

Republic of Côte d'Ivoire
Ministry of Construction, Housing, Sanitation and Urban Development (MCLAU)



SCHEMA
DIRECTEUR
d'URBANISME
du GRAND
ABIDJAN

REPUBLIC OF COTE D'IVOIRE
THE PROJECT FOR THE DEVELOPMENT OF THE URBAN
MASTER PLAN IN GREATER ABIDJAN (SDUGA)
FINAL REPORT



VOLUME II
URBAN MASTER PLAN FOR GREATER ABIDJAN
AND OTHER PROJECT RELATED TASKS

MARCH 2015

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

Oriental Consultants Global Co., Ltd.

Japan Development Institute

International Development Center of Japan

Asia Air Survey Co., Ltd.

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Abbreviations

English		French	
AA	Asia and Africa	AA	Asie et Afrique
AAD	Abidjan Autonomous District	DAA	District Autonome d'Abidjan
AAGR	Average Annual Growth Rate	TCAM	Taux de Croissance Annuel Moyen
AAP	Abidjan Autonomous Port	PAA	Port Autonome d'Abidjan
ACD	Order of Final Concession	ACD	Arrêté de Concession Définitive
ADB	Asian Development Bank	BASD	Banque Asiatique de Développement
AERIA	Felix Houphouet Boigny International Airport in Abidjan	AERIA	Aéroport International Felix Houphouet Boigny d'Abidjan
AFD	French Agency for Development	AFD	Agence Française de Développement
AfDB	African Development Bank	BAD	Banque Africaine de Développement
AGEF	Land Management Agency	AGEF	Agence de Gestion Foncière
AGEPE	Agency for Studies and Employment Promotion	AGEPE	Agence d'Etudes et de Promotion de l'Emploi
AGEROUT E	Road Management Agency	AGEROUTE	Agence de Gestion des Routes
AGETU	Urban Transport Agency	AGETU	Agence des Transports Urbains
ANASUR	National Agency for Urban Sanitation	ANASUR	Agence Nationale de la Salubrité Urbaine
ANDE	National Environmental Agency	ANDE	Agence Nationale de l'Environnement
APU	Preliminary Agreement for Urban Development	APU	Accord Préalable d'Urbanisme
ATC	Area Traffic Control	ATC	Système de Contrôle de la Circulation
ATCI	Telecommunications Agency of Cote d'Ivoire	ATCI	Agence des Télécommunications de Côte d'Ivoire
AUA	Agency of Urban Planning of Abidjan	AUA	Agence d'Urbanisme d'Abidjan
AUPA	Agency of Urban Planning and Exploration in Abidjan	AUPA	Agence d'Urbanisme et de Prospection d'Abidjan
AUT	Agency of Urban Planning and Topography	AUT	Agence d'Urbanisme et de Topographie
AWI	Africa West Industries	AWI	Africa West Industries
BEIE	Office of Environmental Impact Assessment	BEIE	Bureau d'Etudes d'Impact Environnemental
BNETD	National Bureau of Technical Studies and Development	BNETD	Bureau National d'Etudes Techniques et de Développement
BOAD	West African Development Bank	BOAD	Banque Ouest Africaine de Développement
BOT	Build – Operate – Transfer	BOT	Bâtir Opérer Transférer
BRT	Bus Rapid Transit	BRT	Transit Rapide par Bus
CAS	Country Assistance Strategy	CAS	Stratégie d'Aide-Pays
CBC	Continental Beverage Company	CBC	Continental Beverage Company
CBD	Central Business District	CA	Centre d'Affaires
CCI	Chamber of Commerce and Industry	CCI	Chambre du Commerce et d'Industrie
CCT	Centre of Cartography and Remote Sensing	CCT	Centre de Cartographie et de Télédétection
CDM	Clean Development Mechanism	MDP	Mécanisme pour un Développement Propre

Abbreviations

English		French	
CEPICI	Investment Promotion Centre in Cote d'Ivoire	CEPICI	Centre de Promotion des Investissements en Côte d'Ivoire
CHR	Regional Hospital	CHR	Centre Hospitalier Régional
CHU	University Hospital	CHU	Centre Hospitalier Universitaire
CI	Côte d'Ivoire	CI	Côte d'Ivoire
CIAPOL	Ivorian Antipollution Centre	CIAPOL	Centre Ivoirien Antipollution
CIPREM	Ivorian Production Company of Mineral Water in Côte d'Ivoire	CIPREM CI	Compagnie Ivoirienne de Production d'Eau Minérale en Côte d'Ivoire
CNOA	National Council of the Order of Architects	CNOA	Conseil National de l'Ordre des Architectes
CNRA	National Agricultural Research Centre	CNRA	Centre National de Recherche Agronomique
CRRAE	Pension Fund for Distribution with Savings	CRRAE	Caisse de Retraite par Répartition Avec Epargne
CSDR	Health Reference Centre	CSDR	Centre de Santé de Référence
CSP	Country Strategy Papers	DSP	Documents de Stratégie Pays
CSU	Urban Health Centre	CSU	Centre de Santé Urbain
CSUS	Specialized Urban Health Centre	CSUS	Centre de Santé Urbain Spécialisé
CU	Planning Certificate	CU	Certificat d'Urbanisme
DAC	Development Assistance Committee	CAD	Comité d'Aide au Développement
DAUDL	Department of Urban Planning and Local Development	DAUDL	Département de l'Aménagement Urbain et du Développement Local
DC	Directorate of Religious Affairs	DC	Direction des Cultes
DEM	Digital Elevation Model	DEM	Modèle Numérique de Terrain
DGAMP	Directorate General for Maritime and Port Affairs	DGAMP	Direction Générale des Affaires Maritimes et Portuaires
DOE	Department of Environment	DOE	Direction de l'Environnement
DRC	Democratic Republic of the Congo	RDC	République Démocratique du Congo
DTC	Directorate of Topographic Survey and Mapping	DTC	Direction de la Topographie et de la Cartographie
DVD	Digital Video Disc	DVD	Digital Video Disc
ECOWAS	Economic Community of West African States	CEDEAO	Communauté Economique des Etats de l'Afrique de l'Ouest
EDF	European Development Fund	FED	Fonds Européen de Développement
EEMCI	National Survey on Employment among households in Côte d'Ivoire	EEMCI	Enquête Nationale sur l'Emploi Auprès des Ménages en Côte d'Ivoire
EIA	Environmental Impact Assessment	EIE	Etude d'Impact Environnemental
EIS	Environmental Impact Statement	CIE	Déclaration d'Impact Environnemental
EP	Environmental Permit to Operate	PE	Permis Environnemental d'Exploitation
EP	Rainwater	EP	Eaux Pluviales
EPA	Public Administrative Institution	EPA	Etablissement Public à Caractère Administratif
ESIA	Environmental and Social Impact Assessment	EIES	Etude d'Impact Environnemental et Social
EU	European Union	UE	Union européenne

Abbreviations

English		French	
EU	Wastewater	EU	Eaux Usées
FAO	Food and Agriculture Organization of the United Nations	FAO	Organisation des Nations Unies pour l'Alimentation et l'Agriculture
FAR	Floor Area Ratio	COS	Coefficient d'Occupation des Sols
FCFA	African Financial Community Franc	FCFA	Francs de la Communauté Financière Africaine
FDI	Foreign Direct Investment	IDE	Investissements Directs Etrangers
FHB	Félix Houphouët-Boigny	FHB	Félix Houphouët-Boigny
FSU	Urban Health Formation	FSU	Formation Sanitaire Urbaine
GAUDSS	Greater Abidjan Urban Development Spatial Strategy	SSAUGA	Stratégie Spatiale d'Aménagement Urbain du Grand Abidjan
GCP	Ground Control Point	GCP	Point de Contrôle au Sol
GDP	Gross Domestic Product	PIB	Produit Intérieur Brut
GEF	Global Environment Facility	FEM	Fonds pour l'Environnement Mondial
GIS	Geographic Information System	SIG	Système d'Information Géographique
GNI	Gross National Income	RNB	Revenu National Brut
GPS	Global Positioning System	GPS	Système de Positionnement Global
GRDP	Gross Regional Domestic Product	PIB Régional	Produits Intérieurs Bruts Régionaux
GSPM	Group of Military Firefighters	GSPM	Groupement des Sapeurs-Pompiers Militaires
HG	General Hospital	HG	Hôpital Général
HGV	Heavy Goods Vehicles	PL	Poids Lourds
HIPC	Heavily Indebted Poor Countries	PPTE	Pays Pauvres Très Endettés
HIS	Household Interview Survey	HIS	Enquête Ménages Déplacements
HKB	Henri Konan Bédié	HKB	Henri Konan Bédié
HOV	High-Occupancy Vehicle	VOM	Véhicules à Occupation Multiple
HT	High Tension	HT	Haute Tension
ICT	Information and Communications Technology	TIC	Technologies de l'Information et de la Communication
IDB	Islamic Development Bank	BID	Banque Islamique de Développement
IEE	Initial Environmental Examination	EEI	Examen Environnemental Initial
IGT	Institute of Tropical Geography	IGT	Institut de Géographie Tropicale
IMF	International Monetary Fund	FMI	Fonds Monétaire International
INS	National Statistic Office	INS	Institut National de la Statistique
IS	Impact Statement	CI	Déclaration d'Impact
ISEA	Integrated Strategic Environmental Assessment	EESI	Evaluation Environnementale Stratégique Intégrée
ITS	Intelligent Transportation Systems	STI	Systèmes de Transport Intelligents
JCC	Joint Coordination Committee	CCM	Comité de Coordination Mixte
JICA	Japan International Cooperation Agency	JICA	Agence Japonaise de Coopération Internationale
JST	JICA Study Team	JST	Mission d'Etude de la JICA
K-Economy	Knowledge Economy	K-Economie	Economie Basée sur le Savoir
KPI	Key Performance Indicator	ICP	Indicateurs Clés de Performance
LU	Land Use	OS	Occupation du Sol

Abbreviations

English		French	
MCAPPME	Ministry of Commerce, Handicrafts and Promotion of SMCs	MCAPPME	Ministère du Commerce, de l'Artisanat et de la Promotion des PME
MCF	Ministry of Culture and Francophonie	MCF	Ministère de la Culture et de la Francophonie
MCLAU	Ministry of Construction, Housing, Sanitation and Urban Development	MCLAU	Ministère de la Construction, du Logement, de l'Assainissement et de l'Urbanisme
MEMEASF P	Ministry of State, Ministry of Labour, Social Affairs and Vocational Training	MEMEASFP	Ministère d'État, Ministère de l'Emploi, des Affaires Sociales et de la Formation Professionnelle
MEMIS	Ministry of State, Ministry of Interior and Security	MEMIS	Ministère d'Etat, Ministère de l'Intérieur et de la Sécurité
MEMPD	Ministry of State, Ministry of Planning and Development	MEMPD	Ministère d'Etat, Ministère du Plan et du Développement
MENET	Ministry of National Education and Technical Education	MENET	Ministère de l'Education Nationale et de l'Enseignement Technique
MESRS	Ministry of Higher Education and Scientific Research	MESRS	Ministère de l'Enseignement Supérieur et de la Recherche Scientifique
MICE	Meetings, Incentives, Conferences/Conventions and Exhibitions/Events	MICE	Réunions, Incentives, Conférences / Conventions et Expositions / Evénements
MIE	Ministry of Economic Infrastructure	MIE	Ministère des Infrastructures Economiques
MIMI	Ministry of Industries and Mines	MIMI	Ministère de l'Industrie et des Mines
MINAGRA	Ministry of Agriculture and Animal Resources	MINAGRA	Ministère de l'Agriculture et des Ressources Animales
MINEF	Ministry of Water and Forestry	MINEF	Ministère des Eaux et Forêts
MINEME	Ministry of State, Ministry of Environment	MINEME	Ministère d'Etat, Ministère de l'Environnement
MINESUD D	Ministry of Environment, Urban Safety and Sustainable Development	MINESUDD	Ministère de l'Environnement, de la Salubrité Urbaine et du Développement Durable
MJSL	Ministry of Youth, Sports and Recreation	MJSL	Ministère de la Jeunesse, du Sport et des Loisirs
MLIT	Ministry of Land, Infrastructure, Transport and Tourism	MLIT	Ministère du Territoire, des Infrastructures, des Transports et du Tourisme
MNPD	Ministry of National Planning and Development	MNPD	Ministère d'Etat, Ministère du Plan et du Développement
MOI	Ministry of Industry	MOI	Ministère de l'Industries
MOS	Land Use Patterns	MOS	Modes d'Occupation des Sols
MP	Master Plan	SD	Schéma Directeur
MPEA	Master Plan of Extended Areas	PDZE	Plan Directeur des Zones d'Extensions
MRT	Mass Rapid Transit	MRT	Mass Transit Rapide
MSLS	Ministry of Health and the Fight against	MSLS	Ministère de la Santé et de la Lutte

Abbreviations

English		French	
	AIDS		Contre le SIDA
MT	Ministry of Transport	MT	Ministère du Transport
MTPCPT	Ministry of Public Works, Construction, Post and Telecommunication	MTPCPT	Ministère des Travaux Publics, Construction, Postes et Télécommunication
MV	Medium-Voltage Electricity Line	MT	Ligne Electrique de Moyenne Tension
MW	Megawatt	MW	Mégawatt
NASA	National Aeronautics and Space Administration	NASA	Administration Nationale de l'Aéronautique et de l'Espace
NDP	National Development Plan	PND	Plan National de Développement
NGO	Non-governmental Organization	ONG	Organisation Non Gouvernementale
NW	Northwest	NW	Nord-Ouest
OECD	Organisation for Economic Co-operation and Development	OCDE	Organisation de Coopération et de Développement Économiques
OIC	Ivorian Shippers Office	OIC	Office Ivoirien des Chargeurs
OIPR	Ivorian Office of Parks and Reserves	OIPR	Office Ivoirien des Parcs et Réserves
ONAD	National Sanitation and Drainage Agency	ONAD	Office National de l'Assainissement et du Drainage
ONEP	National Office of Potable Water	ONEP	Office National de l'Eau Potable
ONPC	National Office for Civil Protection	ONPC	Office National de la Protection Civile
OPRC	Oil Pollution Preparedness, Response and Co-operation	OPRC	Préparation, Lutte et Coopération en Matière de Pollution par les Hydrocarbures
PAP	Priority Actions Perimeters	PAP	Périmètre d'Actions Prioritaires
PATA	Pacific Asia Travel Association	PATA	Association de Voyage Asie-Pacifique
PC	Building Permit	PC	Permis de Construire
PDCC	Project of Coastal Commune Development	PDCC	Projet de Développement des Communes Côtières
PDF	Portable Document Format	PDF	Portable Document Format
PIDA	Programme for Infrastructure Development in Africa	PIDA	Programme de Développement des Infrastructures en Afrique
POPs	Persistent Organic Pollutants	POP	Polluants Organiques Persistants
PPP	Public-Private Partnership	PPP	Partenariat Public-Privé
PPU	Presidential Emergency Program	PPU	Programme Présidentiel d'Urgence
PRI	Infrastructure Renaissance Project	PRI	Projet de Renaissance des Infrastructures
PUD	Urban Master Plan	PUD	Plan d'Urbanisme Directeur
PUD	Detailed Urban Plan	PUD	Plan d'Urbanisme de détail
PUIUR	Emergency Program for Urban Infrastructure	PUIUR	Programme d'Urgence d'Infrastructures Urbaines
PURSSAB	Emergency Programme to Restore Basic Social and Administrative Services	PURSSAB	Programme d'Urgence pour le Rétablissement des Services Sociaux et Administratifs Essentiels
RCI	Republic of Cote d'Ivoire	RCI	République de Côte d'Ivoire
RDRP	Relaunching Development and Reducing Poverty	(No Abbreviations)	Relance du Développement et de Réduction de la Pauvreté

Abbreviations

English		French	
RGPH	General Census of Population and Housing	RGPH	Recensement Général de la Population et de l'Habitat
RISP	Regional Integration Strategy Paper for West Africa	RISP	Programme d'Appui à l'Intégration Régionale pour l'Afrique de l'Ouest
ROW	Right of Way	ROW	Emprise de Voie
RPC	Rational Polynomial Coefficient	(No Abbreviations)	Coefficient Polynomial Rationnel
RPU	Special Planning Regulation	RPU	Règlement Particulier d'Urbanisme
SDU	Urban Master Plan	SDU	Schéma Directeur d'Urbanisme
SDUGA	Urban Master Plan for Greater Abidjan	SDUGA	Schéma Directeur d'Urbanisme du Grand Abidjan
SEA	Strategic Environmental Assessment	EES	Evaluation Environnementale Stratégique
SHP	Shapefile	SHP	Shapefile
SIACA	Company Ivorian Pineapple and Canned Food (New SIACA)	SIACA	Société Ivoir-Allemande de Conserve d'Ananas
SICOGI	Ivorian Company of Construction and Real Estate Management	SICOGI	Société Ivoirienne de Construction et de Gestion Immobilière
SIIC	Service Classified Installations Inspectorate	SIIC	Service d'Inspection des Installations Classées
SITARAIL	International Company of African Rail Transport	SITARAIL	Société Internationale de Transport Africain par Rail
SME	Small and Medium Sized Enterprises	PME	Petites et Moyennes Entreprises
SOCABO	Agricultural Cooperative Society Bonoua	SOCABO	Société Coopérative Agricole de Bonoua
SODECI	Water Distribution Company of Côte d'Ivoire	SODECI	Société de Distribution d'Eau de la Côte d'Ivoire
SODEFOR	Association for the Development of Forests	SODEFOR	Société pour le Développement des Forêts
SOTRA	Abidjan Transport Company	SOTRA	Société des Transports Abidjanais
SP	Sub-Prefecture	SP	Sous-Préfecture
SRTM	Shuttle Radar Topography Mission	SRTM	Mission de Topographie Radar Shuttle
STB	Transport Association of Bonoua	STB	Société de Transport de Bonoua
STP	Sewage Treatment Plant	STEP	Station d'Épuration des Eaux Usées
SW	Southwest	SW	Sud-Ouest
SWOT	Strengths, Weaknesses, Opportunities and Threats	SWOT	Forces, Faiblesses, Opportunités et Menaces
TAZ	Traffic Analysis Zone	TAZ	Zones d'Analyse du Trafic
TEU	Twenty-foot Equivalent Unit	EVP	Equivalent Vingt Pieds
TIA	Traffic Impact Assessment	EIT	Étude Impact sur le Trafic
TIS	Traffic Impact Study	EIT	Étude Impact sur le Trafic
TMG	Tokyo Metropolitan Government	GMT	Gouvernement Métropolitain de Tokyo
TOD	Transit-Oriented Development	TOD	Développement Orienté sur le Transit
TOR	Terms of Reference	TDR	Termes de Référence
TSE	Treated Sewage Effluent	EEUT	Effluents d'Eaux Usées Traitées

Abbreviations

English		French	
UEMOA	West African Economic and Monetary Union	UEMOA	Union Economique et Monétaire Ouest-Africaine
UK	The United Kingdom of Great Britain and Northern Ireland	Royaume Uni	Royaume-Uni de Grande-Bretagne et d'Irlande du Nord
UN	United Nations	ONU	Nations Unies
UN-DESA	Department of Economic and Social Affairs, United Nations	ONU-DAES	Département des Affaires Economiques et Sociales, Organisation des Nations Unies
UNEP	United Nations Environment Program	PNUE	Programme des Nations Unies pour l'Environnement
UNESCO	United Nations Educational, Scientific and Cultural Organization	UNESCO	Organisation des Nations Unies pour l'Education, la Science et la Culture
UNOCI	United Nations Operation in Côte d'Ivoire	ONUCI	Opération des Nations Unies en Côte d'Ivoire
US/USA	United States of America	US/USA	États-Unis d'Amérique
US\$/USD	United States Dollar	US\$/USD	Dollar US
USAID	United States Agency for International Development	USAID	Agence des Etats-Unis pour le Développement International
UTM	Universal Transverse Mercator	UTM	Transverse Universelle de Mercator
UU	Urban Unit	UU	Unité Urbaine
UVICOCI	Union of Cities and Communes in Côte d'Ivoire	UVICOCI	Union des Villes et Communes de Côte d'Ivoire
VITIB	Village of Information Technology and Biotechnology	VITIB	Village des Technologies de l'Information et de la Biotechnologie
VRD	Roads and Utility Networks	VRD	Voiries et Réseaux Divers
WADB	West African Development Bank	BOAD	Banque Ouest Africaine de Développement
WAEMU	West African Economic and Monetary Union	UEMOA	Union Economique et Monétaire Ouest Africaine
WB	World Bank	BM	Banque Mondiale
WBG	World Bank Group	(No Abbreviations)	Groupe de la Banque Mondiale
WD	Working Days Required for Review	JT	Jours de travail requis pour examen
WGS	World Geodetic System	WGS	Système Géodésique Mondial

0.0 Introduction

0.1 Project Background

After independence in 1960, the Republic of Côte d'Ivoire (hereinafter called Côte d'Ivoire) achieved an average annual GDP growth rate of 8%, a period referred to as the “Ivorian Miracle”, which was supported by the significant growth of the City of Abidjan as the political and economic center of Côte d'Ivoire. However, since the late 1990s Abidjan has been unable to manage its population increase, acquire needed capital investments, and execute urban development functions due to the political and the socio-military crisis. This further aggravated the typical problems that modern cities face, such as disorderly land use, lack of livelihood infrastructure and insufficient public investment. At present, the disorderly development of Abidjan is an impediment to the recovery of Côte d'Ivoire and the stability of the region.

Modern city planning for Abidjan has a long history. From 1928 until just before independence, four city development plans were formulated to cope with the city's growth. During the 2000s, the population nearly doubled, as a result, the number of urban poor significantly increased and the urban built-up area expanded in a disorderly fashion from an area of 500km² to 750km². The latest urban development plan was formulated in 1994 and approved in 2000 (hereinafter called Master Plan 2000) and has a target year of 2015; however, this plan encounters difficulties in developing the city environment as planned in an orderly fashion.

After the election in 2010, the Ouattara Administration came to power and set the political agenda for the reconstruction of the country under the National Development Plan (PND, Plan National de Développement). It is necessary for the future development of Côte d'Ivoire to analyze and evaluate the latest urban development plan approved in 2000 with a view to solve the said problems by addressing precepts. Within this context, there is an urgent necessity to formulate an updated urban development plan that takes into full account the present prevailing conditions and to conduct feasibility studies of priority projects.

0.2 Project Objectives

The principal objective of the Project is to formulate the urban master plan for the “Greater Abidjan Area”. The plan should be sustainable and in line with the National Development Plan. This can be achieved by:

- (1) Analyzing and evaluating the Master Plan approved in 2000,
- (2) Formulating a revised Urban Master Plan for Greater Abidjan (SDUGA) with the target year of 2030, including Urban Transport Master Plan, and

- (3) Identifying high priority projects in the transport sector
- (4) Preparing topographic maps to provide basic geographic information for Urban Master Plan and Transport Master Plan formulation for Greater Abidjan
- (5) Strengthening of capability profile of counterparts through the Project

The target year for the master plans is set 2030 and the intermediated planning years are set 2020 and 2025. The target year of the detailed master plan of Extended Area is set 2025 through the discussion with MCLAU and approved by JCC (Joint Coordination Committee).

0.3 Scope of Work and Schedule of Project Implementation

This scope of work is basically defined in accordance with the Record of Discussions (R/D) as signed by JICA and the Ministry of Construction, Sanitation and Urban Planning of Côte d'Ivoire (hereinafter referred to MCLAU) in October 2012. The major work items covered in the scope of work are listed and implemented as shown in the following table.

Scope of Work and Outline Schedule of Project

Phase	Major Tasks
Phase 1 (March 2013 ~ December-2013)	<ul style="list-style-type: none"> • Submission and Discussion of Inception Report (April 2013) • Analysis and evaluation of the Master Plan 2000 • Digital Topographic Mapping for Urban Planning • Analysis of Current Conditions • Transport-Related Surveys (Home Interview Survey and other related surveys) • Formulation of Urban Master Plan for Greater Abidjan: <ul style="list-style-type: none"> Analysis and Identification of Issues Setting of Socioeconomic Framework Setting of Development Vision Formulation of Land Use Plan (not including Detailed Urban Plans) • Formulation of Transport Master Plan for Greater Abidjan: <ul style="list-style-type: none"> Directions of Greater Abidjan Transport Development for Transport Master Plan Preparation • 1st Stakeholder Meeting (October 2013) • Submission and Discussion of Progress Report (December 2013)
Phase 2 (December 2013 ~ May 2014)	<ul style="list-style-type: none"> • Compiling all the study results to date • Formulation of Urban Master Plan for Greater Abidjan: <ul style="list-style-type: none"> Detailed Urban Plans for selected areas • Formulation of Transport Master Plan for Greater Abidjan: <ul style="list-style-type: none"> Transport Modeling and Future Demand Forecast Formulation of Basic Guidelines/Policies Formulation of the "Master Plan for Urban Transport Sector" Implementation Planning Selection (Final) of Feasibility Study Projects • 1st Training in Japan (January 2014) • Submission and Discussion of Interim Report (May 2014)

Phase	Major Tasks
Phase 3 (May 2014 ~ March 2015)	<ul style="list-style-type: none"> *Elaboration and Modification of Master Plan Projects and Priority Projects in Transport Sector 2nd Stakeholder Meeting (June 2014) 2nd Training Course in Japan (July 2014) Preparation of Draft Final Report and Final Report
	<ul style="list-style-type: none"> Submission and Discussion of Draft Final Report (October 2014)
	<ul style="list-style-type: none"> Submission of Final Report (March 2015)

0.4 Study Area and Planning Area of Greater Abidjan

The “Study Area” for the Project is the Greater Abidjan Area consisting of such administrative units as the Abidjan Autonomous District (13 communes) and 6 surrounding communes, which is in total 19 communes and un-urbanized sub-prefectures as shown in the following table (total area: 431,063 ha).

Names of Communes in the Study Area

Abidjan Autonomous District (AAD)	10 Central Communes	Northern Abidjan	II. Cities in the peripheral area	Abobo Attecoube Yopougon
		Southern Abidjan	I. Existing central cities	Adjame Plateau Cocody
				Koumassi Marcory Treichville
		II. Cities in the peripheral area	Port-Bouet	
	3 Communes incorporated into AAD after 2001	III. New cities	Bingerville Anyama Songon	
6 Expanded Communes	IV. Cities of 6 expanded communes	Alepe Dabou Jacqueville Bonoua Grand-Bassam Azaguie		
Areas intervening among 6 expanded communes	V. Non-urban area	No specific town is considered at present.		

Within the Study Area of Greater Abidjan, the “Planning Area” is defined as the area delineated by such geographical features as rivers, mountains and roads which are considered most likely limit of area for the urban master planning, and shown by the red dotted line in the figure below (total area:349,202 ha).



Study Area and Planning Area for the Project

0.5 Organization of Project Implementation

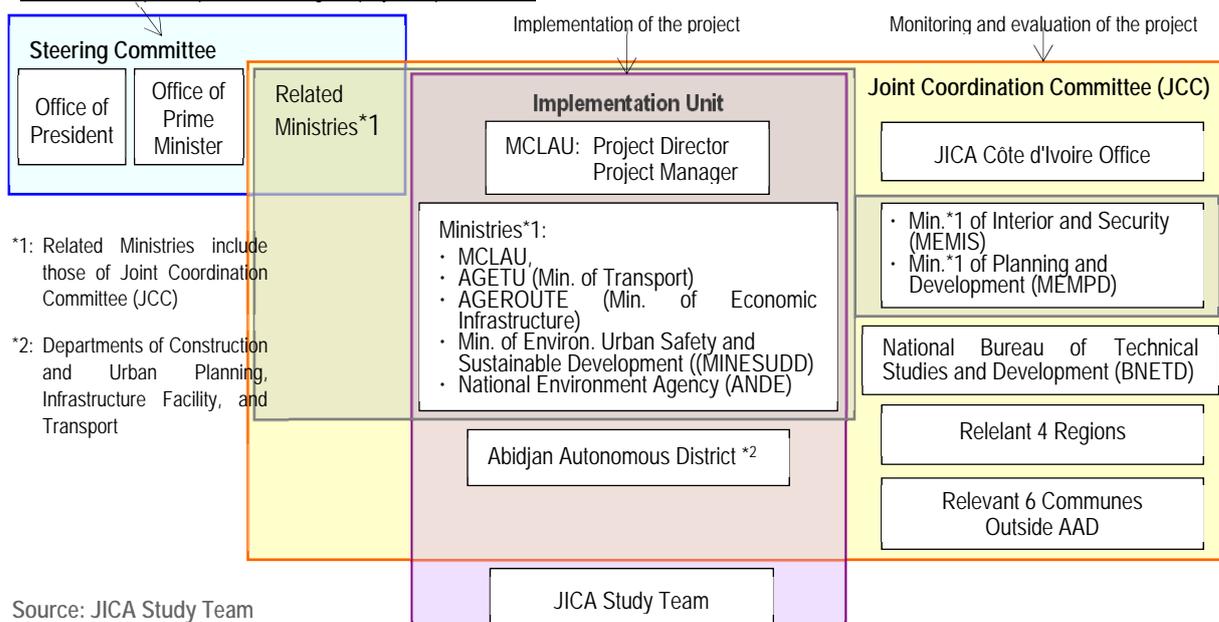
The Project is implemented under the general responsibility of MCLAU and under the system as shown in the following table and the figure.

Related Agencies and Their Functions

Name	Agencies	Function
General Project Manager	MCLAU (Minister/Deputy Minister)	Assuming the final responsibility for the Project.
Project Implementing Manager	MCLAU (Director of Urban Planning Dept.)	Daily management for implementing the Project.
Project Implementing Units (Counterparts and JICA Study Team)	Counterparts: MCLAU (Urban Planning Dept. and DTC), Ministry of Transport (AGETU), Ministry of Economic Infrastructure (AGEROUTE), Ministry of Environment, Urban Safety and Sustainable Development (MINESUDD) National Environment Agency (ANDE), and Abidjan Autonomous District (DAA) JICA Study Team	Implementing the Project.
Steering Committee	Presidential Office, Prime Minister's Office and related governmental ministries	Making the final decision for the Project. Basically, the Committee determines the urban plan based on the final products of the Project after its completion. The Committee also addresses any important problems that may occur.
Joint Coordination Committee (JCC) (Monitoring/Assessment Committee)	Counterpart members, Ministry of Interior and Security (MEMIS), Ministry of Planning and Development (MEMPD), National Bureau of Technical Studies and Development (BNETD), Representatives from relevant 19 Communes, Representatives from relevant 4 Regions, and JICA Office in Côte d'Ivoire	Responsible for the progress control and evaluation of the Project.

Decision-making on urban planning after the project finish

Discussion on specific problems during the project implementation



Project Organizational Structure

Japan International Cooperation Agency (JICA)

Ministry of Construction, Housing, Sanitation and Urban Development (MCLAU)

The Project for the Development of
the Urban Master Plan in Greater Abidjan
in the Republic of Côte d'Ivoire (SDUGA)

Final Report

March 2015

Volume II

Urban Master Plan for Greater Abidjan and
Other Project Related Tasks

Part 1

Current Conditions and Planning Prerequisites
for the Urban Master Plan

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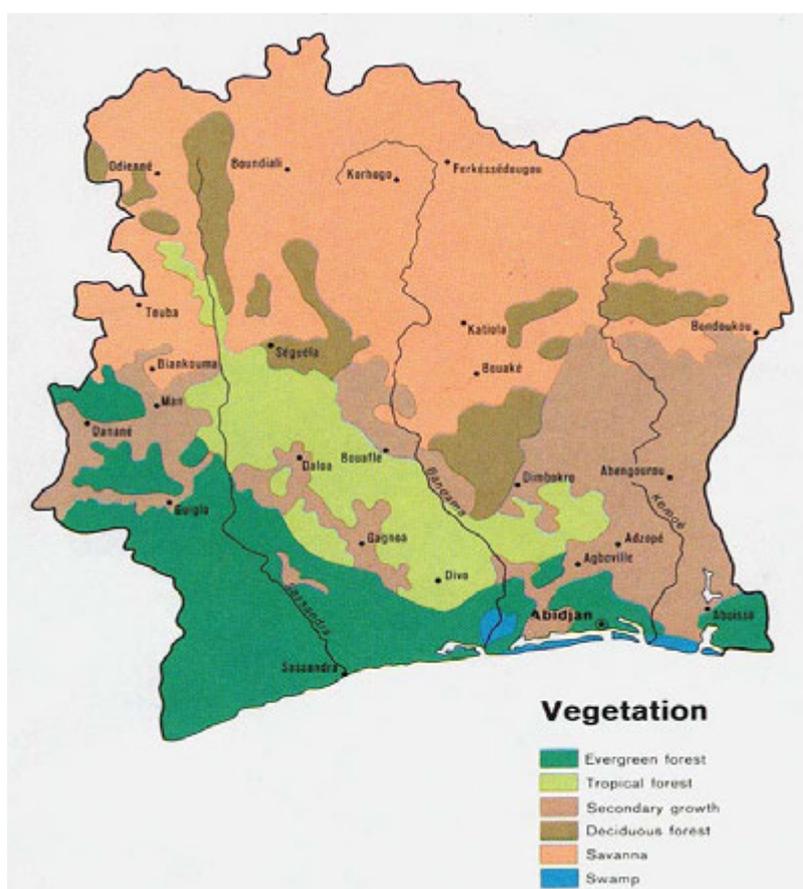
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1.0 Natural, Social and Economic Conditions

1.1 Natural, Social and Economic Profile

1.1.1 Geography

Cote d'Ivoire has a land area of 322,000 km². It has an east-west coastal line of 515 km with many lagoons, especially in its eastern part. Abidjan has grown as a port town along one of the lagoons. The country is surrounded by Ghana, Burkina Faso, Mali, Guinea and Liberia. The distance by road from Abidjan is 560 km to Accra of Ghana, 1114 km to Ouagadougou of Burkina Faso, 1113 km to Bamako of Mali, 1589 km to Conakry of Guinea and 993 km to Monrovia of Liberia.



Source: University of Texas (FAO)

Figure 1.1 Vegetation of Cote d'Ivoire

The lands are mostly flat nation-wide. Vegetation ranges from tropical rain forests in the south to savannah in the north. With plenty of precipitation, the southern part is advanced in tropical export agriculture, food production and forestry, while dry land crops such as cotton and cashew nut, as well as livestock, are the main productive activities in the northern part. There are four major rivers, all from north to south, including Komoe River, Bandama River, Cavalla River, and Sassandra River. Komoe River flows into the sea at Grand Bassam as shown in Figure 1.1 of the previous page.

The national land includes agricultural lands representing about 20% coverage, the permanent meadows and pastures about 40 %, and forestry lands about 33%. Cote d'Ivoire once had the largest forest cover among Western African countries, but the forest has rapidly been shrinking, from about 12.2 million ha to 9.5 million ha during the period 1990-2000, according to the FAO.

1.1.2 Population

The national population in 2014 is 22,671,000 people by the result of the 2014 population census. It has been growing at 2.6% a year during the inter-census period of 1998-2014. The population increases in the past was very rapid and grew at 4.2% a year during the 30-year period from 1955 to 1985. At present, the growth rate is steadily going down to 2.6%, which is a little higher than the estimated average growth rate in Africa at 2.3 % during the period 2000-2010.

A rapid population increase in the past has been caused by a flux of migration from surrounding countries. About a half of the migrants were absorbed in agriculture and the remaining half in the urban informal sector, particularly in Abidjan¹. However, since the early 1990s up to until recently, the rapid immigration slowed down due to a fluctuating national economy and a declining income differential between Cote d'Ivoire and neighboring countries. Government administrations used to accommodate unstrained immigration during the period from the 1960s to the 1980s. However, the Presidential Emergency Program in April 2011 announced that the current administration intends to monitor immigration in line with the ECOWAS policy framework for migration.

According to the 2014 Census, the urban population in Côte d'Ivoire was revealed to share 50% of the total population, while it was 28% in 1970 and 46% in 1998. During the period from 1965-1970 to 2005-2010, the annual urban population growth rate was estimated to sharply decline from 7.2% to 3.6% in Cote d'Ivoire, while in Sub-Saharan Africa it decreased from 4.8% to 3.7%. Thus, the speed of urbanisation has been decelerating in Cote d'Ivoire and this trend seems to be more evident when compared to Sub-Saharan Africa.

Despite of the deceleration of its urban population growth, Abidjan is by far the largest city in Cote d'Ivoire. According to the 2014 Census, Abidjan had 4,707,000 people or 42% of the total urban population of Cote d'Ivoire. It was followed by Bouake with 540,000, Daloa with 260,000, Korhogo with 240,000, Yamoussoukro with 200,000, and San Pedro with 170,000.

The urban primacy of Cote d'Ivoire, in terms of the percentage of the population in the largest city in the national population, has also been increasing to reach one of the highest among the six largest cities in Africa (see Table 1.1)

¹ International Organization for Migrations, Migration en Cote d'Ivoire: Profile National 2009.

Table 1.1 Six Largest Cities in Africa and Their Urban Primacy

Country	City	Urban Primacy (%)				Population in 2010 '000 persons
		1980	1990	2000	2010	
Egypt	Cairo	16.3	15.9	15.0	13.6	11,031
Nigeria	Lagos	3.4	4.9	5.6	6.8	10,788
DRC	Kinshasa	7.6	9.7	10.9	12.8	8,415
Angola	Luanda	12.6	15.2	18.6	25.1	4,749
Sudan	Khartoum	15.4	23.1	25.4	26.9	4,516
Cote d'Ivoire	Abidjan	16.3	16.8	18.3	21.0 (20.8)	4,151 (4,707)

Source: JICA Study Team and United Nations, World Urbanization Prospects, the 2011 Revision, Population Division, UN-DESA

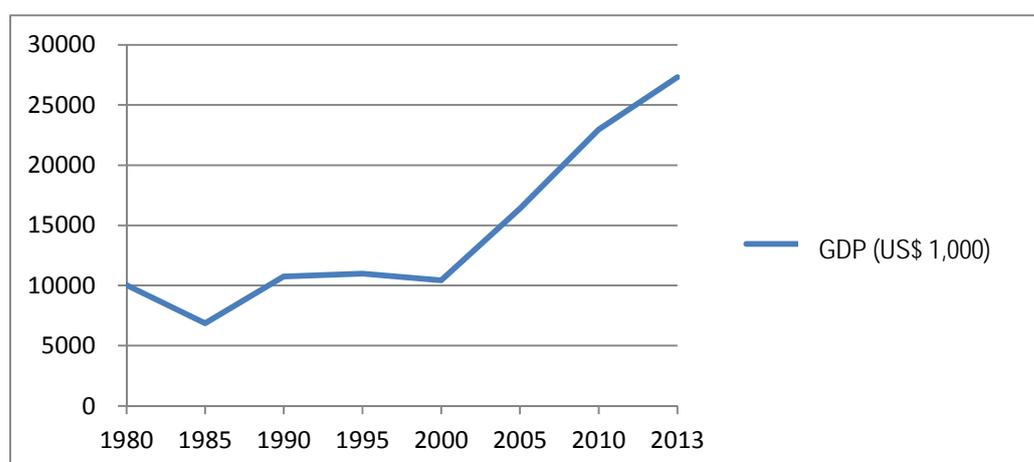
Note: () shows the result of 2014 Census

1.1.3 National Economy

(1) Production

According to the World Bank data, the national GDP amounts to US\$ 24,680 million and per capita GNI amounts to US\$ 1,220 in 2012 (Atlas method and PPP based). The per capita GNI is comparable to the average of Sab-Saharan Africa being US\$ 1,345 in the same year.

Despite fluctuations associated with socio-military conflicts in the past, the national economy has continuously been expanding in the long term when measured in US dollars at current prices, as shown in Figure 1.2. In the 2000s, the national economy apparently began to grow steadily. The growth dropped in 2011 largely due to socio-military conflicts. After the current administration started full-fledged operation, the growth picked up rapidly, mainly with the recovery of FDIs, public investments, and oil production, as well as the institutional reform of cocoa.



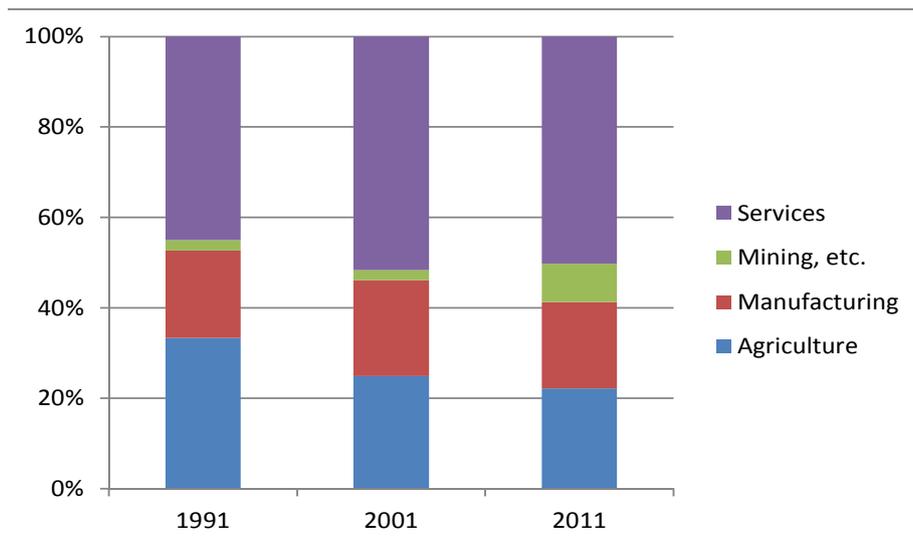
Source: IMF

Note: GDP 2013 is an estimate by IMF

Figure 1.2 Gross Domestic Products of Cote d'Ivoire at current prices

According to the World Bank Data, the sector breakdown of GDP has been changing as follows:

The largest source of GDP is services followed by agriculture, manufacturing and mining as shown in Figure 1.3. The fastest growing sector is mining, petroleum in particular. The proportion of the services has kept increasing. Cote d'Ivoire ranks the seventh in the service GDP per capita among Sub-Saharan countries, after South Africa, Namibia, Angola, and Capo Verde. These are all mining-based or trade-based countries.



Source: World Bank

Figure 1.3 Changing Sector-Mix of GDP of Cote d'Ivoire

(2) Employment

Employment-mix is quite different from GDP-mix. Primary, secondary and tertiary sectors absorb 48%, 7% and 45% respectively of the total employment, which are about 9,492,000 people in 2012 according to the INS statistics as shown on Table 1.2.

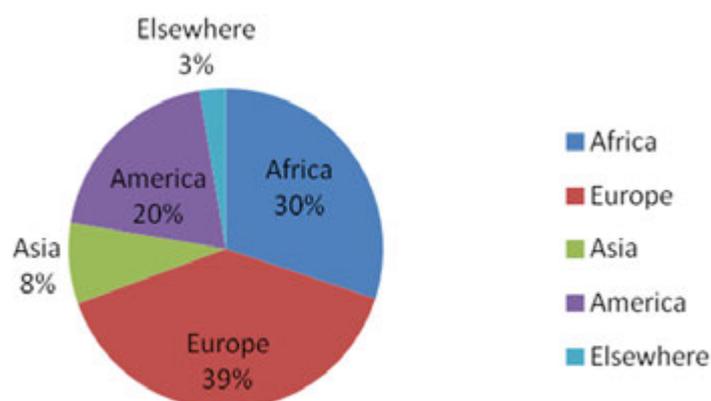
Table 1.2 Employment by Sector of Cote d'Ivoire: 2012

	Employment (persons)	%
Agriculture	4 337 760	45.7
Forestry	114 162	1.2
Farming, hunting and fishing	79 961	0.8
Agro-processing	53 208	0.6
Manufacturing	154 778	1.6
Construction	151 213	1.6
Other industries	281 400	3.0
Retail	1 953 090	20.6
Wholesale	256 814	2.7
Repair	172 800	1.8
Hotels and restaurants	200 583	2.1
Transport and communications	351 721	3.7
Household services	677 793	7.1
Other services	706 867	7.4
Total	9 492 150	100.0

Source : AGEPE, à partir des données de l'EEMCI 2012

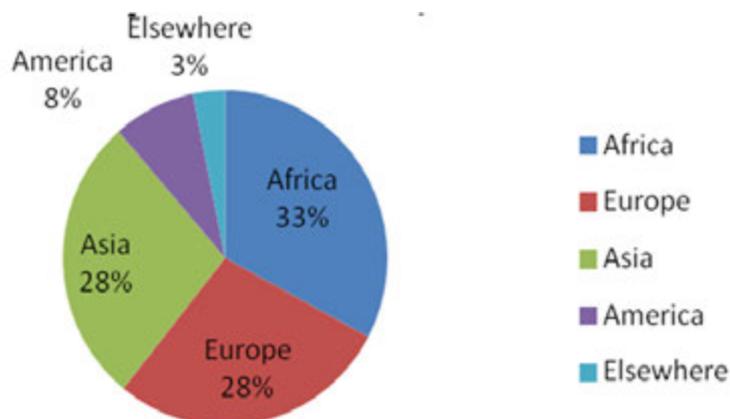
(3) Trade

Cote d'Ivoire exported US\$ 9,046 million and imported US\$ 5,664 million in 2012. During the period between 2010 and 2012, it exported US\$ 10,126 million and imported US\$ 6,744 million a year on average. Cote d'Ivoire trades with many regions in the world. It trades not only with Europe, which is a major trade partner for Africa, but also with other countries in Africa. Figure 1.4 and Figure 1.5 show destinations of exports and origins of imports in the world market.



Source: International Trade Center

Figure 1.4 Export Market of Cote d'Ivoire, 2011



Source: International Trade Center

Figure 1.5 Origins of Import by Cote d'Ivoire, 2011

Table 1.3 and Table 1.4 show major export and import products. Fuels and cocoa are especially large export commodities. A large part of crude oil is imported from Nigeria and exported mainly to Nigeria after it is refined in Abidjan. Cote d'Ivoire is the top exporter of cocoa in the world market with a share being consistently about 10% in the past decade in spite of the socio-economic instability.

Table 1.3 Major Exports of Cote d'Ivoire: 2010-2013 Annual Average

Commodity Groups	Amount 000 US\$	% in Total Export	Top Three Destinations
Fuels	4 119	40.7	Nigeria, Germany and Canada
Cocoa	4 085	40.0	Netherlands, USA and France
Rubber, etc.	918	9.1	South Africa, Germany and Malaysia
Fruits, nuts, etc.	511	5.0	India, Vietnam and France
Wood, wood products, etc.	236	2.3	Italy, India and Senegal

Source: International Trade Center

Table 1.4 Major Imports of Cote d'Ivoire: 2010-2013 Annual Average

Commodity Groups	Amount 000 US\$	% in Total Import	Top Three Origins
Fuels	4 071	20.1	Nigeria, Columbia and Equatorial Guinea
Cereals	2 093	10.3	Thailand, France and Vietnam
Machineries	1 782	8.8	France, China and Germany
Electrics and electronics	1 112	5.3	China, France and UK
Vehicles	1 076	5.3	Japan, France and Germany

Source: International Trade Center

After a rapid production expansion in the past three decades Cote d'Ivoire is now the second largest producer of cashew nuts in the world, which is exported world-wide. Coffee is still a major product, but its production has been stagnant. Palm oil and rubber are major products but these are exported mainly in the regional market in Africa. Cote d'Ivoire is the largest producer of canned seafood in Africa. Production and export are rapidly expanding as well. Major imported items are cereals, rice from Southeast Asian countries, in particular, and manufactured goods, including machineries, electric goods and vehicles.

(4) Investment

Foreign direct investments (FDI) in flows have steadily been expanding over the long-term. The annual amount of FDI increased from US \$49.5 million at current prices in the 1980s, US \$189 million in the 1990s, and US \$318 million in the 2000s, according to Index Mundi.²

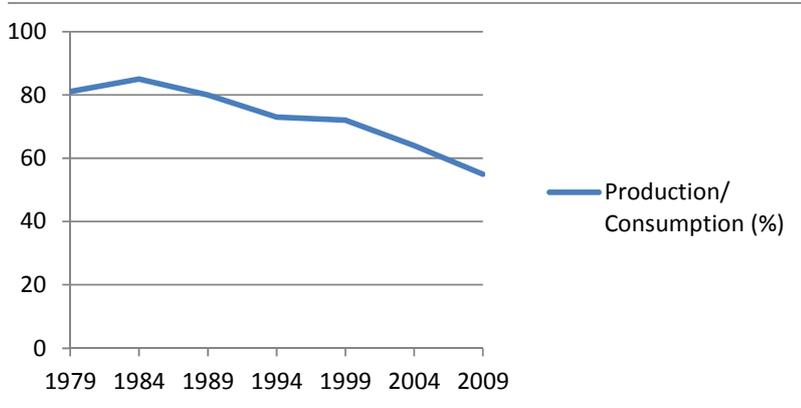
On this trend, investments have been picking up after a slack in 2011; 377 million in 2009, 339 million in 2010, 286 million in 2011 and 478 million in 2012.

According to the Investment Promotion Centre of Cote d'Ivoire (CEPICI), the composition of foreign and domestic investments is about equal in 2011. In 2011, the major sources of foreign investments are Lebanon, Switzerland, Singapore and France. In 2012, China and India were also additional major investors. Major investment fields are agro-processing, oil & gas, fishery, transport, hotel & tourism and chemicals in 2011. In 2012, the investments in oil & gas were accelerated. Other emerging fields include mining, construction, power and telecommunication.

(5) Food Production

It is widely understood that Cote d'Ivoire is a food deficit country and an overall food sufficiency has been estimated at about 70%. Figure 1.6 shows the ratio of production to consumption in cereals, which is one of the largest crop groups in both production and import. It is clear that cereal consumption has been increasingly dependent on import. The import has kept increasing since early 1980s and has exceeded domestic production since 2004. Chronic and intensifying food shortage and occasional food price hikes are reportedly the background for the past and potential social instability.

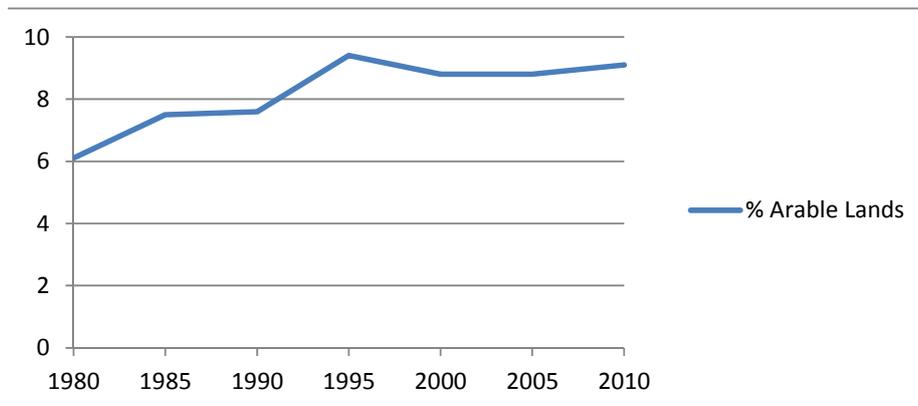
² <http://www.indexmundi.com/facts/c%C3%B4te-d'ivoire/foreign-direct-investment>



Source: FAO

Figure 1.6 % Ratio of Production to Consumption of Cereals in Cote d'Ivoire

Expansion of arable lands has almost stopped, beginning in the middle of the 1990s (See Figure 1.7). AfDB stresses the importance of protecting food agriculture as well as forestry in its Country Strategy Note: 2009-2010, Feb. 2008. Unfortunately, urban lands have been expanding into arable lands that are more advantageous in both rain fall and market access.



Source: FAO

Figure 1.7 Relative Proportion of Arable Lands in Cote d'Ivoire

1.1.4 Cote d'Ivoire and Abidjan in an International Setting

Cote d'Ivoire has world-wide competitiveness, but only in a limited number of products such as mineral fuels, cocoa and cashew nuts. Regarding other agricultural products such as rubber, palm oil and coffee, Cote d'Ivoire has been competitive to a limited extent due to a limited level of processing and quality.

Mineral fuels are an emerging leading sector with a proven reserve of petroleum being about one million barrels and natural gas being about one trillion cubic feet. The petroleum and the natural gas exist mainly offshore from Dabou. With a refinery in Abidjan, which is the third largest after Lagos and Port Sudan, Cote d'Ivoire exports energy to European countries, USA and many African countries including Nigeria, Ghana, Mali, Burkina Faso, Benin and Togo.

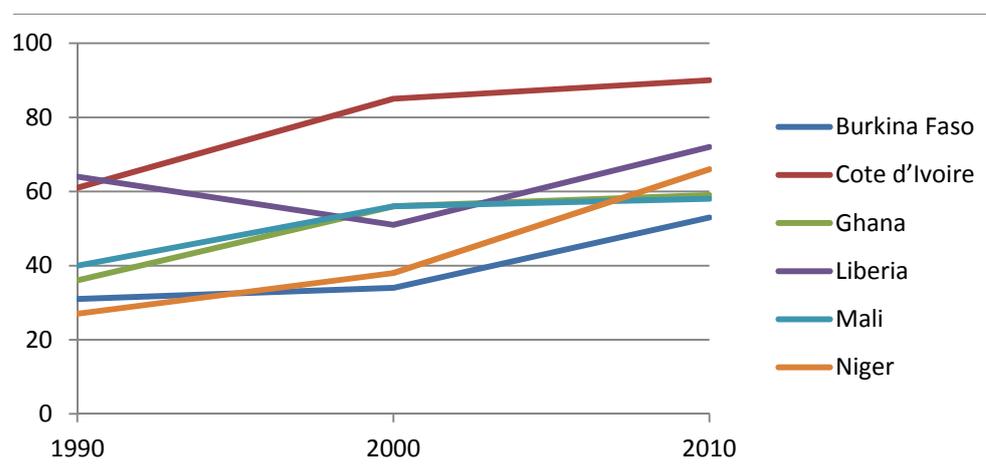
Cote d'Ivoire is competitive not only in oil in Africa but also in a variety of products in the western Africa region. Cote d'Ivoire has a large surplus in exports with all of its neighboring countries. It is a regional hub. Basically, it exports plenty of industrial goods to and imports agricultural and resource products from neighboring countries (Table 1.5). Cote d'Ivoire reportedly has the most diversified industrial structure in the ECOWAS region. With all of these factors, Cote d'Ivoire ranks second after Nigeria among ECOWAS member countries in the number of enterprises listed in the 500 leading enterprises in Africa. All of Cote d'Ivoire's enterprises in that list are concentrated in Abidjan.

Table 1.5 Trade between Cote d'Ivoire and Neighboring Countries: 2010-2011 Average

	Amount (000US\$)		Top Three Commodity Groups	
	Export	Import	Export	Import
Burkina Faso	352	4	Fuels, soaps and Plastics	Vehicles, cereals, salt
Ghana	545	28	Ship, machineries, edible preparations	Machineries, cocoa, chemicals
Guinea	57	16	Plastics, edible preparations ,fuel	Fish
Liberia	120	25	Electrics, electronics, fuel, essential oils	Rubber, electrics, electronics,
Mali	234	1	Fuel, fats and edible preparations	Fertilizer, cereals

Source: International Trade Center

Economies of Cote d'Ivoire and the neighboring countries have been increasingly interactive, as demonstrated in increasing trade-GDP ratios in each of them (Figure 1.8). Particularly, the trade-GDP ratio is the highest in Cote d'Ivoire among these countries.

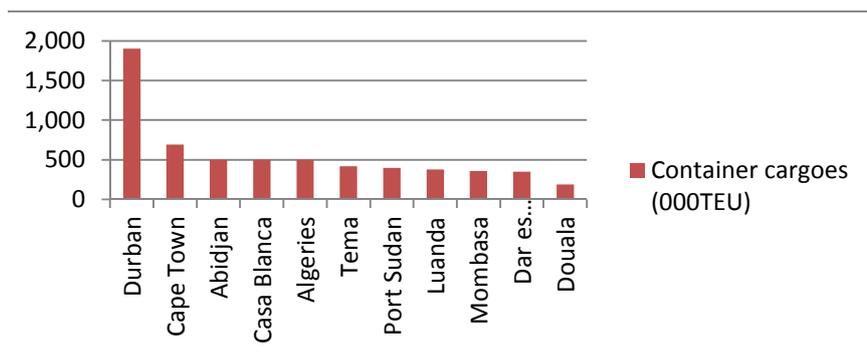


Source: FAO

Figure 1.8 Trade-GDP Ratio of Cote d'Ivoire and Neighbors

Abidjan port plays a central role in the international economic linkage between Cote d'Ivoire and the rest of the world. The port handles the largest volume of bulk and general cargo in Africa and the third largest in TEU of container cargo, as shown in Figure 1.9. Table 1.6 shows the volume of cargo handled at Abidjan port.

In terms of logistic traffic, according to the SDUGA Cargo Transport Survey, the largest truck traffic generator is Abidjan Port, followed by the Vridi and Yopougon industrial parks. About 90% of the origins and destinations of trucks are inside Greater Abidjan, about 5% are inside the country, and the remaining 5% are from or to neighboring countries.



Source: Ocean Shipping Consultants/World Bank, Africa Infrastructure Country Diagnosis: Background Paper 8, August, 2009

Figure 1.9 Container Cargo Handled in Major African Ports: 2005/2006

Table 1.6 Volume of Bulk & General Cargo Handled at Abidjan Port: 2010-2012

		Total (000t)	Inbound (000t)	Outbound (000t)
Import and Export	Total	66 240	36 041	30 199
	Petroleum	24 427	12 792	11 635
	General cargo	39 980	21 784	18 196
	Fish	1 833	1 465	368
Transit	Total	3 263	2 891	372
	Burkina Faso	1 695	1 411	264
	Mali	1 560	1 452	108
	Niger	10	10	0
	Other countries	18	18	0

Source: Port Autonome d'Abidjan

1.2 Existing Land Use

1.2.1 Creation of Current Land Use Maps

The current land use maps were created using the simplified digital base maps as elaborated on in “Chapter 3 - Digital Topographic Mapping” of this report, and in accordance with the following specifications and methods.

- **Scale**

1/10,000

- **Target area**

The target area is identical in nature with the one of the simplified digital base maps; the total area is approximately 2,150 km².

- **Land use categories**

Fourteen land use categories for urban planning were planned in the Inception Report as indicated below;

- 1) Low-density housing land,
- 2) Medium/high density housing land,
- 3) Industrial land,
- 4) Commercial/business use land (including other uses/mixed land),
- 5) Educational facility-use land,
- 6) Main public/utility facility-use land,
- 7) Transport facilities,
- 8) Supply and treatment facilities,
- 9) Parks, plazas, graveyards, and so on,
- 10) Other open space,
- 11) Forest,
- 12) Grassland,
- 13) Agricultural land,
- 14) Rivers and channels.

These categories were identified by JICA for adoption on this project. A meeting was held with the Department Aménagement Urbain et Développement Local (DAUDL), a section within BNETD, who prepare the land use maps for government use in order to clarify the current status.

The land use categories currently used for mapping purposes are those shown on the MOS plans of 1989 prepared by a French consultant for the government. The map has been updated to 1992, the current MOS version available. A subsequent revision of some land uses, mainly “Equipements” (public and social facilities) was undertaken for the Atlas Des Villes, published by Ministère d’Etat, Ministère du Plan et du Développement in 2007.

JICA Study Team definitely set out twenty categories of land use for urban planning with consideration for the MOS (1993) categories that are the standard categories used in Abidjan. See Table 1.7.

- 1) Informal Settlement, newly established (1)
- 2) Low-density housing land, no change (2)
- 3) Medium/high density housing land, divided into medium density residential land (3) and high density residential land (4)
- 4) Industrial land, no change (5)
- 5) Commercial/business use land (including other uses/mixed land), no change (6)
- 6) Educational facility-use land, no change (7)
- 7) Main public/utility facility-use land, divided into health facility land (8), government office land (9), sports and tourism facility land (10), security facility land (11) and cultural land (12)
- 8) Transport facilities, no change (13)

- 9) Supply and treatment facilities (utilities land), no change (14)
- 10) Parks, plazas, graveyards, and so on, changed to “Others” which was newly established
- 11) Other open space, changed to “Others” which was newly established, except for cemeteries (15)
- 12) Forest, no change (16)
- 13) Grassland, no change (17)
- 14) Agricultural land, no change (18)
- 15) Rivers and channels, excluded from the land use category of land use
- 16) Riparian land, newly established (19)
- 17) Others, newly established (20)

- **Land use identifying method**

Land use categories were identified as described in Table 1.8. They are not judged in the unit of each site, but in each zone covering the sites of the same category or each zone covered by a main category. Minimum mapping Unit is set to 3mm by 3mm on the map.

The results of the field survey were compiled digitally and the current land use maps were created (See Figure 1.10 and Appendices A and B).

Table 1.7 Land Use Categories

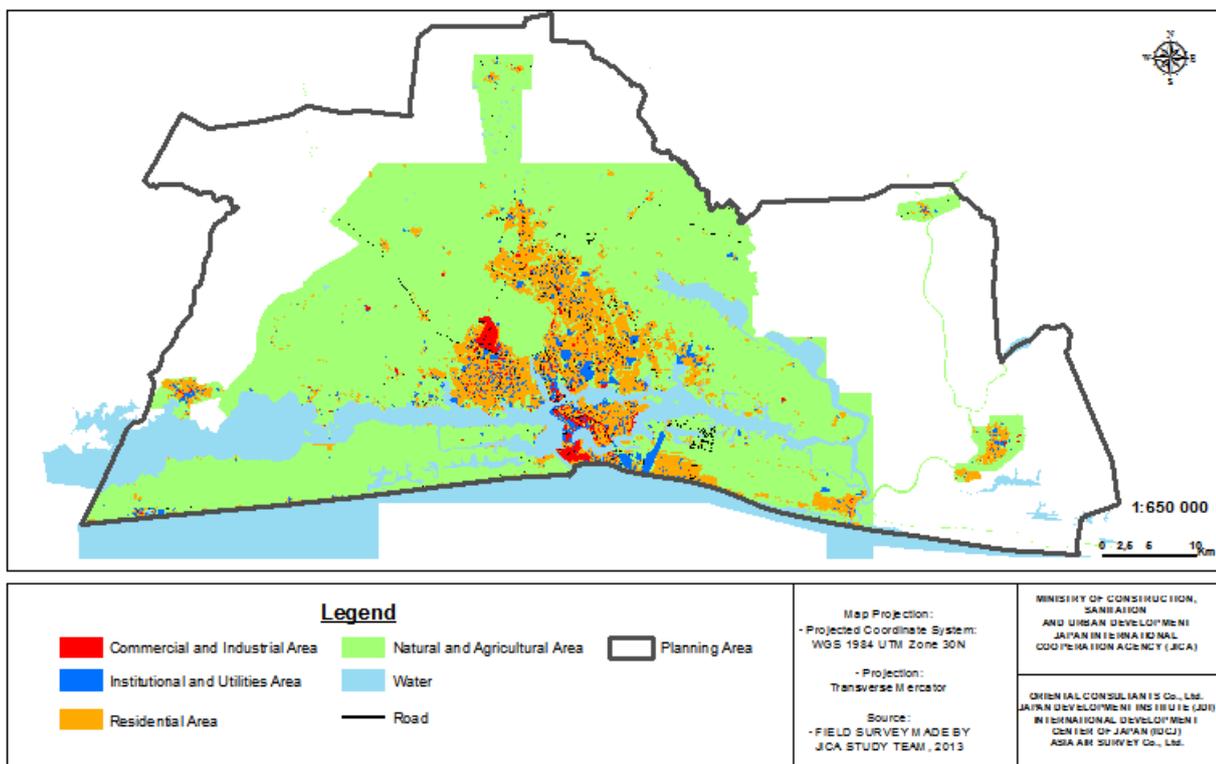
Land Use Categories	Definition
1) informal settlement	Housing areas which lack the legal status of the land
2) low density residential land	Residential areas where estimated population density is less than 70 persons/ha
3) medium density residential land	Residential areas where estimated population density is between 70 to 260 persons/ha
4) high density residential land	Residential areas where estimated population density is more than 260 persons/ha
5) industrial land	Land areas used for the purpose of heavy chemical industry or light industry such as factories, workshops, laboratories, car repair shops, tank storages
6) commercial/office land	Land areas used for the purpose of commercial/service activities such as offices, markets, wholesale markets, malls, shopping centres, hypermarkets, supermarkets, shops, hotels, guest houses, amusement facilities, banks, petrol stations and other private services
7) health facility land	Land areas used for the purpose of medical / health care such as hospital and clinic
8) educational land	Land areas used for the purpose of education such as primary schools, junior high schools, senior high schools, universities, colleges, vocational schools, other various schools
9) government office land	Land areas used for the purpose of the offices for local, regional, national government and other public organizations such as government offices, city halls, town halls, post offices, courthouses, tax offices, revenue offices
10) sports and tourism facility land	Land areas used for the purpose of sports, athletic and recreation such as stadium, grounds, gymnasiums, pools, golf courses, parks, gardens, children's playgrounds, green zones, tourist facilities, historic sites
11) transport facility land	Land areas used for the purpose of transportation and storage such as stations, bus terminals, water-bus terminals, track terminals, port facilities, airport facilities, car parks, depots, warehouses
12) security facility land	Land areas used for the purpose of security facilities such as police stations, gendarmerie offices, military sites, prisons, fire stations
13) utilities land	Land areas used for the purpose of public services such as water treatment plants, water tanks, sanitary facilities, waste disposal sites, final landfill sites, substations, slaughterhouses, broadcast stations, telecommunications
14) cultural land	Land areas used for the purpose of cultural and religious activities such as museum, art galleries, botanical garden, libraries, churches, mosques, temples
15) cemeteries	Large size and important cemeteries. Does not include a churchyard in a church.
16) forest	Forest area with native trees including original and secondary forest
17) grassland	Pasture land with sparse trees
18) agricultural land	Seasonal cultivated land for vegetables, grains and plantation area for mass production such as pineapple, palm oil, banana
19) riparian land	Swamp, Marsh area
20) others	No categorize items, non-utilized area, landslide and erosion, cliff

Source: JICA Study Team

Table 1.8 Identifying Method of Land Use Categories

Land Use Categories	Identifying Method
1) informal settlement	- Monographic representation of the Informal settlements (2009, AUT) and 1:5,000 scale topographic maps - Exclude restructuring project area
2-4) low / medium / high density residential land	Population density derived from population by quartier (2013) and land area (ha) by quartier
5) industrial land, 6) commercial/office land, 7) health facility land, 8) educational land, 9) government office land, 10) sports and tourism facility land, 11) transport facility land, 12) security facility land, 13) utilities land, 14) cultural land, 15) cemeteries	Field survey in order to identify land uses from "5) industrial land" to "15) cemeteries" by using the interim data output maps
16) forest, 17) grassland, 18) agricultural land, 19) riparian land, 20) others	Based on the 1:5,000 scale to 1:50,000 scale topographic maps and satellite images, the interim data output maps for the 1:10,000 scale simplified digital base maps were created. Built-up areas and natural land uses from "16) forest" to "19) riparian land" had been identified in the interim data output maps.

Source: JICA Study Team



Source: JICA Study Team

Figure 1.10 Current Land Use Map

1.2.2 Existing Land Use

The total area of the land as which the present land use was specified measures about 189,000 hectare, and occupies about 54% of the Greater Abidjan whole area (about 349,000 hectare). The area of each land use classification is shown in Table 1.9.

The ratio of a developed area and an undeveloped area in Greater Abidjan is 1 to 3. The developed area is divided into 60% of a residential area, 16% of an institutional/utility area, 6% of a commercial/industrial area, and 18% of other areas.

Table 1.9 Land Area by Land Use Category

	Former AAD (10 Communes)		3 communes/sous- prefectures which have later joined AAD		6 communes/sous- prefectures outside the present AAD		Greater Abidjan (Total)	
	ha	%	ha	%	ha	%	ha	%
Developed Land	29,827	60.73%	8,335	8.29%	6,224	15.95%	44,386	23.52%
Residential Areas	18,956	38.59%	4,034	4.01%	3,435	8.80%	26,425	14.01%
Informal Settlement	2,819	5.74%	37	0.04%	0	0.00%	2,856	1.51%
Low Density Residential Area	8,552	17.41%	3,538	3.52%	2,868	7.35%	14,957	7.93%
Medium Density Residential Area	3,068	6.25%	358	0.36%	476	1.22%	3,901	2.07%
High Density Residential Area	4,517	9.20%	102	0.10%	91	0.23%	4,710	2.50%
Commercial and Industrial Areas	2,366	4.82%	206	0.20%	137	0.35%	2,708	1.44%
Industry	1,433	2.92%	152	0.15%	46	0.12%	1,631	0.86%
Commercial/Office	933	1.90%	54	0.05%	91	0.23%	1,077	0.57%
Institutional and Utilities Areas	5,370	10.93%	941	0.94%	797	2.04%	7,108	3.77%
Health	265	0.54%	38	0.04%	62	0.16%	365	0.19%
Education	1,217	2.48%	250	0.25%	334	0.86%	1,801	0.95%
Government Offices	349	0.71%	50	0.05%	60	0.15%	459	0.24%
Sports and Tourism	301	0.61%	55	0.05%	23	0.06%	378	0.20%
Transport	625	1.27%	13	0.01%	5	0.01%	644	0.34%
Security	769	1.57%	63	0.06%	28	0.07%	860	0.46%
Utilities	102	0.21%	35	0.04%	21	0.05%	158	0.08%
Cultural	506	1.03%	107	0.11%	144	0.37%	757	0.40%
Cemeteries	207	0.42%	62	0.06%	78	0.20%	347	0.18%
Roads	1,030	2.10%	267	0.27%	42	0.11%	1,339	0.71%
Other Land Use Areas	3,135	6.38%	3,155	3.14%	1,855	4.75%	8,145	4.32%
Other	3,135	6.38%	3,155	3.14%	1,855	4.75%	8,145	4.32%
Non Developed Land	19,290	39.27%	92,204	91.71%	32,798	84.05%	144,292	76.48%
Natural and Agricultural Areas	19,290	39.27%	92,204	91.71%	32,798	84.05%	144,292	76.48%
Agriculture	10,258	20.89%	46,613	46.36%	17,389	44.56%	74,260	39.36%
Forest	4,624	9.41%	27,823	27.67%	10,019	25.68%	42,466	22.51%
Grassland	3,669	7.47%	16,995	16.90%	4,153	10.64%	24,817	13.15%
Riparian Land	738	1.50%	769	0.76%	1,230	3.15%	2,737	1.45%
Other Natural and Agricultural Areas	1	0.00%	5	0.00%	7	0.02%	12	0.01%
Total	49,117	100.00%	100,539	100.00%	39,022	100.00%	188,678	100.00%

Source: JICA Study Team

Table 1.10 Land Use Change

	Residential Areas	Institutional and Utilities Areas	Commercial and Industrial Areas	Other Urban Land	Natural and Agricultural Areas	(Unit ha) total
Treichville	-1	106	1	20	0	126
Plateau	16	79	-57	55	17	111
Adjamé	197	67	14	73	118	470
Attécoubé	71	143	31	63	3,309	3,618
Marcory	-15	101	44	-21	22	130
Koumassi	289	119	-49	-157	114	317
Port-Bouët	1,301	659	67	840	5,260	8,128
Cocody	3,936	520	195	-576	3,212	7,287
Yopougon	1,766	793	403	546	4,849	8,358
Abobo	1,920	552	-9	-250	2,389	4,603
Anyama	1,111	214	20	728	12,868	14,941
Bassam	967	-1	-24	749	-498	1,193
Bingerville	1,236	63	5	618	2,364	4,287
Songon	41	152	39	570	-9,807	-9,005
Total	12,837	3,568	681	3,260	24,217	44,563

Source: JICA Study Team

1.3 Land Use Planning and Management Institutions

1.3.1 Legislation Related to Urban Planning

Laws, decree and orders that are shown in Table 1.11 are legislation related to urban planning matters. The following three legislations are closely related to urban planning, land use and their management.

- Law No 62-253, 31 July 1962 concerning urban planning
- Decree No 2005-261, 21 July 2005 fixing the manner of application of urban planning and housing matters according to governmental transfer
- Order No 2151, 19 August 1985 fixing the procedure for approval of urban planning master plan

Table 1.11 List of Laws, Decrees and Orders Concerning to Urban Planning

Law (Loi)	<ul style="list-style-type: none"> • Loi No62-253 du 31 Juillet 1962 relative aux plans d'urbanisme • Loi No 84-1244 du 8 novembre 1984 portant regime dominal des communes et de la Ville d'Abidjan • Loi No 94-619 du novembre 1994 relative a la creation d'un Ordre national des Urbanistes de Cote d'Ivoire
Decree (Decret)	<ul style="list-style-type: none"> • Decret No 68-77 du fevrier 1968 portant creation d'une zone d'aménagement differe au pourtour de l'agglomeration d'Abidjan • Decret No 72-636 du 5 octobre 1972 fixant les formes et conditions de l'enquete publique prevue par l'article 10 de la loi No 62-253 • Decret No 96-884 du 25 octobre 1996 reglement la purge des droits coutumiers sur le sol pour interet general • Decret No 2000-80 du 9 fevrier 2000 portant organisation du ministere de la construction et de l'Environnement • Decret No 2000-380 du 10 mai 2000 portant nomination des membres du Gouvernement de transition, tel que modifie par le decret No 2000-382 du mai 2000 • Decret No 2005-261 du 21 juillet 2005 fixant les modalites d'application en matiere d'urbanisme et d'habitat, de la loi no 2003-308 du 07 juillet 2003 portant transfert et repartition de competences de l'Etat aux Collectivites territoriales
Order (Arrete)	<ul style="list-style-type: none"> • l'arrete no 2151 du 19 aout 1985 fixant la procedure d'approbation des Plans d'Urbanisme Directeur • l'arrete no 0672 du 28 juin 1993 portant actualisation du Schema Directeur du Grand Abidjan • - le proces-verbal de la reunion du Comite Consultatif du 21 october 1999

Source : Decret 2000-669 du 06 septembre 2000 portant approbation du Schema Directeur d'Urbanisme du Grand Abidjan , JICA Study Team

1.3.2 Plans

1.3.2.1 Related Plans and Procedures Defined in the Legal System

The urban master plan (PUD: Plan d'urbanisme directeur) and Detail urban plan (PUD: Plan d'urbanisme de detail) are defined in the law No. 62-253 with their planning contents (ref: Table 1.12). These plans consist of spatial drawings and texts, which include spatial regulations to be applied to their planning area.

The following matters will be approved or decided according to these plans.

- Estate transactions
- Building construction
- Preparation to the natural land
- Development and creation of housing estates
- Establishment of 1st class and 2nd class facilities, that is dangerous, unsanitary and disturbing.

And planned matters in these documents are expected to be realized through the above mentioned measures, and land acquisition according to the urban master plans.

The urban master plan will be effectuated, after approval, as ministerial decree of the ministry of construction, housing, sanitation and urban planning. For approval of the urban master plan, consultations with relative administrative organizations and public hearings are required.

For approval of the detail master plan, consultation with related administrative organizations and public hearings are required.

After approval of the detail master plan, it will be effectuated as ministerial ordinance of the ministry of construction, housing, sanitation and urban planning.

A schematic urban master plan is prepared independent of the above mentioned legislative frame. There isn't any law, which defines planning contents to be included for the Schematic urban master plan (SDU: Schema Directeur d'Urbanisme), except its approval procedure in the order No. 2151/MTPCPT, 19 August 1985. The schematic urban master plan will become effective as a decree. For this study, the Ministry of construction, housing, sanitation and urban planning and the JICA Study Team agreed that the Schematic urban master plan will include planning contents which are equivalent to that of the urban master plan.

Table 1.12 Specified Planning Items in Law No 62-253

Items	Urban master plan (PUD: Plan d'urbanisme directeur)	Detail urban plan (PUd: Plan d'urbanisme de detail)
[drawings]		
Land use zoning	Various land uses	Particular land use
Town, area	(N/A)	To be indicated with its population density
Route, Road network	Principal roads	Principle and secondary roads
Reserved land	Principal area for general interest and open space	Public service functions and open space
Forest area	Area with special aspect to be protected	Area with special aspect to be protected
Indication for specific zone	Indicate detail urban planning area	
Infrastructure	Basic scheme for water supply, electric supply and sanitary facilities	Basic plan for water supply, electric supply and sanitary facilities
[text]		
Regulations	Regulations relating to land use	Building regulations relating to land condition
Program	Phasing development proposal Cost estimation Expected roles to be shared by related organizations	Development program with solution for urgent areas, Cost estimation Expected roles to be shared by related organizations
[Common planning items]		
<ul style="list-style-type: none"> • areas to be urbanized with their capacity for development • areas for development • expected area of expropriation for <ul style="list-style-type: none"> - extension or new development area for residential or industrial use - residential and industrial development according to its progress 		

Source : Loi No62-253 du 31 Juillet 1962 relative aux plans d'urbanisme

1.3.2.2 Related Plans and Procedures Not Defined in Legal System

The “Abidjan Strategy Plan” was formulated in October 2007 by Abidjan district under the Ministry of Interior. The plan treats urban planning matters, which are expected to be realized between 2008-2018, such as urban infrastructure, transport, parks/ gardens, etc. Also, more developed human resources and financial matters for implementation of the plan are studied. And priorities of several investment programs are defined.

The plan is not fully equivalent to urban master plans, but it is well worth consideration as a realization master plan for urban planning matters.

1.3.3 Related Organization and Its Roles

1.3.3.1 General Remarks

For the urban planning and implementation in Abidjan area, the Ministry of construction, housing, sanitation and urban planning, Abidjan Autonomous District and communes are mainly involved. Their duties and tasks are defined by the Decree No 2005-261. After the administrative structure changes in 2011, Abidjan Autonomous District took charge of duties, which are described as those of the department, district and region.

Relating to this transfer of administrative responsibility, the decree mentions the following matters as well.

- Regarding human resources, staffs will be transferred from the national government to local administrative organizations according to necessary.
- Finance resources will be transferred to local government according to its duties.

Table 1.13 Tasks and Duties in Urban Planning Matters of Administrative Organizations

Planning matters/ Corresponding organizations	Commune	Department	District	Region	Government, National ministry
Coordination of related administrative organizations		<ul style="list-style-type: none"> To coordinate related communes for urban master plan and urban detail plan 	<ul style="list-style-type: none"> To coordinate related communes for urban planning, housing and land preparation works. 	<ul style="list-style-type: none"> To coordinate related communes for urban planning, housing and land preparation works. 	
Master plan (schema directeur)			<ul style="list-style-type: none"> To take initiative and to realize the plan(*6) Approval of the plan (*2) 		
"plans directeurs d'urbanisme"	<ul style="list-style-type: none"> Formulation Implementation (*1) 	<ul style="list-style-type: none"> To give consulting advice To assist its realization 	<ul style="list-style-type: none"> To take initiative and to realize the plan(*6) Approval of the plan (*2) 	<ul style="list-style-type: none"> To give consulting advice 	
plan d'urbanisme directeur	<ul style="list-style-type: none"> Approval (*2) 				
"plans d'urbanisme de detail"	<ul style="list-style-type: none"> Formulation Implementation (*1) Approval (*3) 	<ul style="list-style-type: none"> To give consulting advice To assist its realization 	<ul style="list-style-type: none"> To take initiative and to realize the plan(*6,7) 		
Sanitation master plan		<ul style="list-style-type: none"> Implement the plan (*5, 6) 	<ul style="list-style-type: none"> To take initiative and to realize the plan (*5, 6) 	<ul style="list-style-type: none"> To harmonize individual plans by district (*5) 	<ul style="list-style-type: none"> Approve implementation plan
Urban development plan		<ul style="list-style-type: none"> Implement the plan (*5,6) 	<ul style="list-style-type: none"> To take initiative and to realize the plan(*6,7) 		<ul style="list-style-type: none"> Approve implementation plan
administrative reserved land and communal private land	<ul style="list-style-type: none"> Proposing changes of plan 				
Residential area			<ul style="list-style-type: none"> To study habitation area (*8) 		
Housing estate project (Projets de lotissement)	<ul style="list-style-type: none"> executing of development works (*1) 		<ul style="list-style-type: none"> develop the plan and construction (*5, 6) 		
Land attribution document in residential use area	<ul style="list-style-type: none"> deliver land attribution document Register application document 				<ul style="list-style-type: none"> Prepare application document format
Building permission	<ul style="list-style-type: none"> Preliminary study on housing buildings and buildings less than ground floor + 3 floors Provide license Register application document 				<ul style="list-style-type: none"> Provide license for following buildings (*4) <ul style="list-style-type: none"> -other than housing buildings -buildings more than ground floor + 4 floors -classified facilities -public buildings -estate development program Prepare application document format
Development certification					<ul style="list-style-type: none"> Deliverance of certification (*4)
Conformity certification					<ul style="list-style-type: none"> Deliverance of certification (*4)
Development activities			<ul style="list-style-type: none"> order stopping inadequate development works 		
Social housing	<ul style="list-style-type: none"> preparation and realization (*5) 	<ul style="list-style-type: none"> To take initiative and to realize (*5) 	<ul style="list-style-type: none"> To take initiative and to realize (*7) 	<ul style="list-style-type: none"> To take initiative and to realize (*5) 	<ul style="list-style-type: none"> approve working program of commune and department
Green space	<ul style="list-style-type: none"> implementation and maintenance 		<ul style="list-style-type: none"> implementation and maintenance 		
Heritages			<ul style="list-style-type: none"> Constitution and management 		

*1: according to opinion of "ville", "department", "district"

*2: according to advice on presentation to Minister of Construction and Urban planning

*3: according to ordinance (arrete) relating to Ministry of Construction and urban planning

*4: by communal office representative

*5: with the approval of local office representative of Ministry of construction and urban planning

*6: after opinions from related communes

*7: according to Ministerial ordinance

*8: defined by decree

Source : Decret No 2005-261 du 21 juillet 2005 fixant les modalites d'application en matiere d'urbanisme et d'habitat, de la loi no 2003-308 du 07 juillet 2003 portant transfert et repartition de competences de l'Etat aux Collectivites territoriales

1.3.3.2 Related Organizations

1.3.3.2.1 Ministry of Construction, Housing, Sanitation and Urban Planning (MCLAU)

After the administrative decentralization in 2003, Abidjan District and the communes took over all initiatives on urban planning. The Ministry of Construction, Housing, Sanitation and Urban Planning is involved in advising on urban master plans for these areas. In addition, the ministry examines applications for development projects and building construction. And the Ministry takes a role to examine individual application for development projects and building construction.

1.3.3.2.2 Abidjan Autonomous District

After the administrative structure change that took place in 2011, Abidjan district was renamed Abidjan Autonomous District, and was upgraded to the same level as the ministries. It conducts coordination meetings between related ministries and administrative organizations for planning and implementation of urban planning matters. Corresponding to expansion of duties in urban planning matters, engineers are recruited from national ministries or other organizations such as BNETD.

For planning schematic urban master plans, it is necessary to consider how to coordinate with other local governments which are located outside of Abidjan Autonomous District area.

1.3.3.2.3 Communes

The commune in Cote d'Ivoire is the minimum decentralized municipality unit. It takes the responsibility for implementation of urban planning and development projects within its municipal area.

And it takes responsibility for control of adequate building construction and development works. But this duty is not fully executed, because of lack of budget and human resources.

According to the legal definition, some part of the execution of construction works are the commune's responsibility. But its real situation is unclear and it is supposed insufficient.

1.3.3.2.4 BNETD

BNETD is technical research and planning institution for development, which was established by the national government in the 1960's.

It conducted studies and planning for the schematic urban master plan 2000. And several urban master plans, detail urban plans and housing estate plans have been prepared by BNETD. Even though it was founded by the national government; it operates independently from administrative organizations. It engages in planning works not only for Cote d'Ivoire ministries, administrative organizations and local municipalities, but also for organizations abroad. In this sense, BNETD's operation is similar to a private consulting company.

It maintains close relationships with the national government and local administrative/ municipal organizations. So some engineers are recruited from BNETD to go to these organizations, and vice versa. It has its own urban planning information and research data, but it is quite difficult for outsiders to obtain them, even if they are governmental representatives.

1.3.3.2.5 Other Ministries

The following ministries take responsibility for planning which relate to urban planning.

- Ministry of Planning and Development: the ministry takes responsibility for formulation of the national development plan
- Ministry of Economic Infrastructure: the ministry takes responsibility for formulation of infrastructure plans including road transport plans
- Ministry of Transport: the ministry takes responsibility for formulation of public transport plans

1.3.4 Current Condition of Urban Planning Management

1.3.4.1 Planning

1.3.4.1.1 Urban Master Plan (PUD: Plan d'urbanisme directeur)

In Abidjan district area, urban master plans are prepared for all communes.

Generally, drawings and planning texts are prepared in accordance with the requirements of the law No. 62-253. The volume of the contents differs by commune. And the need for revision differs according to the development situation in the commune.

In the case of Azaguie commune, the following drawings and texts are prepared.

[Drawings]

- Current land use map (1/20,000)
 - Land use classified into 5 categories (urbanized area, future urbanized area, urbanized area with reclamation, flood area, agricultural area)
 - Location of arterial roads, railway and high-voltage power lines
- General master plan (schematic master plan, 1/10,000)
 - Current and future land use classified into 8 categories, which are grouped into residential, industrial, and green areas
 - Current and future locations of public facilities
 - General block plan (future, more than 50m block size)
- - 5 year development plan (1/5,000)
 - Partial enlarged plan of the general master plan

[Text]

- Description on planning text required by the law No. 62-253

1.3.4.1.2 Detail Urban Plan (PUd : Plan d'urbanisme de detail)

In Abidjan district area, only 5 detail urban plans have been prepared, and they cover a limited area of the district of Abidjan. And no plan has been approved.

1.3.4.1.3 Housing estate plan (plan de lotissement)

There are 3 different types of housing estate plans as follows.

- Administrative estate plan (le lotissement administratif)
- Private housing estate plan (le lotissement d'habitation)
- Village estate plan (lotissement villageois)

For each plan, different planning items and approval procedures are specified by Decrees and orders. For its approval, a plan has to be submitted to the Ministry of construction, housing, sanitation and urban planning and be examined. But its technical requirements have not been confirmed yet.

In many cases, plans face difficulties in their implementation especially construction of public facilities such as roads and schools. This problem is caused by insufficient and inadequate financial planning for realization. As a result, construction and realization of infrastructure tend to be delayed and implemented slower than the related development. This tendency became notable from 1985 to 1990, when economic conditions were getting worse.

In order to resolve this problem, an approved estate developer system was introduced for its planning and management. This system intends to require the approved estate developer to take responsibility for planning and realization by confirming its economic feasibility and preparation of public infrastructures.

1.3.4.1.4 Urban Planning Regulations

1) General Regulations

In a general area, land uses are classified into the following 6 categories.

- Residential area
- Apartment area (Habitat collectif, operations immobilières)
- Developing habitation area (Habitat évolutif)
- Industrial/ Port area (Industrielle et Portuaire)
- Craft industry area (Zones artisanale)
- Other area

According to its land use category, the following planning requirements must be satisfied.

- Minimum surface of building lot, maximum surface for housing block
- Setback distance from road, neighboring site
- Maximum building height
- Maximum FAR (Floor area ratio)
- Fence (wall)

- Building distance
- Length of eaves

2) Regulations Applied to Specific Communes

For some communes in Abidjan district, more specific requirements are defined. One set of uniform requirements are applied for an estate area as a unit. The number of estates differs by commune. There are more than 10 estate areas in Cocody and Yopougon communes, but fewer than 5 areas in Marcory and Koumassi communes.

1.3.4.2 Permits and licenses

1.3.4.2.1 Building permission

Before construct a building, building permission is required. The Ministry of construction, housing, sanitation and urban planning is responsible for examination of application drawings and documents. Conformance with the regulations mentioned in 1.3.4.1.4 is examined.

1.3.4.2.2 Development certification (certificats d'urbanisme)

Development certification is required before the development and construction works start. It describes regulations to be applied for the construction and buildings in the applied for site. This means that building construction and development works are not permitted in the area where an urban master plan does not exist.

1.3.4.2.3 Conformity certification (certificats de conformite)

A conformity certification is provided by the communal representative office of the Ministry of construction, housing, sanitation and urban planning. The certificate confirms legal compatibility of the applied for buildings after construction.

1.3.4.2.4 Permits and licenses

Construction/ development activity and their conformity to their permission and licenses are confirmed by the representative officer of the Ministry of construction, housing, sanitation and urban planning.

The representative officer is assigned to the commune, but it is understaffed. In Yopougon commune, only two representative officers are assigned to its 1.1 million residents, and personnel shortfalls against the number of construction activities are obvious. Insufficient equipment (e.g. vehicles for patrol) is also an issue to be improved.

1.3.5 Issues on urban planning and its management

1.3.5.1 Categories of administrative works for urban planning and development

The following six categories are considered as related works for urban planning and development by administrative organizations from the initial stage of planning until the final stage of construction. The study examines issues in urban planning and its management for Abidjan area according to these categories of works.

1.3.5.1.1 Coordination

Prior to making a plan for urban planning and development, it is necessary to identify relevant stakeholders and to share future development visions, goals and matters to be considered. And it is necessary to set the roles and responsibilities of every relevant organization.

For the above mentioned purpose, it is necessary to specify the responsible organization which coordinates the project and its roles.

For example,

- To coordinate discussions with relevant administrative organizations
- To coordinate necessary preparation of development activities
- To formulate a development/ planning policy regarding inter-regional or inter-township matters
- Consensus building among relevant stakeholders

1.3.5.1.2 Survey and research

In order to make decisions and establish policy on urban development and improvement, the current spatial situation and problems should be grasped. For this purpose, collecting related information, its continuous maintenance and its sharing are indispensable.

The following are examples of related activities,

- To collect necessary information for planning
- To conduct surveys for data collection and to revise that data as necessary
- To manage and maintain information systems and its data
- To offer technical advice and suggestions for planning matters

1.3.5.1.3 Planning

The process for urban planning is not simply making proposals for spatial design, but it should be a result of study, judgment, decision and agreement among different stakeholders, who may have relationships with the target area.

In this context, the following are considered to be examples of related activities.

- To prepare comprehensive urban master plans
- To supervise planning works by consultants
- To authorize the plan among relevant organizations (Union ministries, regional government, district/ township)

1.3.5.1.4 Establishing a legal system

For implementing a plan which is described in the form of an urban planning document, it is necessary to establish legal systems, such as laws, regulations or bylaws. In order to bring spatial formulation rules into effect, the following legal procedures need to be taken by responsible administrative organizations.

- To formulate plans into legal regulations
- To prepare legal systems for implementation of plans
- To formulate related laws
- To formulate bylaws, regulations, and technical requirements

1.3.5.1.5 Controlling

Corresponding to the legal system, a spatial control system also needs to be established. For control of urban space and development, it is necessary to decide which will be the responsible organization and control procedures. The following matters are considered to be examples of related activities,

- To evaluate application documents, that are submitted by developers
- To provide permission for building construction and town/ district development
- To give suggestions regarding the development plans
- To monitor building construction and development implementation status

1.3.5.1.6 Realizing

For accelerating urban development, forming partnerships between private companies, the residents and public organizations is an important step. In order to guide the project for public profit, assistance and guidance for project realization by administrative organization are expected.

Following are examples of the above mentioned activities.

- Coordination of project implementation
- Preparing a budget for development
- Coordination of relevant agencies and private investors
- Promotion of balanced development progress

1.3.5.2 Evaluations of current urban planning matters

The study examined the current situation and identified issues by considering six categories of work related to urban planning and development by administrative organizations. These six work categories are described below, along with proposed actions for their improvement.

1.3.5.2.1 Coordination

Corresponding to administrative decentralization and administrative structure change, Abidjan Autonomous District has taken initiative on coordination among related organizations for urban planning and development. Their coordination with ministries is considered well organized, but there is still much room for improvement on coordination with local municipalities (communes). Finance for development is a big issue for communes to handle, and its coordination assistance seems necessary. Furthermore, coordination between private developers and investors, which are to be considered as possible stakeholders, is important.

The following matters are proposed actions for enforcement of administrative activities.

- Enforcement of the relationships between Abidjan Autonomous district and the communes
- Assistance regarding the relationships between related ministries and communes
- Establishment of coordination systems with surrounding administrative organizations in order to consider urban matters on a large regional scale between Abidjan Autonomous district and the communes
- Establishment of coordination systems with possible private developers and investors for development and construction

1.3.5.2.2 Survey and research

Surveys, which were conducted for the schematic urban master plan 2000 and Abidjan strategy plan (2008-2018), include appropriate contents, but their descriptions are too simple, and it is not certain whether it was caused by lack of resources or too much summarizing. And it is considered that there is still much room for improvement on sharing and disclosure of related information.

The following matters are actions proposed for improvement.

- Establishment of information sharing systems among related organizations
- Preparation of a list and format for survey items, which can be applied to research among different local administrative organizations (Common research format)

1.3.5.2.3 Planning

A systematic planning process is defined with legal background, and it is appropriately managed. The urban plans and regulations differ from commune to commune, and it seems that they are not based on a unified spatial management system. Detail plans were studied for only five areas, although many housing estate plans were prepared. For housing estate plans, insufficient consideration on realization of public infrastructure was a serious problem for many years. Introduction of an approved estate developer system is expected to resolve this matter.

The following matters are proposed actions for improvement.

- Development of planning for urban master plans, especially detail urban plans, including precise spatial regulations corresponding to the situation of the planning area.
- Introducing a master architect* system to the communes.
(*: A master architect system has been introduced in France. The master architect provides judgment and supplemental suggestions to urban master plans for individual construction and development works).

1.3.5.2.4 Establishing a legal system

There are very few specific or urgent matters in need of improvement with the legal frame on urban planning in Cote d'Ivoire. However legal measures regulating inappropriate residential areas should be considered, which would promote improvement and a transition to an appropriate urban planning system.

1.3.5.2.5 Controlling

For spatial control according to urban master plans, it is necessary to resolve the shortage of capable staff and the shortage of finance for management. Making use of community organizations and residents for this purpose is well worth consideration.

The following matters are proposed actions to be considered.

- Improvement of human resources allocation to the communes
- Utilization of community residents for observation of spatial control
- Enforcement of community activities and civic education for the above mentioned matters

1.3.5.2.6 Realizing

For accelerating urban development, partnerships between private companies, the residents and public organizations is an important step. In order to guide the projects for public benefit, assistance and guidance for project realization by administrative organizations are expected.

The following are examples of the above mentioned activities.

- Coordination of project implementation
- Preparing budget for development
- Coordination of relevant agencies and private investors
- Promotion of balanced development progress

In many housing development sites, construction of public infrastructure and public facilities are delayed. Introduction of an approved estate developer system and formulation of the Abidjan Strategy Plan in recent years are expected to solve this unbalanced development. But there still remain financial resource issues for future implementation of facilities. And improvement in inadequately developed areas should be also considered along with the financial aspects.

The following matters are proposed actions for resolving these problems, especially the financial situation for development

- Introducing an expense sharing system for construction of public infrastructure/ facilities with developers
- Taking measures of promoting improvement of current urbanized areas (*).
(*: ADB assisted in the execution of an integrated urban redevelopment project in Ulaanbaatar, Mongolia. Under the program, assistance for formulation of planning, construction of public facilities and micro financing for residents were packaged and applied to spatial redevelopment in illegal housing areas).

1.4 Current Conditions of Each Urban Unit

This section describes current conditions of each Urban Unit, consisted of the planning context, urban character and projects.

Please note the areas in hectares given for each Urban Unit are measurements of the land area only. They do not include major water bodies, such as areas of the lagoons that fall inside the governance boundary of a commune. For the communes and sub-prefectures of Jacquville, Dabou, Azaguie, Alepe, Oghlwawapo, and Bonoua, only the land area within the Greater Abidjan boundary are measured.

This section describes the planning context, urban character, proposed development themes and projects. The Urban Development Framework Plan is primarily focused on the spatial strategies for development and their supporting policies. In the case of projects this section itemizes the major projects within each Unit. These projects are:

- Planned projects identified in the Master Plan 2000, many of which are committed but have not been built.
- More recent committed and planned projects proposed by government ministries and the private sector, of which the JICA Study Team has been apprised over the course of the study.
- Additional strategic development proposal recommended by the JICA Study Team for further detailed review on feasibility either under the scope of this Study or under the terms of new studies.

These proposed projects and their timing are key components of the overall development strategy for the Units.

1.4.1 UNIT 1 - Central Urban Area (Adjame, Attecoube, Plateau)

1.4.1.1 Planning Context

- **Area, Population, Density**

Unit 1 covers the mainland urban core of Abidjan, the origins of the city settlement. Three communes are covered by this Unit; Adjame, Attecoube, and Plateau; in land area they total 5,944ha, see Table 1.15.

Current population and population densities, in terms of the overall commune land area, are indicated on Table 1.14. The total population of the Unit in 2014 is 641,377 residents.

- Adjame is a high density residential area and when considering the extensive land areas occupied by the University and Cemetery the actual densities will be much higher within actual housing areas and informal settlements than shown. This commune is in fact the second most densely populated in Greater Abidjan.
- The density of Attecoube is shown on Table 1.14 as at the lower range of medium density. However, this figure is skewed downwards by the inclusion Banco Park land area. In actuality Attecoube residential areas are in the high density range.
- The very low density of Plateau is attributable to it being the government and business centre of the city and also the large areas of land dedicated to security services and road and rail infrastructure.

Table 1.14 Commune and Sub-Prefecture Population

Commune/Sub-Prefecture	Area (ha)	Population 2014 (persons)	Population Density 2014 (pers/ha)
Commune Abobo	7,283	1,030,658	141.5
Commune Adjame	1,215	372,978	307.0
Commune Attecoube	4,303	260,911	60.6
Commune Cocody	10,982	447,055	40.7
Commune Koumassi	1,187	433,139	365.1
Commune Marcory	1,255	249,858	199.0
Commune Plateau	426	7,488	17.6
Commune Port-Bouet	9,878	419,033	42.4
Commune Trechville	896	102,580	114.5
Commune Yopougon	11,693	1,071,543	91.6
Sous-Prefectures Anyama and Brofodoume	68,433	164,804	2.4
Commune Bingerville	16,748	91,319	5.5
Sous-Prefecture Songon	55,892	56,038	1.0
Commune Grand-Bassam	10,234	78,866	7.7
Sous-Prefectures Alepe and Oghlawapo	61,244	38,047	0.6
Sous-Prefectures Azaguie	21,011	17,915	0.9
Sous-Prefectures Bonoua	32,701	55,230	1.7
Sous-Prefectures Dabou	19,136	50,854	2.7
Commune Jacquville	14,684	19,227	1.3
All Planning Area	349,202	4,967,544	14.2

Source: JICA Study Team

- **Land Uses**

The land uses for Unit 1 are set out in Table 1.15.

Table 1.15 Land Uses for Unit 1

LAND USE	Land Use Areas (ha)		
	Adjame	Attecoube	Plateau
Informal Settlement	86	233	0
Low Density Residential Area	195	13	75
Medium Density Residential Area	107	185	6
High Density Residential Area	348	246	1
Industry	29	7	9
Commercial/Office	35	23	89
Health	22	8	10
Education	41	35	15
Government Offices	15	3	52
Sports and Tourism	1	9	13
Transport	10	6	13
Security	15	31	10
Utilities	8	0	1
Cultural	16	30	15
Cemeteries	46	6	0
Forest	9	3,289	0
Grassland	0	5	0
Agriculture	109	7	0
Riparian Land	0	9	17
Other	73	133	55
Paved road with separated lanes	6	3	2
Paved road (Double lines)	44	22	42
Unpaved road (Double lines)	0	1	0
TOTAL	1,215	4,303	426

Source: JICA Study Team

1.4.1.2 Urban Character

The Unit forms a north–south ridgeline upon which a linear urban form has developed. The southern part of the ridge becomes a peninsula bounded by river valleys and bays feeding into Ebrie lagoon. Road and rail transport are therefore physically constrained either following the ridge or valley sides to link with the two bridges crossing Ebrie Lagoon to Petit Bassam, or squeezed between Banco Park and Banco Bay to enable west to east connections across the city.

Although this Unit sits on a spectacular headland the urban environment quality is poor. The architectural standard of buildings predominately ranges from modest; in the case of office, government buildings, hotels and housing, many showing their age; to very poor, older housing, markets and slum areas. There are extensive illegal settlements crammed along coast lines and river valleys. The quality of the urban landscape is also inadequate for such as important downtown area of a major city. There are few parks and limited street trees, although some champion trees add quality to parts of Plateau.

1.4.1.3 Projects

1.4.1.3.1 Planned Projects

a) Since Master Plan 2000

- Mossikro lagoon ferry station (to be completed by 2013 and 2014)
- wharf and offshore
- Docking facilities rehabilitation works at Abadjin Doumé and Eboinda ferry stations.
- Lagoon station for inter-city transportation of people and goods Abidjan.

b) Master Plan 2000

Major Strategic Projects

Table 1.16 Major Strategic Projects

Project	Status	Recommendation
Intercity Bus Terminal	Under construction	Take forward in Master Plan 2030
Place of Provinces	Not implemented	Take forward in Master Plan 2030
La Triomphale	Not implemented	Take forward in Master Plan 2030
Road V23 Bridge (ROW reserved)	Not implemented	Take forward in Master Plan 2030
Avenue Reboul link	Not implemented	Take forward in Master Plan 2030
Plateau / Adjame Urban Renewal	Not implemented	Take Forward in Master Plan 2030
Road V6 Bridge	Not implemented	Take forward in Master Plan 2030

Source: JICA Study Team

Main Medium Term Development Plans

- Identified but not implemented: 5 road projects; 5 public amenity projects; public housing initiative; commercial development initiative
- Commenced not completed 1 potable and sanitation project; not implemented.

1.4.1.3.2 Committed Projects

- The rehabilitation of the Abidjan-Ouagadougou-Kaya railway line.
- Slope protection and stabilization works along western shore line of Attecoubé.

1.4.1.3.3 JICA Study Team Considered Projects

- **Transport**
 - The 4th Bridge (studying “expansion” from currently planned 2 lanes to 4 lanes)
 - Section of North-South Rail Project
 - Section of East-West Rail Project

- Section of High Speed Ferry Service
- Improvement of the Zoo Intersection.
- Development / Improvement of Intermodal centres at Adjamé, and Central/Southern Plateau

1.4.2 UNIT 2 - South East Coast Urban Area (Port Bouet, Grand Bassam)

1.4.2.1 Planning Context

- **Area, Population, Density**

Unit 2 extends along the eastern ‘cordon littoral’ coast of Abidjan, between the Vridi Canal and the River Comoe. The communes of Port Bouet and Grand Bassam; in land area they total 19,896ha, see Table 1.17.

Current population and population densities, in terms of the overall commune land area, are indicated on Table 1.14. The total population of the Unit in 2014 is 497,899 residents.

- Port Bouet is a low density commune, although higher densities are experienced to the west of the Valery Gistang causeway.
- Grand Bassim is shown to have a very low density indicating that the majority of the commune is undeveloped as the urban area of Grand Bassam has a medium density of residential development.

- **Land Uses**

The land uses for Unit 2 are set out in Table 1.17.

Table 1.17 Land Uses for Unit 2

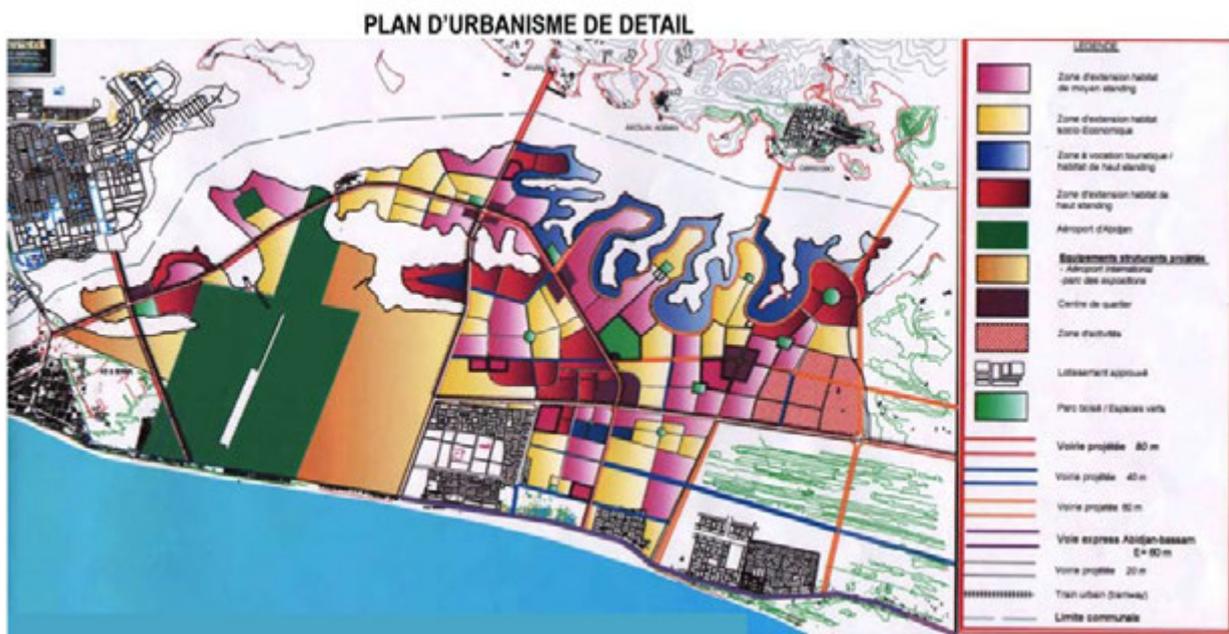
LAND USE	Land Use Areas (ha)	
	Port Bouet	Grand Bassam
Informal Settlement	1,278	0
Low Density Residential Area	772	997
Medium Density Residential Area	51	168
High Density Residential Area	119	54
Industry	431	2
Commercial/Office	71	25
Health	13	6
Education	83	81
Government Offices	44	14
Sports and Tourism	36	2
Transport	377	1
Security	211	6
Utilities	10	2
Cultural	39	13
Cemeteries	19	32
Forest	210	2,262
Grassland	1,224	1,104
Agriculture	3,428	3,334
Riparian Land	399	832
Other	855	822
Paved road with separated lanes	12	0
Paved road (Double lines)	33	0
Unknown	0	478
TOTAL	9,878	10,234

Source: JICA Study Team

1.4.2.2 Urban Character

This is a coastal belt of flat low lying land, basically an elongated island, only accessed from other parts of Abidjan by bridges and in the eastern part infrequent ferry services. Along its Atlantic Ocean frontage there is a straight stretch of beaches, which beyond the urban area of Abidjan are lined with coconut plantations. Conversely the Ebrie Lagoon facing coastline is deeply incised by small bays. The eastern end of the Unit contains the île Vitré, uninhabited and almost completely covered by water at high tide. Development changes from a heavily industrial area in the west to a more peri-urban / rural environment of small agricultural villages past Félix Houphouët-Boigny International Airport and at the eastern end the large town of Grand Bassam lines the western bank of the Comoe River, with its colonial era-settlement on a lesser 'cordon littoral' of France Grand-Bassam. There are extensive areas of illegal settlement along the coast.

This Unit is under growing pressure for development and committed large scale projects include the extension of Félix Houphouët-Boigny International Airport and 'Aerocity'. Acknowledging the need for urgent development control and direction to new private sector development initiatives MCLAU has prepared a Detailed Urban Master Plan (PUD), awaiting statutory approval, see Figure 1.11.



Source: MCLAU

Figure 1.11 Port Bouet PUD

Significant post Master Plan 2000 strategic development within this Unit has been:

- Free Zone (VITIB) in Grand Bassam
- The commencement of the Port Bouet to Grand Bassam Highway
- The designation of the Historic Town of Grand-Bassam as A UNESCO World Heritage Site in 2012, see Figure 1.12.



Source: UNESCO

Figure 1.12 Grand Bassam UNESCO World Heritage Site

In addition to the cultural and tourist importance of the French quartier there is the ecologically important 'sacred forest' of Moossou at the north-eastern edge of Grand Bassam town.

1.4.2.3 Projects

1.4.2.3.1 Planned Projects

a) Master Plan 2000

Major Strategic Projects

Table 1.18 Major Strategic Projects

Project	Status	Recommendation
Exhibition Park	Not implemented	Take forward in Master Plan 2030
Extension of International Airport	Under study / part 'Aerocity' project	Take forward in Master Plan 2030
Craft development	Site rezoned mixed development area	Identify alternative site in AAD
Free Zone (VITIB)	Implemented	Na
Port Bouet – Grand Bassam Highway	Under construction	Na
Medium and Long Term Roads, and bridges including coast highway	Not implemented	Alignment reviewed for Master Plan 2030
North - South Rail links	Alternative Route under study	Take forward in Master Plan 2030
Port Extension	Under Study	Take Forward in master Plan 2030
Vridi Canal Rail and Road Bridge	Not implemented	Road bridge only take forward to Master Plan 2030

Source: JICA Study Team

Main Medium Term Development Plans

Unit 2 – 1 Mass Urban Transport, Abidjan-Bassam Highway; 2 potable and sanitation projects; 6 public amenity projects (including rehabilitation of slaughter house); 4 housing initiatives; 3 activity zones;

1.4.2.3.2 Major Committed Projects

- Abidjan- Bassam Expressway – under construction due for completion 2015.
- The Abidjan to Lagos International Highway
- New Aero city project developed on 3.800ha under study on airport area, see Figure 1.13.
- Port extension reclamation in Bay Vridi Bitry, see Figure 1.14.
- Social housing development
- Lagoon stations for inter-city transportation of people and goods Grand-Bassam, Abidjan
- Abidjan exhibition grounds.



Source: Aeria

Figure 1.13 Aérocity Master Layout Plan Proposal

1.4.2.3.3 JICA Study Team Considered Projects

- **Transport**

- Vridi Bridge
- The Desiree Island Bridge
- Section and extension of North-South Rail Project North-South Rail Project
- Stage 1 Anyama to Airport
- Stage 2 Airport to Grand-Bassam

1.4.3 UNIT 3 - Northern Urban Area (Abobo, Anyama)

1.4.3.1 Planning Context

- **Area, Population, Density**

Unit 3 includes the communes to the north of Abidjan, Abobo and Anyama; in land area they total 74,588ha, see Table 1.19.

Current population and population densities, in terms of the overall commune land area, are indicated on Table 1.14. The total population of the Unit in 2014 is 1,195,462 residents.

- The density of Abobo indicates the lower range of medium density, due to the low rise nature of housing and large areas of undeveloped land scheduled for urban expansion. The existing urban areas, which include subdivision of existing properties for rental and extensive informal housing areas, are likely to be at the higher range of medium density and in some places reaching high density levels.
- The population density of Anyama, although very low as it includes the rural sub-prefecture of Brofodoume, indicates the same properties of urban settlement density as described above for Abobo. This growth is concentrated alongside the A1 road leading north from the city.

- **Land Uses**

The land uses for Unit 3 are set out in Table 1.19.

Table 1.19 Land Uses for Unit 3

LAND USE	Land Use Areas (ha)	
	Abobo	Anyama
Informal Settlement	661	35
Low Density Residential Area	1,293	1,042
Medium Density Residential Area	702	231
High Density Residential Area	1,159	94
Industry	33	3
Commercial/Office	73	25
Health	17	8
Education	161	54
Government Offices	18	5
Sports and Tourism	11	12
Transport	22	2
Security	55	13
Utilities	30	3
Cultural	66	43
Cemeteries	58	8
Forest	196	3,569
Grassland	769	3,632
Agriculture	1,381	7,038
Riparian Land	42	35
Other	350	865
Paved road with separated lanes	3	0
Paved road (Double lines)	42	29
Unpaved road (Double lines)	141	103
Pool	0	4
Unknown	0	2,646
TOTAL	7,283	19,497

Source: JICA Study Team

1.4.3.2 Urban Character

The Unit straddles the upland north –south and east west ridgelines in the northern part of Abidjan, generally at an elevation between 110 m PD and 130 m PD. Main residential and commercial development follows the Autoroute d'Abobo. The older urban communities lie between that Highway and the Alepe Road P2. The characteristic of the Unit is that either side of the main north- south ridgeline, which creates a plateaux area immediately to the north of Banco Park, are deeply incised river valleys that separate residential neighbourhoods and quartiers. The water along these catchment areas finally discharge, west into the Ebrie Lagoon at Songon, and west directly into Adjin Lagoon.

This Unit has been earmarked for extensive urban expansion. Beyond the built up areas land has been cleared and subdivided, in some cases with partial utility connection. Nearly all of the roads in these areas unsealed dirt tracks. There is sporadic residential development in the form of individual lots or compounds. Noticeable features are the on-going densification, through subdivision of the existing properties and the large number of informal settlements. This is a clear illustration of the demand for housing outstripping supply to meet the almost half a million additional population explosion in this Unit over the past 15 years.

In common with older and more recent lower income areas of the city the urban quality is poor. Within Abobo town centres are overcrowded; traffic hold ups and on street parking is endemic. Until this year's road improvements Anyama's main urban street was a potholed dirt track and consequently the built up areas are visually and environmentally unpleasant. Informal shanty markets lined the streets. Beyond the buildings that line this road are extensive informal settlements, and only partially serviced formal housing areas. The high levels of street side informal commerce in Anyama indicate a lack of local employment opportunities and possibly large commuter traffic south to Abidjan's city centre.

1.4.3.3 Projects

1.4.3.3.1 Planned Projects

a) Since Master Plan 2000

- The proposed Tramway System for Abidjan extends to Abobo (Planned and not done)
- Rehabilitation of the Abidjan- Ouagadougou-Kaya railway line
- The Anyama to International Airport Mass Transit Rail, alignment under study

b) Master Plan 2000

Major Strategic Projects

Table 1.20 Major Strategic Projects

Project	Status	Recommendation
Slaughter House Abidjan in Residential Anyama	Under Study	Take forward in Master Plan 2030
Industrial Area in Akelkoi Anyama	Now residential site	Identify new area with AAD
Vehicle repair yard relocated to Anonkoua Kouté Abobo	Under Study	Take forward in Master Plan 2030, should be subject to EIA and TIA
Olympic Village, Ebimpé Anyama	Under Study	Take forward in Master Plan 2000
Road Y4 (ROW reserved)	Not implemented	Take forward in Master Plan 2000
Y4 (east) Railway	Not implemented	Omit
West Route freight rail	Not implemented	Review alignment for Master Plan 2030
Medium Term Roads	Partially implemented	Review unimplemented routes alignment for Master Plan 2030
Rehabilitation of the Abidjan- Ouagadougou-Kaya railway line	Not implemented	Take forward in Master Plan 2000
3 Economical Housing Areas	2 completed. SICOGI Concorde PK18 is under construction	na

Source: JICA Study Team

1.4.3.3.2 Committed Projects

- Rehabilitation and construction of storm water retention tank
- Asphaltting project of the expressway from Abobo to Anyama
- Project of a new water tower with a capacity of 5000m³ under construction by a Chinese company to improve water supply
- The Anyama to International Airport Mass Transit Urban Rail
- Project of construction for a teachers training centre
- Extension of existing college to Grammar school under study by Chinese company

1.4.3.3.3 JICA Study Team Considered Projects

- **Transport**
 - A Flyover at the Mairie d'Abobo Intersection in Abobo
 - A Flyover at Banco Intersection in Abobo (not included in the SDUGA survey)
 - Improvement of Samake Intersection in Abobo

1.4.4 UNIT 4 – Eastern Urban Area (Cocody, Bingerville)

1.4.4.1 Planning Context

- **Area, Population, Density**

Unit 4 includes the communes to the east of Abidjan, Cocody and Bingerville; in land area they total 27,686 ha, see Table 1.21.

Current population and population densities, in terms of the overall commune land area, are indicated on Table 1.14. The total population of the Unit in 2014 is 538,374 residents.

- The density of Cocody indicates the lower range of medium density, reflecting the nature of low rise and more expensive housing.
- The very low population density of Bingerville is a reflection of the mainly undeveloped nature of the commune.

• **Land Uses**

The land uses for Unit 4 are set out in Table 1.21.

Table 1.21 Land Uses for Unit 4

LAND USE	Land Use Areas (ha)	
	Cocody	Bingerville
Informal Settlement	128	2
Low Density Residential Area	4,038	1,251
Medium Density Residential Area	1,412	118
High Density Residential Area	63	0
Industry	6	1
Commercial/Office	189	25
Health	75	11
Education	361	115
Government Offices	54	26
Sports and Tourism	157	20
Transport	2	3
Security	295	50
Utilities	18	2
Cultural	93	28
Cemeteries	23	17
Forest	547	2,344
Grassland	833	1,473
Agriculture	1,704	4,538
Riparian Land	128	176
Other	594	747
Paved road with separated lanes	20	0
Paved road (Double lines)	151	6
Unpaved road (Double lines)	92	21
Pool	1	0
TOTAL	10,982	10,974

Source: JICA Study Team

1.4.4.2 Urban Character

Cocody and Bingerville occupy the finger peninsula that stretches east from the city centre. The northern coast line is formed by the Adjin and Potou Lagoons and the southern by Ebrie Lagoon. Cocody is a well-developed area, with a comprehensive road network. A main ridge runs the length of the peninsula, either side of which are incised valleys draining into the lagoons. Some of these valleys are

occupied by informal settlements, sources of pollution and potential for landslip and flooding. It contains extensive high and upper middle income low rise residential private compounds, as well as embassy residences and the only golf course in Greater Abidjan. There are also a high proportion of mid-rise apartments and some social housing around local commercial centres. In terms of civic identity the area is a large suburban sprawl with no well-defined and service civic centres. Traffic congestion is a major impact on all arterial and secondary roads. New development is on-going and the majority of unoccupied land had been subdivided and scattered construction in progress. The area is planned for new strategic roads to;

- ring and link the entire urban area of Abidjan including bridges to the coastal and Petit Bassam communes,
- improve access and circulation within Cocody, and
- upgrade the road to Bingerville.

Delay in construction these routes has resulted in extensive illegal occupation by both formal houses and informal settlement within the reserved right of way.

The urban area is starting to sprawl beyond Cocody towards and the town of Bingerville. This is generally the early stages of strip development along the main roads and some outlying residential compounds. Less salubrious are the extensive informal settlements around Bingerville and the horrendous insanitary landfill, in the middle of residential areas. Beyond the town is agriculture, with limited dirt road access. To the east a major palm plantation occupies the entire width of the peninsula and beyond that are small coastal villages. Some of which, retain the original buildings and street layout of their former role as colonial plantation settlements. This area at tip of the peninsula has a charming rural waterside character.

1.4.4.3 Projects

1.4.4.3.1 Planned Projects

a) Since Master Plan 2000

Bingerville

- New Mother and child hospital under construction (Private)
- Hemodialysis centre Aghien under construction
- Rehabilitation of the main road
- Project of construction for a teachers training centre
- Extension of existing college to Grammar school under study by Chinese company
- Botanic Garden next to Ebrié Lagoon

Cocody

- Creation of primary and secondary networks (sanitation in Abidjan/the District of Abidjan)
- Abobo-Cocody Ring Road, as proposed under the 2000 Master Plan and currently under review due to informal settlement along the proposed route.
- The Anyama to International Airport Mass Transit Rail, alignment under study.

- The Yopougon to Cocody Mass Transit Rail, alignment due for study.
- Clean-up and restoration of the bay of Cocody Primary sewerage networks in the catchment area of Bonoumin-Riviera Golf.
- Rehabilitation of the primary EP and
- EU collecting sewers in the district of Yopougon

b) Master Plan 2000

Major Strategic Projects

Table 1.22 Major Strategic Projects

Project	Status	Recommendation
General Hospital, Angré-Bessikoi Cocody	Completed	na
Cemetery, Cocody Faya	Now residential site	Identify new area within Unit 4
High School, Akouédo ATCI Cocody	Now residential site	Identify new area within Unit 4
Industry Zone, Adjame Bingerville	Not implemented site reserved	Take forward in Master Plan 2030
Road Y4 (ROW reserved)	Southern section restricted width	Take northern section forward in Master Plan 2030, realign route to link with ile Desiree route
Road Y4 Bridge	Southern access restricted width	Omitted
Ile Desiree Bridge	Under study	Take forward in Master Plan 2030
Boulevard de France (ROW reserved)	Part implemented	Take forward in Master Plan 2030
Boulevard de Mitterrand Extension	Not implemented	Take forward in Master Plan 2030
Boulevard Latriille (ROW reserved)	Part implemented	Take forward in Master Plan 2030
Road Y3 (ROW reserved)	Part implement /part reduced width	Amend in Master Plan 2030
East – West Rail Project	New route under study	Take forward in Master Plan 2030
Two North – South Rail Routes	Reduced ROW	Omitted
Riviera-Marcory Bridge	Under construction	na
Lagoon Ferry Station	Completed	na
Bingerville – Port Bouet bridge	Long Term not implemented	Take forward in Master Plan 2030
Bingerville – Grand Bassam Bridge	Long Term not Implemented	Omitted

Source: JICA Study Team

1.4.4.3.2 Committed Projects

- Lagoon stations for inter-city transportation of people and goods Bingerville, Abidjan.

1.4.4.3.3 JICA Study Team Considered Projects

- **Transport**
 - The Desiree Island Bridge
 - Extension of the Boulevard Francois Mitterrand

- The Extension of the Boulevard de France
- A Flyover or underpass at St Jean Intersection
- A Flyover at Palmeraie Intersection
- East –West High Speed Ferry Service
- Songon to Bingerville (development of 8 to 20 lagoon transport stations)
- East – West Rail Project
- Cocody BRT Service

1.4.5 UNIT 5 – Western Urban Area (Songon, Yopougon)

1.4.5.1 Planning Context

- **Area, Population, Density**

Unit 5 includes the communes to the west of Abidjan, Yopougon and Songon; in land area they total 67,643 ha, see Table 1.23. This total area also includes the committed and proposed extension to Abidjan Port, which are described further in Unit 7 below.

Current population and population densities, in terms of the overall commune land area, are indicated on Table 1.14. The total population of the Unit in 2014 is 1,127,581 residents.

- Yopougon is indicated as medium density. However, the older parts developed areas of this commune are likely to record high density levels due to subdivision of properties and extensive informal settlements.
- The very low population density of Songon is a reflection of the extensive rural nature of the commune and the concentration of urban development in the south along the Dabou Road.

- **Land Uses**

The land uses for Unit 5 are set out in Table 1.23.

Table 1.23 Land Uses for Unit 5

LAND USE	Land Use Areas (ha)	
	Yopougon	Songon
Informal Settlement	323	0
Low Density Residential Area	1,760	606
Medium Density Residential Area	339	8
High Density Residential Area	1,550	8
Industry	582	129
Commercial/Office	232	2
Health	64	10
Education	361	49
Government Offices	55	18
Sports and Tourism	38	18
Transport	21	9
Security	99	0
Utilities	26	2
Cultural	188	28
Cemeteries	44	19
Forest	278	7,477
Grassland	837	4,721
Agriculture	3,606	19,513
Riparian Land	128	394
Paved road with separated lanes	8	9
Paved road (Double lines)	79	40
Unpaved road (Double lines)	54	10
Pool	0	1
Other	1,021	775
Unknown	0	22,047
TOTAL	11,693	55,892

Source: JICA Study Team

1.4.5.2 Urban Character

Within the Greater Abidjan study area this Unit extends well beyond the eastern urbanized area of Abidjan. In addition part of Yopougon on the cordon littoral lies within Unit 7. The rural areas and future port are not described in this section.

The mainland area of Yopougon is a flat plain fronting Ebrie Lagoon, which is almost completely urbanized and includes a major industrial zone. It is densely developed urban sprawl of low rise buildings. The urban quality is poor with a lack of open space, streetscape cluttered with informal settlements and markets, a proliferation of bad neighbour premises - small scale industrial premises and car repair yards – within residential areas. A number of statutory rights-of-way reserved for future infrastructure projects cross the urban conglomeration, all have to some extent been occupied by illegal buildings. These range from substantial permanent structure, in some case up to 4 story's in height, to wide swathes of poor and dangerous construction slum dwellings. The Ebrie Lagoon is occupied by some traditional villages that are gradually being surrounded by a mixture of permanent and temporary living accommodation.

Beyond Yopougon is the rural countryside with traditional village settlements along the Route de Dabou. Unlike the flat plain of Yopougon the landform of this area is characterised by hills with narrow ridgelines and step sided valleys, whose rivers drain into the lagoon. Most village and new urban development lies to the south of the Dabou Road along the Ebrie Lagoon waterfront. The area is predominantly low rise and occupies the so called Banco Plain to the west of Abidjan urban centre. North of the Dabou Road is agricultural land and plantations. New development is also underway alongside the Yamoussoukro Highway. This includes small villages, and on-going construction of the new industrial zone next to the town of Attinguié.

A number of current and planned major road and utility infrastructure projects, where land has been reserved for their implementation, will accelerate the impetus for new urban development in this Urban Unit. They are:

- Songon- Jacquville Bridge that is under construction and due for completion in 2014.
- The widening of the Dabou Road.
- Triple fuel 372MW Combined Cycle Power Plant near Songon-Dagbe, contract commenced to be completed in 2016.
- Le Parkway; the extension of the Dabou-Songon highway through Yopougon to Plateau
- Le voie V 28; the main road through Yopougon to the new Port on Bouley Island
- Le voie V 2; an arterial road through Yopougon paralleling the road V28.
- Le voie V 6; a southern ring road for Yopougon linking by bridge to the Plateau.
- Le voie V 9; new road along the western edge of Yopougon industrial zone.
- Bridge 4; linking Yopougon with the new Port extension on Bouley Island.

The west to east line of the proposed Urban Train is also proposed to commence in Yopougon, although no alignment has been finalised, land has been reserved alongside the 'Le Parkway'. In addition the potential for a new freight rail is under review and a land has been reserved aside Roads V28 and V9.

1.4.5.3 Projects

1.4.5.3.1 Planned Projects

a) Since Master Plan 2000

Yopougon

- New social housing complex under study
- New industrial zone at PK 24 under study
- New truck station
- Extension of the thermal power plant of Azito
- The western part of the port ring road to Bouley Island Container Port.
- The high level and bridge to Plateau
- Rehabilitation of the primary EP and EU collecting sewers in the district of Yopougon
- Tramway System

- The Yopougon to Cocody Mass Transit Urban Train, alignment due for study.
- OIC (Office Ivoirienne des Chargeurs /Ivorian shippers Office) logistics centre 30Km from Abidjan.

Songon

- Social housing project on 400 ha under study
- Creation project of a dairy farm
- Project of potable water supply improvement

b) Master Plan 2000

Major Strategic Projects

Table 1.24 Major Strategic Projects

Project	Status	Recommendation
Industrial park relocated to Attinguié Songon	Under construction	Take forward in Master Plan 2030
Yopougon Industrial Area (north extension)	Partially completed	Take forward in Master Plan 2030
Port Extension	Under Study / pre tender award	Take forward in Master Plan 2030
Road V2 (ROW reserved)	Water pipeline implemented	Take forward in Master Plan 2030
Road V9 (ROW reserved)	Illegal structures	Take forward in Master Plan 2030
Le Parckway V23 (ROW reserved)	Occupied by slum housing	Take Forward in Master Plan 2030
Road V28 (ROW reserved)	Under Study	Take forward in Master Plan 2030
Road V6 (ROW reserved)	Occupied by permanent illegal structures	East section, take forward in Master Plan. West section, review from Traffic Study.
Songon – Jacquenville Bridge	Under construction	Na

Source: JICA Study Team

1.4.5.3.2 Committed Projects

- Strategic roads in 7.4.2 above
- OIC logistics development
- Attinguié Industrial Zone
- 372MW Combined Cycle Power Plant near Songon-Dagbe
- Lagoon stations for inter-city transportation of people and goods Abidjan.
- Niangon-Lokoua lagoon ferry station (to be completed by 2013).

1.4.5.3.3 JICA Study Team Considered Projects

Transport

- The 4th Bridge (studying “expansion” from currently planned 2 lanes to 4 lanes)
- The Voie V9

- A Flyover at Siporex Intersection in Yopougon
- A Flyover at Kenya Intersection in Yopougon (not included in the SDUGA survey)
- A Flyover at Sapeur pompiers Intersection in Yopougon
- East –West High Speed Ferry Service
 - Songon to Bingerville (development of 8 to 20 lagoon transport stations)
- East – West Rail Project
 - Yopougon to Bingerville (central alignment and Lagoon alignment)

1.4.6 UNIT 6 – Petit-Bassam Urban Area (Marcory, Koumassi, Treichville)

1.4.6.1 Planning Context

- **Area, Population, Density**

Unit 6 covers the island that forms part of the urban core of Abidjan, commonly referred to as Petit-Bassam, Marcory, Koumassi, and Treichville; in land area they total 3,201 ha, see Table 1.25. This total area also includes Abidjan Port, which is described further in Unit 7 below. Il Desirée also lies within this Urban Unit.

Current population and population densities, in terms of the overall commune land area, are indicated on Table 1.14. The total population of the Unit in 2014 is 785,577 residents.

- The density of Koumassi is very high, which not only indicates the intensity of development but also includes for a substantial informal sector population. If the land area for the undeveloped Isle Desire was discounted the density for this commune would be higher than indicated on Table 1.14.
- Marcory is projected to move from the current medium density to high density before 2030.
- In comparison the density for Treichville shows a constant medium density range. In fact the densities of residential areas in Treichville are likely to be in the high density range. This is because large areas of the commune are occupied by Port and Industrial zones.

- **Land Uses**

The land uses for Unit 6 are set out in Table 1.25.

Table 1.25 Land Uses for Unit 6

LAND USE	Land Use Areas (ha)		
	Marcory	Koumassi	Treichville
Informal Settlement	45	63	1
Low Density Residential Area	290	33	82
Medium Density Residential Area	107	136	25
High Density Residential Area	333	557	142
Industry	113	67	155
Commercial/Office	81	34	106
Health	4	5	46
Education	65	65	30
Government Offices	65	9	34
Sports and Tourism	10	9	17
Transport	3	12	160
Security	26	17	10
Utilities	5	2	1
Cultural	27	27	5
Cemeteries	2	10	0
Forest	0	95	0
Grassland	0	1	0
Agriculture	21	3	0
Other	19	13	20
Paved road with separated lanes	6	2	3
Paved road (Double lines)	30	12	60
TOTAL	1,255	1,187	896

Source: JICA Study Team

1.4.6.2 Urban Character

Petit Bassam is a major employment centre for Abidjan. It contains Abidjan Port and contiguous industrial areas, as well as the Koumassi industrial area. The Boulevard Valery Giscard D'Estaing is the main arterial road across Petit Bassam that links the centre of the city at Plateau to the eastern areas beyond Abidjan. It is heavily trafficked and subject to congestion along its entire length through this Urban Unit. The new third bridge will provide a direct link to Cocody and divert some traffic away from the Général De Gaulle Bridge. At the western end of Petit Bassam the F. Houphouët Boigny Bridge links the port area with the mainland through Plateau.

The island of Petit Bassam is flat and completely developed. To the south of Boulevard Valery Giscard D'Estaing development is predominantly industrial and commercial, especially in the west around and associated with the port. The eastern area south of Boulevard Valery Giscard D'Estaing is mainly low to mid rise, low density residential. North of Boulevard Valery Giscard D'Estaing is high density residential, of low to mid rise buildings that in some places include high rise point blocks. At notable exception to the aforementioned industrial / residential disposition is the industrial area to eastern of Koumassi. The complete development of Petit Bassam has compromised the possibility of the Y4 bridge and road link to the island.

The island of Il Desirée is undeveloped except for a few village and informal settlements.

The overall urban character of the Unit is of low visual and environmental quality. The impression is a densely developed urban sprawl. There is little open space, or street tree planting and a lack of significant civic spaces to denote a sense of place and individual commune / quartiers identity. Primary orientation through the Unit is by the north – residential, south – industrial divide provide by Boulevard Valery Giscard D’Estaing and landmark buildings such as Champroux Centre and large shopping centres. The water frontages of the island are privatised; by industrial, commercial, residential premises to the south and private residential along the north coast fronting the Ebrie Lagoon. A major exception to this turning of the public face of the city away from the water is the Cultural Palace. The intensity of development has restricted informal developmental to a few water front and utility-reserve pockets to the east of the Urban Unit.

1.4.6.3 Projects

1.4.6.3.1 Planned Projects

a) Since Master Plan 2000

Koumassi

- Tramway System, along the Boulevard Valery Giscard D’Estaing.
- The new City Hotel under construction

Marcory

- The third bridge crossing will land on the north shore of Marcory in the Gnazoua quartier.
- Rehabilitation of the Abidjan-Ouagadougou-Kaya railway line.
- Tramway System
- The Anyama to International Airport Mass Transit Urban Train, alignment under study.

Treichville

- Port expansion to improve the current capacity of terminals
- Rehabilitation of the palace of culture on going by Chinese company
- Rehabilitation of the Abidjan-Ouagadougou-Kaya railway line.
- Abidjan Port improvement works, completion scheduled for 2015-6.

b) Master Plan 2000

Major Strategic Projects

Table 1.26 Major Strategic Projects

Project	Status	Recommendation
Place of Culture	Phase 1 completed	Take forward in Master Plan 2030
3rd Bridge	Under construction	Take forward in Master Plan 2030
Y4 Bridge	Complete route unavailable	Omit
Ile Desiree Bridge	Under study	Take forward in Master Plan 2030
North - South Rail links	Alternative Route under study	Take forward in Master Plan 2030
Treichville – Port Bouet bridge	Not implemented	Take forward in Master Plan 2030

Source: JICA Study Team

1.4.6.3.2 Committed Projects

- 2 potable and sanitation projects;
- 2 public amenity projects;
- public housing initiative;
- Industrial zone rehabilitation.
- Lagoon stations for inter-city transportation of
- people and goods Abidjan.

1.4.6.3.3 JICA Study Team Considered Projects

Transport

- Widening of the Boulevard de Marseille
- Vridi Bridge
- The Desiree Island Bridge
- A Flyover at Solibra Intersection in Treichville
- A Flyover at Gare Bassam Intersection in Treichville
- Improvement of the Boulevard du Port - CHU Treichville Intersection
- Improvement of the Place Inchallahe Intersection
- North-South Rail Project -Stage 1 Anyama to Airport
- East –West High Speed Ferry Service
 - Songon to Bingerville (development of 8 to 20 lagoon transport stations)

1.4.7 UNIT 7 – Special Function Area (Abidjan Port)

1.4.7.1 Planning Context

Unit 7 is considered a Special Function Area as it deals with Abidjan Port and its associated areas alone. The port is focused around the Vridi canal and the harbour area of Ebrie Lagoon, see Figure 2.4.

- The existing port and some committed expansion (20ha) are located mainly in the commune of Treichville. The existing port occupies an area of 130 ha. There is also a fruit quay area of the port on the Banco Bay coast of Plateau commune.
- The committed extension of the Port of Bouley Island lies within the commune of Yopougon and is proposed to cover an area of 679ha³.
- A proposed port area of 1550ha⁴ dedicated to the oil industry on the 'cordon littoral' west of the Vridi Canal that lies within the commune of Port Bouet.
- In addition there are proposed land reserves for port back up facilities on the mainland coast within Yopougon.

From Figure 2.4 it can be seen that land adjacent to the existing and proposed expanded port areas either exist or are planned for industrial zones, in the communes of Treichville, Port Bouet and Yopougon. Other than a proposed workers housing area, on Bouley Island one of the above port and industrial areas include residential development.



Source: Abidjan Autonomous Port

Figure 1.14 Layout Plan of Abidjan Port Expansion

1.4.7.2 Urban Character

Bouley Island and Brakré Island are undeveloped mainly plantation land with some small village settlements along the coast. The mainland area is undeveloped land next to the Azito thermal power plant, in the quartiers of Yopougon Beago and Yopougon Camp Militaire.

³ Port Autonome d'Abidjan – An International Reference.

⁴ ibid

1.4.7.3 Projects

1.4.7.3.1 Planned Projects

a) Since Master Plan 2000

- Extension of Abidjan Port, Bouley Island and Yopougon
- Petrochemical and refinery Brakré Island.
- Fourth Road Bridge
- The southern part of the port ring road and bridged across Brake Island to Port Bouet.
- Coastal Road and Bridge across Vridi Canal
- Lagoon stations for inter-city transportation of people and goods Abidjan.

b) Master Plan 2000

Major Strategic Projects

Table 1.27 Major Strategic Projects

Project	Status	Recommendation
Abidjan Port Extension	Under Study / pre tender award	Take forward in Master Plan 2030
Associated Port and Industrial development	Land Reserved	Take forward in Master Plan 2030
4th (Azito) Bridge	Road Only Under Study	Take forward in Master Plan 2030
Road extension to Virdi Canal	Under Study	Take forward in Master Plan 2030
Vridi Canal Bridge	Under Study	Take forward in Master Plan 2030
Coastal Road	Under Study	Take forward in Master Plan 2030
Freight railway line	Under Study	Take forward in Master Plan 2030

Source: JICA Study Team

1.4.7.3.2 JICA Study Team Considered Projects

Transport - The 4th Bridge (studying “expansion” from currently planned 2 lanes to 4 lanes)

1.4.8 UNIT 8 – Northern Greater Abidjan (Azaguié)

1.4.8.1 Planning Context

- **Area, Population, Density**

Unit 8 is focused on the urban environs and rural hinterland of Azaguié some 35km to the north of the centre of Abidjan in Plateau. The land area of this spatial unit within the Greater Abidjan area is 21,011 ha.

The total population of the Unit in 2014 is 17,915 residents. Table 1.14 shows a density level that highlights the extensive rural nature of this Unit. Within the rural towns the residential densities range up to higher end of low density.

- **Land Uses**

The land uses for Unit 8 are set out in Table 1.28.

Table 1.28 Land Uses for Unit 8

LAND USE	Land Use Areas (ha)
	Azaguie
Informal Settlement	0
Low Density Residential Area	168
Industry	6
Commercial/Office	7
Health	2
Education	16
Government Offices	6
Sports and Tourism	1
Security	1
Utilities	2
Cultural	8
Cemeteries	4
Forest	1,132
Grassland	439
Agriculture	1,896
Other	125
Paved road (Double lines)	19
Pool	1
Unknown	10,202
TOTAL	14,036

Source: JICA Study Team

1.4.8.2 Urban Character

This Unit is an agricultural area. The urbanized area of this Unit is confined to the rural towns of Azaguie Gare, the larger, and Azaguie Aoua. The towns are bypassed by two arterial roads that lead to Agboville and Adzopé. These are the main roads bringing goods from the north of the country to Abidjan.

Azaguie Gare town centre development lines the main ridgeline road through the town. Development also straddles the Abidjan-Ouagadougou-Kaya railway line that runs along the valley immediately west of the town centre. There is a station served twice weekly by a passenger train. The old station building has heritage merit. The overall character of the town is poor and predominately strip development behind which are low rise low density housing areas.

1.4.8.3 Projects

1.4.8.3.1 Committed Projects

- Rehabilitation of the Abidjan-Ouagadougou-Kaya railway line.

1.4.9 UNIT 9 – Eastern Greater Abidjan (Alepe, Bonoua)

1.4.9.1 Planning Context

- **Area, Population, Density**

Unit 9 covers the predominantly rural eastern part of Greater Abidjan beyond the Ebrie and Patou Lagoons. These are the partial commune areas focused on the urban areas of Alepe and Bonoua. Within the Greater Abidjan area their combined land area is 95,040 ha, see Table 1.29.

The total population of the Unit in 2014 is 93,278 residents. Table 1.14 shows a density level that highlights the extensive rural nature of this Unit. Within the two major rural towns the residential densities range up to higher end of low density and medium.

- **Land Uses**

The land uses for Unit 9 are set out in Table 1.29.

Table 1.29 Land Uses for Unit 9

LAND USE	Land Use Areas (ha)	
	Alepe	Bonoua
Low Density Residential Area	80	830
Medium Density Residential Area	18	80
Industry	0	24
Commercial/Office	3	15
Health	2	27
Education	7	56
Government Offices	7	9
Sports and Tourism	1	3
Transport	1	2
Security	1	2
Utilities	1	5
Cultural	16	41
Cemeteries	0	13
Forest	497	354
Grassland	253	255
Agriculture	348	1,225
Other	13	94
Paved road (Double lines)	7	0
Unknown	5,084	4,317
TOTAL	6,341	7,349

Source: JICA Study Team

1.4.9.2 Urban Character

The land area of this Unit is the largest of Greater Abidjan and includes a diverse range of natural and agricultural landscapes. It is predominantly an agricultural area although some areas are unsuitable for crop production such as swamp land in the lower reaches of the Comoe River. There are also large areas of scrubland, in many cases the remnant of clearance of forests. The rural towns of Alepe and Bonoua lie on the only two main roads that link Abidjan to the east of the country: in the south, the A1 to Grand-Bassam and to the north, the Alepe Road to Abobo. Further east both roads join at N'zikio and then continue via Aboisso to the Ghanaian border at Noe. In the future this route will form the Abidjan – Lagos Highway. There is no direct road linking the two towns.

The larger town is Bonoua and it is currently experiencing new residential development into the surrounding agricultural land and along the A1 road. Urban development is principally low density, low rise housing. The centre of the town is medium density residential and commercial. The area is noteworthy for its pineapple production. Agricultural food and water bottling processing plants are located in the vicinity. There is a significant level of people commuting daily into Abidjan.

The town of Alepe occupies higher ground above the western banks of the River Comoe. It is low rise and low density and is laid out either side of the main road. The main employment is from the extensive palm oil plantations. Some local river sand extraction for building occurs in this area.

1.4.9.3 Projects

1.4.9.3.1 Committed Projects

- **Alepe**
 - 560 Social housing units to be built and 180 developed urban land on 20ha.
 - Ministry of Industry policy is to develop agribusiness
 - Upgrading of Alepe Road by Ageroute
- **Bonoua**
 - Bonoua industrial zone project
 - Piped water supply project from Bonoua to Abidjan under construction

1.4.10 UNIT 10 – Western Greater Abidjan (Dabou, Jacqueville)

1.4.10.1 Planning Context

- **Area, Population, Density**

Unit 10 covers the predominantly rural western part of Greater Abidjan. These are the partial commune areas focused on the urban areas, separated by the Ebrie Lagoon, of the large town of Dabou on the mainland and the smaller coastal town of Jacqueville on the 'cordon littoral' Within the Greater Abidjan area their combined total land area is 95,040 ha, see Table 1.30.

The total population of the Unit in 2014 is 70,081 residents. Table 1.14 shows a density level that highlights the extensive rural nature of this Unit. Within the two major rural towns the residential densities range up to higher end of low density.

- **Land Uses**

The land uses for Unit 10 are set out in Table 1.30.

Table 1.30 Land Uses for Unit 10

LAND USE	Land Use Areas (ha)	
	Dabou	Jacqueville
Low Density Residential Area	492	295
High Density Residential Area	38	0
Industry	7	7
Commercial/Office	28	13
Health	16	8
Education	101	73
Government Offices	14	6
Sports and Tourism	6	10
Transport	1	0
Security	18	0
Utilities	9	3
Cultural	40	27
Cemeteries	6	23
Forest	305	2,856
Grassland	78	1,818
Paved road (Double lines)	0	11
Unpaved road (Double lines)	0	4
Islands in Lagoons	3	0
Unknown	4,329	0
TOTAL	6,734	14,684

Source: JICA Study Team

1.4.10.2 Urban Character

The common factor of the two main urban centres of this Unit is that they are some 40km from the centre of Abidjan. Dabou town is the major centre for mainland agriculture to the east of Abidjan. Jacqueville is a much smaller town, once a tourist destination and now a centre for the extensive coconut plantations along the cordon littoral. Geographically they are 10km apart, separated by the Ebrie Lagoon. By road, upon the opening of the new bridge the distance is some 45 km. They operate as independent urban centres.

There is a stark contrast between the towns. Dabou is a thriving rural centre with a growing population that includes those who commute daily to work in Abidjan. The impression of Jacqueville is of a town whose best days have passed, a consequence of the socio-military crisis. Although set within the exotic landscape of coconut palm trees and sandy beaches stretching into the distance the waterfront and main town centre include many abandoned buildings including former hotels, and vacant plots. Both towns have strong urban form with civic and commercial centres of medium density, the main residential areas low density. Building height is predominately low rise with the occasional four to five story buildings. In general the overall quality of the environment, with some future public area improvement, is

considered good. These are towns that will benefit from catalytic development to promote commercial, social and economic rejuvenation rather than urban renewal.

Two factors should stimulate future growth in Jacquville the opening of the bridge across Ebrie Lagoon at N'djem in 2014 and this area has traditionally been recognised as a beach frontage tourist area.

1.4.10.3 Projects

1.4.10.3.1 Committed Projects

Dabou

- Ministry of Industry policy is to develop agribusiness
- Social housing program
- Road widening project between Abidjan and Dabou

Jacquville

- Social housing program
- Tourism centre
- Coastal Highway
- New bridge across Ebrié Lagoon to Jacquville commune under construction.

2.0 Environmental Conditions for Urban Master Plan

2.1 Current Environmental Conditions

2.1.1 Climate

The climate in Greater Abidjan area is humid with high temperatures that are relatively uniform throughout the year, annual average is 26.4 C, and average minimum is 22.1 C. The annual precipitation ranges between 1,540 and 3,040 mm with an average of about 2,000 mm. It can be classified as having 4 seasons: 1) long rainy season from March to July with precipitation up to 700 mm, 2) short dry season from August to September, 3) short rainy season during October and November, and 4) long dry season from December to March. The intensity of rain is very high, reaching an intensity of 115 mm / h for a period of 15 minutes and 71 mm / h for a period of 1 h.

The relative humidity rate varies very little with the seasons, with an annual average of 84%. The associated permanent moisture along with the heat makes the 'heavy weather' hard to bear. This is a favorable climate for the rapid decay of waste and breeding of disease vectors (mosquitoes, parasites and microbes).

In recent years, a significant disruption of the seasons has been observed, the Harmattan breath (a dusty wind from the Sahara that blows toward the western coast of Africa during the winter) has lasted longer and penetrates the Greater Abidjan area, the heat is hotter than normal and precipitation is often shifted in the year. Some do not hesitate to blame deforestation and all the gaseous discharges from the city of Abidjan.

2.1.2 Topography

The topography of the Greater Abidjan area consists of four topographic elements which succeed each other from north to south. In the north, a line of low plateaus is observed in two areas, one is around 100 meters, and the other is between 40 and 50 m. These areas are incised deeply by valleys. At the foot of the low plateaus, there is a localized floodplain around the lagoon Ebrie or the barrier.

Ebrie lagoon is the most characteristic element of the topography, it stretches over 120 km on either side of Abidjan. It isolates several islands, the most important are the small islands Bassam Island, Boulay Island, and Desiree. A barrier isolates the lagoon from the ocean. The lagoon has a winding shoreline, cluttered with islands and bays, more or less calmed by its swamps and an important development of the mangrove opposes a low sandy sea coast.

2.1.3 Geology

The plateau, Coastal Lowlands, and the lagoon system are all situated in a sedimentary basin that covers a substrate Birimian formation consisting of metamorphosed rocks (flysch, shale, schist, and quartzite). The sedimentary basin has two distinct parts: a northern and a southern part. The northern part is in an area of fairly thick cover sediments: the continental terminal. The dominant forms are the highlands, in a large part of sandstone more or less ferruginized, sands and clays.

The southern part corresponds to a coverage area of sediments belonging to the Cretaceous. There are three forms: 1) low coastal continental plateau formed with continental clayey sands, 2) compounds in the sandbars of Nouakchott-like deposits, and 3) depressions occupied by the river and lagoon deposits which likes mainly vases made by sand washing.

The layout of the forms of the sedimentary basin was controlled by the major tectonic system of the lagoon. This accident is a very important long break of several kilometers, parallel to the coast and separating the two areas of morphology.

2.1.4 Soil condition

The soil on the plateau is almost exclusively consists of lateritic sands, homogeneous to a depth of several tens of meters. The unaltered granite base generally has depths exceeding 50 meters. A body of water moderately profound extends in all the trays in the sands of the continental metal terminal. This water is exploited by SODECI (Societe de Distribution d'Eau de la Cote d'Ivoire: Water Distribution Company of Cote d'Ivoire) to provide drinking water in Abidjan. At the shoreline, the soil is composed of deposits of marine origin from the fine yellow sand to light brown, slightly clayey silt, vases containing a lot of organic matter.

2.1.5 Hydrography and Water Use

The annual rainfall is in a range of 1,400 to 2,000 mm, and the annual mean discharge at Agboville (4,600 km²) of Agneby River is 7.6 m³/s. The discharge at Lobo Akoudzin (1,274 km²) of Me River is 7.6 m³/s, which is equivalent to the specific discharge of 0.6 m³/s/100 km². The monthly discharge varies remarkably. At Agboville, the discharge from December to April is very low (0.2 to 1.9 m³/s) and the discharge in June, July and October is comparatively large (18 to 22 m³/s).

The Agneby River with a basin surface area of 6,110 km² at Kassingui is significant river due to its location near Abidjan. The Agneby also called Agbo River springs up in northeast of Bongouanou. It flows down from the north to the south and receives several tributaries on the way of meandering. Then the river flows into the Ebrie Lagoon at east Dabou.

The Me River springs up in Akoupe and grows bigger by tributaries. The river takes southwest direction and turns to the south from the confluence with Mofou River coming from the right-bank. Then the river flows into the Potou Lagoon, which is connected with Aghien Lagoon on the upstream side.

It seems the groundwater is used for industrial and domestic water. The following figure shows some wells in Abidjan.



Source: Etude D'Impact Environmental et Social, Forages des Champs Captants, Puits et Piezometres du District D'Abidjan et Environs, Ministère des Infrastructures Economiques

Figure 2.1 Location of Some Wells in Abidjan

2.1.6 Vegetation

Three vegetation types share the waterlogged soil depressions.

In the highlands, the climax vegetation was Avodire (African satinwood, the smooth-textured decorative whitish to pale yellow wood of a large tropical West African tree (*Turraeanthus africana*) of the mahogany family used for cabinetmaking. Today all plant formations have been destroyed by urbanization and deforestation. On the coastal strip, coconut took over the marshy forests in areas not yet built up. In the highlands, the primary forest has been replaced by degraded secondary forests that are now supporting agro-industry plantations and areas of food crops.

The witnesses of the original vegetation is the Banco forest (3,474 ha) that is designated a National Park. This park faced serious threat because it is subject to various attacks. In the surrounding area, only fragments of forests remain that are mainly localized on the slopes.

2.1.7 Natural Disaster

The Institution of civil protection: La Cote d'Ivoire has an institution for civil protection, created by Decree No. 2002-822. The National Office for Civil Protection (ONPC), among others, is responsible

for organizing Measures for prevention and ways to fight natural disasters and its mandate extends to all other risks and accidents. It was under the Military Garrisons Fire Brigade (MPSG)

Natural catastrophes are, by definition, natural events causing loss of life, destruction of livelihoods, loss of economic production of equipment and environment. They are not directly caused by human actions and interventions but these are factors promoting and aggravating their impact. The most frequently observed natural disasters in Côte d'Ivoire are:

- floods caused by heavy rains
- movements or landslides and rockslides
- bushfires (forest fires)
- drought

Table 2.1 shows 8 recorded climate & geological disasters in Greater Abidjan area over 15 years (1996 – 2010). There are no records of earthquakes, tsunamis, or tropical cyclones. Therefore the Greater Abidjan area has few relatively few natural disasters.

Table 2.1 Climate & Geological Disasters in Greater Abidjan (1996 – 2010)

Date	Events	Location	Consequences
30 - 31 May, 1996	Torrential rains	Abidjan	28 dead, material damage
18 July, 1996	Landslide	Abidjan	2 dead, material damage
	Torrential rains	Abidjan (Abobo, Koumassi, Marcory, Riviera)	Material damage
11 Jun, 1997	Torrential rains	Abidjan (Abobo)	1 dead
	Torrential rains	Anyama	1 missing, 3 injured, material damage
20 Oct, 1998	floods	Abidjan (Riviera, Yopougon)	Material damage
16 Nov, 1998	storm	Abidjan	3 dead, several missing, material damage
3 - 5 Jun, 2007	floods	Abidjan	9 dead, material damage
12 - 15 Jun, 2009	Landslide (& flood)	Abidjan	22 dead, 6 missing, 7 injured, 48 homeless family
28 - 29 Jun, 2009	floods	Abidjan	7 dead, 20 homeless

Source : ONPC (l'Office National de Protection Civile)/GSPM (Garnisons de Sapeurs Pompiers Militaires) (Recueil des Statistiques de Environnement en Cote d'Ivoire, 2011)

Table 2.2 shows sensitive habitat areas, which are a portion of land exposed to natural hazards with respect to this indicator, sensitive Abidjan sites are those precarious habitats due to their geographical location areas. Abidjan has 72 sensitive habitat areas with a total area of 775 ha.

Table 2.2 Sensitive Habitats Abidjan in 2010

Commune	Number of precarious habitat areas	Total area of precarious habitat areas (hectares)
Abobo	9	199
Adjame	8	20
Attecoubé	11	81
Cocody	8	54
Koumassi	6	82
Marcory	3	9
Plateau	0	0
Port-Bouet	13	224
Treichville	1	9
Yopougon	13	97
TOTAL	72	775

Source: ANDE (Recueil des Statistiques de Environnement en Côte d'Ivoire, 2011)

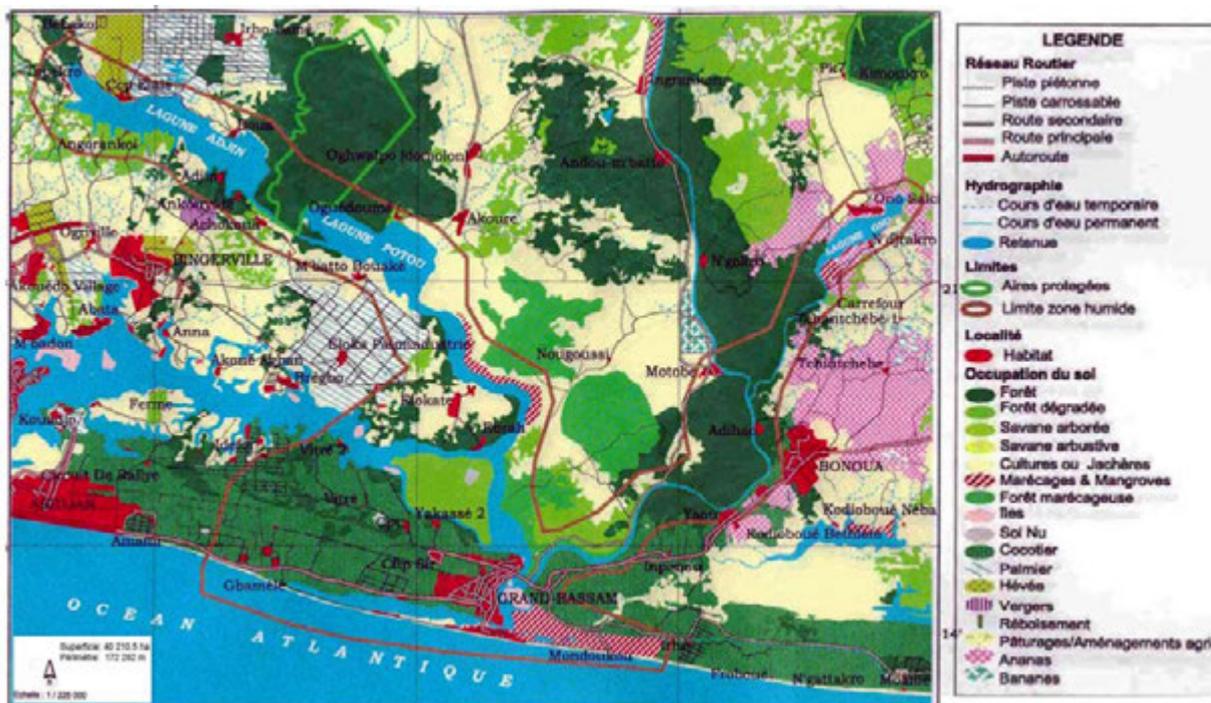
2.1.8 Management System for the Protected Areas

Banco National Park in Abidjan (3,474 ha) is designated as a national park by Order No. 536 of 25.06.1960, and Decree No. 81-218 of 02.04.1981 (Source: Office Ivoirien des parcs et Reserves, 2006). N'Ganda-N'ganda reserve in Grand-Bassam/Adiaka (4,400 ha) is designated as a Botanical Reserve Area by Order No. 2020/SE of 07.04.1951, Modified by Order No. 5894/SE of 13.08.1954, and Order No. 279/Minagri of 01.08.1958 (Source: centre national de Floristique). No Natural Reserve Areas, or Fauna & Flora Reserve Areas are designated in the Greater Abidjan Area (Source: Office Ivoirien des parcs et Reserve, 2006).

Grand Bassam is a designated Historic Town of Grand-Bassam as a World Heritage Site (Figure 2.2 and Figure 2.3). The historic town of Grand-Bassam is an example of a colonial town built at the end of the 19th century and during the early 20th century. It follows a planning concept based on the specialisation of quarters for commerce, administration, housing for Europeans and housing for Africans. It embodies, on the one hand, colonial architecture and town planning, based on the principles of functionalism and hygiene of the time, and adapted to climatic conditions, and, on the other hand, an village N'zima which demonstrates the permanency of indigenous cultures. Grand-Bassam was the first colonial capital, and the most important port, economic centre and legal centre of Côte d'Ivoire; it bears witness to the complex social relations between Europeans and Africans, and then to the popular movement in favour of independence (UNESCO).

Grand Bassam is designated as a Ramsar site (Figure 2.4).

Banco National Park and N'Ganda-N'ganda Botanical Reserve Area are rare remaining natural areas, therefore these areas should be strictly protected, and the promotion of green area enlargement in the Greater Abidjan area will be required.



Source: Wetlands International

Figure 2.4 Location Map of Grand Bassam Ramsar Site

2.1.9 Evaluation of Existing Environmental and Social Conditions

Legal regulations regarding natural/social environmental protection and pollution control are already sufficient, and their features are similar to those in developed countries. However understanding of the present and future environmental problems, concrete planning, execution in line with the regulations, and establishment of monitoring systems have not been implemented, because of the lack of staff and related facilities.

Therefore the kinds of environmental problems that are occurring in the present and will occur in the future, and where those environmental problems will arise should be clearly determined. Necessary plans, programs, projects, and the order of priority on implementation should be examined. In this sense, improvement of environmental data collection systems is indispensable. Concrete planning on solid waste/wastewater management and flood control, which seems to be an emergency matter, should be examined urgently. Measures for the disadvantaged in slums also will be examined as soon as possible.

Tasks for environmental protection and pollution control seem to be duplicated in related agencies, so reconsideration of implementation setting, and demarcation of responsibilities of related agencies should be considered.

In general, it seems that infrastructure development is given first priority and environmental protection and pollution control come later. However, a sound environment is the base for infrastructure development, and restoration of the environment after problems become serious comes at a great cost. Some parts of the budget will be distributed to environmental issues.

2.1.10 Environmental and Social Key Issues

• **Improvement of Environmental Information Systems**

Existing data on the following pollution items, the natural environment, and social environment are insufficient.

- Pollution items:
air/water quality, noise/vibration, solid waste/wastewater, soil contamination, land subsidence, rank odors, and sediment
- Natural environment:
ecosystem, hydrology, topography/geology
- Social environment:
living conditions, cultural assets, aesthetics, minorities/indigenous peoples/socially disadvantaged people

CIAPOL is responsible for pollution protection, however, past measurement data and measurement equipment was lost because of the political crisis. The staff and measurement equipment is still insufficient. The existing condition of other agencies related to data collection might be in the same situation.

Lack of data means that it is not clear what kinds of environmental problems exist and what is the priority of the actions to be taken. The urgent rebuilding of the data collection systems is the most important key issue regarding the environment.

• **Improvement of Solid Waste/ Wastewater Management Systems**

The existing problems on solid waste and wastewater are not clear because of lack of detailed data, however these problems might be the most critical issue especially in the slum areas and densely populated areas.

The garbage sorting system, collection system, transportation system, intermediate processing system, final disposal system, etc. is not established adequately, therefore it is unsuitable and illegal dumping is done. The drainage system for domestic wastewater is also insufficient. These untreated solid wastes and wastewater lead to worsening hygiene and living conditions, and they pour into the rivers and go to the lagoon. There is water pollution, offensive odors, and aesthetic problems in the rivers and lagoon, and these lead to problems with beautification, which negatively impacts tourism development.

The establishment of solid waste and wastewater management systems, rearrangement of the implementing body, and implementation in accordance with the regulations should be implemented urgently.

• **Improvement of Flood Control**

Flooding is one of most important issues to be examined. Almost all communes are relatively flat and at a low elevation and are adjacent to the sea or the lagoon, and they suffer damage from floods in the rainy season. Some areas are designated as flood prone areas, however, the proper mitigation measures to be taken are not clear. At present, the coastal areas and areas fronting on the lagoon might not be affected by high tides or heavy coastal erosion, however floods will be a greater issue because of a rise

in the sea level due to global warming. Over exploitation of groundwater for industrial development will bring land subsidence, so flooding will become more severe.

A detailed survey on flood and land subsidence, flood mitigation planning, and the impact of sea level rise should be examined as soon as possible. There is the potential to reconsider the land use plan in flooded areas in accordance with the results.

- **Improvement of Water Pollution Control**

The degree of the existing water pollution in the lagoon is not clear because detailed data is not available, however, some reports mentioned water pollution including heavy metal pollution might have occurred. The lagoon is used for fishery activities and domestic water use, so heavy metals will lead to serious health problems.

A detailed water quality survey including heavy metals should be implemented in the lagoon and harbor area. If new harbor development is planned in the lagoon, an environmental assessment should be implemented carefully.

- **Collection/ Analysis of Soil Contamination Data**

It is not clear that wastewater from factories is discharged appropriately and pesticides, agricultural chemicals, and fertilizers are used, which should follow the rules. Soil contamination leads to impacts on the health of those living nearby, impacts on agricultural products, and water pollution of surface water and ground water. When groundwater is used for drinking, this will be critical. A detailed survey on soil contamination should be implemented and proper implementation of wastewater disposal and usage of chemicals, etc. is required.

- **Rebuilding of the System for Air Quality and Noise Data**

Traffic vehicles will exhaust air pollution and cause noise problems. The existing road condition is poor, so traffic congestion and low traffic speed make air pollution and noise problems. When the road network is constructed as planned, these will be resolved. However, new road development will lead to these problems in newly developed areas, so that data collection systems should be established and careful attention should be paid to environmental assessment for new and rehabilitated roads.

- **Implementation of Natural Resource Management**

The strategies and protection plan for protected areas such as National Parks have already been established. However, these are not being implemented. Therefore, protected areas have been eaten into by illegal land use and development, and planting/greenery projects are not yet carried out. Enforcement of the regulations on protected areas and planting/greenery projects, reconsideration of the institutional settings, and guarantees of funding will be required.

- **Collection/Analysis of Detailed Information on People Affected by the Political Crisis**

It is reported that several million people who were affected by the political crisis live in some areas in Abidjan, especially in Abobo and Yopougon. These areas are in very poor condition, such as poor basic social infrastructure (schools, health care, roads, drainage systems, solid waste management, etc.), poor economic condition (lack of job opportunities/school attendance), and low standard of public safety. Some of them are refugees due to political crisis in inland or neighboring countries. The detailed conditions are still not clear. An urgent survey and suitable measures are required.

2.2 Legal Framework for Environmental and Social Considerations

2.2.1 National Legal Framework

2.2.1.1 The constitution of the Republic of Cote d'Ivoire

The constitution of the Republic of Cote d'Ivoire (2000) is the basis of all laws and regulations in Cote d'Ivoire. It is composed of 133 articles, and the following articles, in particular, are the principles of all laws and regulations related to environmental and social considerations in Cote d'Ivoire.

Table 2.3 Environmental and Social Considerations in the Constitution

Title	Article	Description
Title I Freedoms of the Rights and Duties	Article 7	Every human being has the right to the development and to the full realization of his personality in the material, intellectual and spiritual dimensions. The State assures to all citizens equal access to health, to education, to culture, to information, to professional formation and to employment. The State has the duty to safeguard and to promote the national values of civilization as well as the cultural traditions not contrary to the law and to good morals.
	Article 19	The right to a healthy environment is recognized to all.
	Article 28	The protection of the environment and the promotion of the quality of life are a duty for the community and for each physical or moral person.
Title V The Relations Between the Executive Power and the Legislative Power	Article 71	The National Assembly holds the legislative power. It alone votes on the law. The law establishes the rules concerning: (seventeen bases and statures). The law determines the fundamental principles: (only two relevant principles out of twelve principles) - of the regime of property, property rights, and civil and commercial obligations; - of the protection of the environment;
Title XI The Association and Cooperation between The States	Article 122	The Republic of Côte d'Ivoire may conclude agreements of association with other States. It accepts to create with these States the intergovernmental organisms of common management, of coordination, and of free cooperation.
	Article 123	The Organizations specified in the previous article can have, notably, for [their] object (only three relevant out of thirteen): - the cooperation in matters of security and of protection of persons and of property; - the cooperation in matters of Health; - the cooperation in matters of protection of the environment and of management of natural resources.

Source: JICA Study Team

2.2.1.2 National Legal Frameworks for Environmental and Social Considerations

Considering the environmental legal frameworks in Cote d'Ivoire, the Environmental Code (Law No. 96-766, 1996) is considered as the principal law after the constitution. The Environmental Code comprises six parts: I) definitions of terms, purpose and scope, II) definitions of the environment, III) general principles, IV) the obligation of the state and local authorities, V) prohibited and criminal provisions and VI) final provisions/enforcement of the environmental code. Particularly, Part III states the equal right to secure the safe environment for all persons and gives the principal philosophy of the environmental protection. Then, the following Part IV gives the state and local authorities' obligation for the environmental protection and general guidelines, which defines the power of designated authorities to evaluate and control negative impact activities and minimum requirements of the environmental

impact assessment. Under the Article 74 (Part IV/SECTION IV Institutions), the national environmental agency, l'Agence Nationale de l'Environnement (ANDE) is established and given power to enforce the environmental code.

Key legislation and relevant regulations could be organized as follows:

Table 2.4 Key Legislations and Relevant Regulations on Environmental and Social Considerations

Type		Key legislation/ regulations
Institutional	<ANDE: National Environmental Agency >	Decree No. 97-393 of 9 July 1997 on the establishment and organization of a public institution called the administrative National Environment Agency (ANDE) Order No. 445/MINEME/CAB of 24 March 2004 integration of the Office of Environmental Impact Assessment (BEIE) at the National Agency for the Environment (ANDE)
	<CIAPOL: Ivorian Anti-pollution Centre >	Decree No. 91-662 of 9 October 1991, establishing a public administrative institution (EPA), called "the Centre Ivorian Anti-pollution" (CIAPOL) and determining its functions, organization and operation Order No. 044/MINEME/IG of 24 March 2004 Integration Service Classified Installations Inspectorate (SIIC), the Ivorian Anti-Pollution Centre (CIAPOL)
	<OIPR: National Parks and Nature Reserves >	Law No. 2002-102 of 11 February 2002 on the creation, management and funding of national parks and nature reserves Decree No. 2002-359 of 24 July 2002 establishing the organization and functioning of the Ivorian Office of Parks and Reserves
	<SODEFOR: Society for the Development of Forest Plantations>	MWF/Decree No. 93-2006 of 3 February 1993 on the transformation of the state in SODEFOR Company
	<ANASUR: National Agency for Urban Safety>	MCLAU/Decree No. 060 of 11 October 2007 opening activities related to the safety and management of solid waste and urban waste, the National Agency for Urban Safety (ANASUR)
	<Local Authorities>	Law No. 2003-208 of 7 July 2003 on the transfer and distribution of state powers to local government (in terms of environmental protection and management of natural resources) Ordinance No. 2007-586 of 4 October 2007 repealing certain provisions of Law No. 2003-208 of 7 July 2003 on the transfer and distribution of state powers to local government.
Environmental Protection		Decree No. 97-678 of 3 December 1997 on the protection of the marine and lagoon environments against pollution Decree No. 205 / MINEME / IG / 19 October 2005 establishment, composition and mission of the plan development program for the decontamination cell, and development and exploitation of the lagoon area Law No. 88-651 of July 07 1988 on the protection of public health and the environment against the effects of nuclear and toxic industrial waste and harmful substances Law No. 65-255 of 4 August 1965 on the protection of wildlife and for hunting Decree No. 66-433 of 15 September 1966 on the status and regulation of the procedure for classifying natural reserves, full or partial, and national parks
Natural Resources Management and Protection		Law No. 96-669 of 29 August 1996 on the Petroleum Code Law No. 95-553 of 18 July 1995 on the Mining Code Law No. 98-755 of 23 December 1998 on the Water Code
Forest and Wood		Law No. 65-425 of 20 December 1965 on the Forest Code Decree No. 66-122 of 31 March 1966 laying down the tree species called protected Decree No. 66-428 of 15 September 1966 establishing procedures for the classification and declassification of state-owned forests Decree No. 66-421 of 15 September 1966 regulating the use of timber and woodworking, service, fire and coal

Source: JICA Study Team

2.2.1.3 Legal Frameworks for Environmental Clearance

The principal regulation and its relevant regulations for environmental impact assessment are listed as follows:

- Decree No. 96-894 of 08 November 1996 laying down rules and procedures for studies on the environmental impact of development projects,
- Decree No. 2005-03 dated 6 January 2005 Environmental Audit,
- Order No. 00972 of 14 November 2007 on the application of Decree No. 96-894 of 8 November 1996 laying down rules and procedures for studies on the environmental impact of development projects,
- Order No. 00973 of 14 November 2007 on the application of No. 2005 -03 January 6, 2005 on environmental auditing,
- Decree No. 2013-41 of 30 January 2013 on strategic environmental assessment for policies, plans, and programs.

a) Environmental and Social Impact Assessment

In regard to the Ivorian environmental and social impact assessment (ESIA) framework and its guidelines, Decree No. 96-84 is the principle regulation of the ESIA process. Numerous amendments and relevant regulations have been enforced followed by this decree so that all updated regulations shall be carefully taken into account for project level assessments, especially Order No. 00972 of 14 November 2007 (application of Decree No. 96-894 of 8 November 1996 laying down rules and procedures for studies on the environmental impact of development projects) and Order No. 00973 of 14 November 2007 (application of No. 2005 -03 January 6, 2005 on environmental auditing).

The content of the Decree No. 96-84 is shown as follow:

Table 2.5 Contents of the Decree No. 96-84

General Provisions	<ul style="list-style-type: none"> • Applicable types (ANNEX I) and area (ANNEX III) of this decree • Definition of terms
Rules of Procedure	<ul style="list-style-type: none"> • General procedures of the assessment processes and maximum dates of public's assessment processes • Qualification of environmental consultants assessing the projects' impacts and writing assessment reports • Legally responsible person to prepare the ESIA report (in case of the proposed project designed by the SDUGA, the project implementing agencies, such as MCLAU etc., are the responsible agencies/ persons.)
Administrative Rules	<ul style="list-style-type: none"> • ANDE's responsibility for: <ul style="list-style-type: none"> • supporting ESIA technically, • defining the terms of reference (TOR) of ESIA's, • evaluation of potential impacts and a proposed ESIA report for approval, • monitoring the environmental impacts and proposed environmental management plan • accountability of the assessment process • promotion of good practices for practical countermeasures
Content of the ESIA Study	<ul style="list-style-type: none"> • General description of five main contents, namely 1)Description of project, 2) Analysis of baseline and potential impacts, 3) Assessments of the potential impacts, 4) Countermeasures, 5) Monitoring plan
Special Provisions	<ul style="list-style-type: none"> • Legal status of the ESIA assessment and its appraisal decisions • Minister of Environment's time frame to make the final decision • Information disclosure and assurance of public access to the ESIA reports
Final Provisions	<ul style="list-style-type: none"> • Applicability of this decree for on-going and future projects • Relevant ministers' responsibility to report this decree in their ministries
ANNEX	<ul style="list-style-type: none"> • ANNEX I: activities subject to ESIA • ANNEX II: activities subject to be evaluated as to whether ESIA is required or not • ANNEX III: sites subject to ESIA • ANNEX IV: sample contents of the ESIA report

Source: JICA Study Team

Project activities listed in ANNEX I and areas listed in ANNEX II are subject to the ESIA. Project activities listed in ANNEX III shall be evaluated for the ESIA requirement by ANDE.

The public inquiry is required for an environmental impact study (Article 16, Decree No. 96-894 of 08 November 1996 laying down rules and procedures for studies on the environmental impact of development projects). The details of public inquiry are not mentioned, but two public hearings at the scoping stage and a draft EIA review stage as necessary bases. Information disclosure of EIA reports and monitoring results are not provided in any rules or regulations.

b) Environmental Permit

The project owner/proponent of activities listed in ANNEX I and III and activities in sensitive areas listed in ANNEX II is required to acquire an environmental permit to operate (EP) before any construction activities are undertaken in the proposed area. Based on Decree No. 96-84, activities listed in ANNEX-I and sensitive areas listed in ANNEX-III of the decree are required to prepare an ESIA and acquire approval of the ESIA for the EP. Typical activities and sensitive areas requiring an ESIA are summarized in Table 2.6.

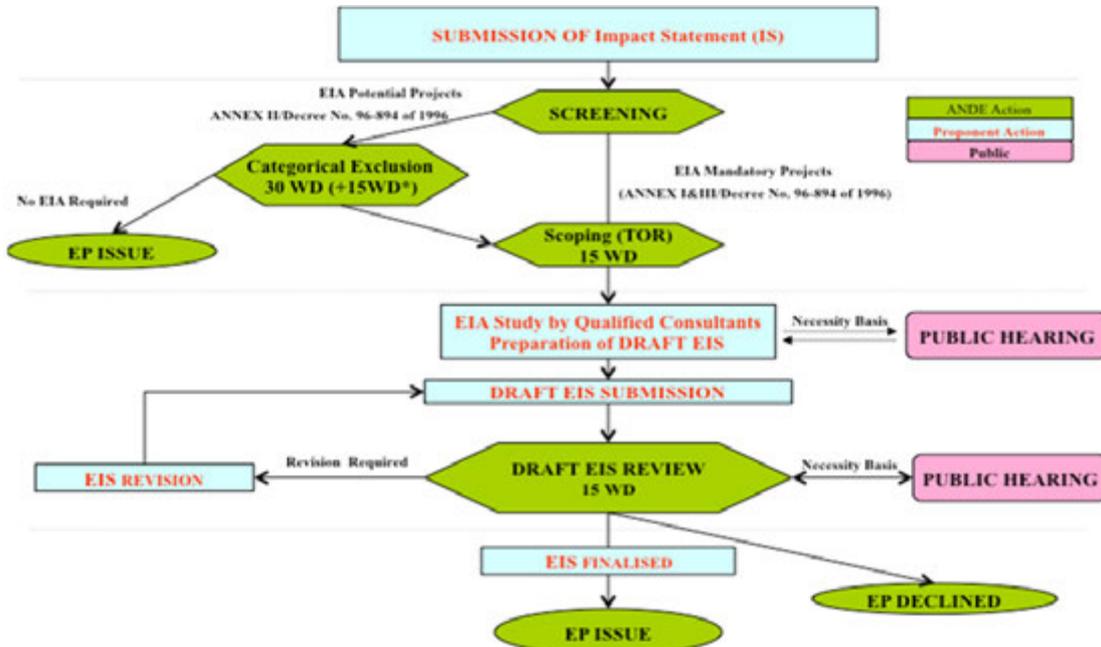
Table 2.6 Typical Activities that require an ESIA

<p>Activities ANNEX I of Decree No.96-84</p>	<ul style="list-style-type: none"> • Agriculture (over 999ha) • Forest management (over 999ha) • Mining (oil, gas, mineral) • Energy (oil and gas refineries, thermal power, hydropower) • Disposal (waste treatment, landfill, wastewater treatment) • Food (oil/fat, processed food, alcohol and soft drinks, syrups and sugar, meat production/processing, starch, fishmeal/oil, drinking water) • Chemicals (chemical manufacturing for varied products) • Metalwork (steel/non-ferrous plant, scrap storage) • Textile/leather/wood/paper (manufacturing of pulp and cotton, production/processing of cellulose, tanning, textile dyeing) • Infrastructure projects (over 2,100m railway/highway/airport, commercial ports, industrial zone, urban development, waterway, dam, pipeline, water treatment facility) • Other (cement factory, over 150 bed hotel, explosive factory)
<p>Sensitive Areas ANNEX III of Decree No.96-84</p>	<ul style="list-style-type: none"> • Protected areas and similar reserves • Wetlands and mangroves • Areas of scientific, cultural, tourist interest • Environmentally sensitive areas • Scope of protection of water points • International maritime areas under national jurisdiction and other international waters

Source: JICA Study Team

In addition to such activities and sensitive areas, for activities with potentially significant impacts listed in ANNEX-II, the proponent/owner of the project is required to prepare an impact statement (IS), and an inventory of the effects of the project/activities. Based on the IS, ANDE determines whether an ESIA is required or not. In case of negligible impacts, an EP shall be prepared for the ANNEX-II projects. On the contrary, the project owner/proponent is required to follow the ESIA process listed in ANNEX I and III projects.

General procedures of the ESIA are shown below.



IS (Impact statement): inventory of the effects of project/activities

EIA: ENVIRONMENTAL IMPACT ASSESSMENT EIS: ENVIRONMENTAL IMPACT STATEMENT

EP: ENVIRONMENTAL PERMIT to OPERATE WD - WORKING DAYS REQUIRED FOR REVIEW

* Additional 15 days might be added if ANDE requires

Source: ANDE, Decree No. 96-894 of 08 November 1996, Order No. 00972 of 14 November 2007

Figure 2.5 ESIA Procedure in Cote d'Ivoire

c) Contents of Environmental Impact Statement (EIS)

ANNEX IV of the Decree 96-894 gives general guidelines for the EIS (Table 2.7).

Table 2.7 Suggested Contents of EIS

1 - Non Technical Summary
2 - Introduction
<ul style="list-style-type: none"> • Purpose of Report • Presentation by the party responsible for environmental impact assessment • Procedure and scope of the environmental impact study • Short description of the methods and techniques used to study the environmental impact
3 - Description of the project or program owner of the project or program
<ul style="list-style-type: none"> • Location of the project or program • Need and justification of the project or program • Development goals, targets and indicators • Description of the project: raw materials, processes, equipment, labor, products, etc. • Maps, charts and photographs if necessary; • Summary of the technical, economic and ecological characteristics is essential for the project or program • Application schedule • Need for an environmental impact study
4 - Environmental context
<ul style="list-style-type: none"> • Methods of data collection • Quality and quantity of physical, biological and socio-economic background before the implementation of the project • Spatial boundaries within the environment considered • Environmentally sensitive socio-economic or cultural or single special areas of ecological value • Trends in the state of the environment • Data gaps.
5 - Other development options
6 - Environmental impact of each option and control plan
<ul style="list-style-type: none"> • Technical methods and assumptions involved • Data • Forecast (size, importance, distribution, uncertainties) • Attenuation measures required • Need of monitoring program
7 - Comparison of options, finding
8 - Monitoring program
9 - Recommendations for evaluation of the project or program
10 - Sources of data and information
<ul style="list-style-type: none"> • Communication, consultation, program data collection in the field, written opinions, public participation.
11 - References
12 - Appendices

Source : ANNEX IV Decree 96-894

d) Strategic Environmental Assessment (SEA)

Environmental CODE (PART III: GENERAL PRINCIPLES, Article 35) and Decree 96-894 (Article 5 referring to ANNEX II of 12: Planning documents, and Article 8) state requirements of ESIA if a plan or program is likely to have negative effects environmentally and/or socially. However, ESIA has rarely

been conducted for policy and ministerial level planning/ programs based on the discussions with the EIS appraisal officers of ANDE. The need for policy, plan, and program level coordination was also proposed in the strategic direction 4 and 5 of the “National Sustainable Development Strategy and Action Plan (2012-2016) by MINESUDD 2011, which has been under the review and process of the minister’s approval as of May 2013 (Strategic Direction 4: Cities, Local Authorities and Regional Planning, and Strategic Direction 5: Environment regulatory, and institutional setting.

Under such circumstances, the presidential decree No. 2013-41 of 30 January 2013 on “Strategic environmental assessment (SEA) for policies, plans, and programs” was enforced in Cote d’Ivoire. Although the detailed requirements and guidelines for such activities shall be set in the future, the decree No.2013-41 principally sets the requirement of SEA for any policy, plan, or program development by authorities except for some exceptions such as national security matters after the date of enforcement.

Considering the implementation of SEA on this JICA SDUGA study, the JICA Study Team applies the SEA defined by “JICA Guidelines for Environmental and Social Considerations (JICA Env. Guidelines)” due to the “Record of Discussion on 31st of October, 2012 between JICA and MCLAU (II. Outline of the project 10. Environmental and Social Considerations).

The knowledge sharing workshop on the introduction of SEA for the JICA Study was held on 8 May, 2013. It was reconfirmed that the SEA for the JICA Study would be carried out in accordance with JICA Env. Guideline, because the decree of SEA in Cote d’Ivoire is newly formulated and the detail rules or regulations, such as guidelines, were not yet prepared at that moment.

- SEA on JICA Guidelines for Environmental and Social Considerations
 - 1.4 Basic Principles Regarding Environmental and Social Considerations: 2. Measures for environmental and social considerations must be implemented from an early stage to the monitoring stage.

JICA applies a Strategic Environmental Assessment (SEA) when conducting Master Plan Studies etc., and encourages project proponents etc. to ensure environmental and social impacts are given consideration from an early stage to the monitoring stage. (also, cf. 3. Procedures of Environmental and Social Considerations)

Table 2.8 shows the difference between the SEA system in CI and the JICA Guideline. There is no divergence in both, just CI needs to prepare detailed guidelines.

Table 2.8 Difference between SEA system in CI and JICA Guideline

	SEA system in CI	SEA system in JICA Guideline	Divergence of SEA system between CI and JICA Guideline
Objective	a plan or program is likely not to have negative effects environmentally and/or socially	to ensure environmental and social considerations from an early stage	No divergence
Time/ target	for policies, plans, and programs	at the policy, planning, and program levels and/or at master plan study	No divergence
Organization	authorities	project proponents	No divergence
Contents	the detailed requirements and guidelines in progress	Environmental checklists for 19 sectors such as road, railway, harbor, airport, etc. are prepared. (These are checklists at the project-level, but very useful information is provided for the implementation of SEA.)	SEA system in CI was just set up, therefore detailed requirements and guidelines for ANDE/ related ministries will be provided in the near future.

Source: JICA Study Team

Table 2.9 Typical SEA Activities and Exceptional Cases

The following points are Subject to Strategic Environmental Assessment (Article 3)

- Policies, plans and programs in areas or sectors such as protected areas, agriculture, forestry, fisheries, energy, mining, industry, transport, waste management, water management, telecommunications, economic infrastructure, tourism, education, health, urban master plan, the land use plan, development plans
- Policies, plans and programs likely to have impacts on risk areas or environmentally sensitive areas

The following points are Excluded from SEA Requirement (Article 4)

- Policies, plans and programs relating to national defense
- Policies, plans and programs relating to emergency situations related to humanitarian disasters

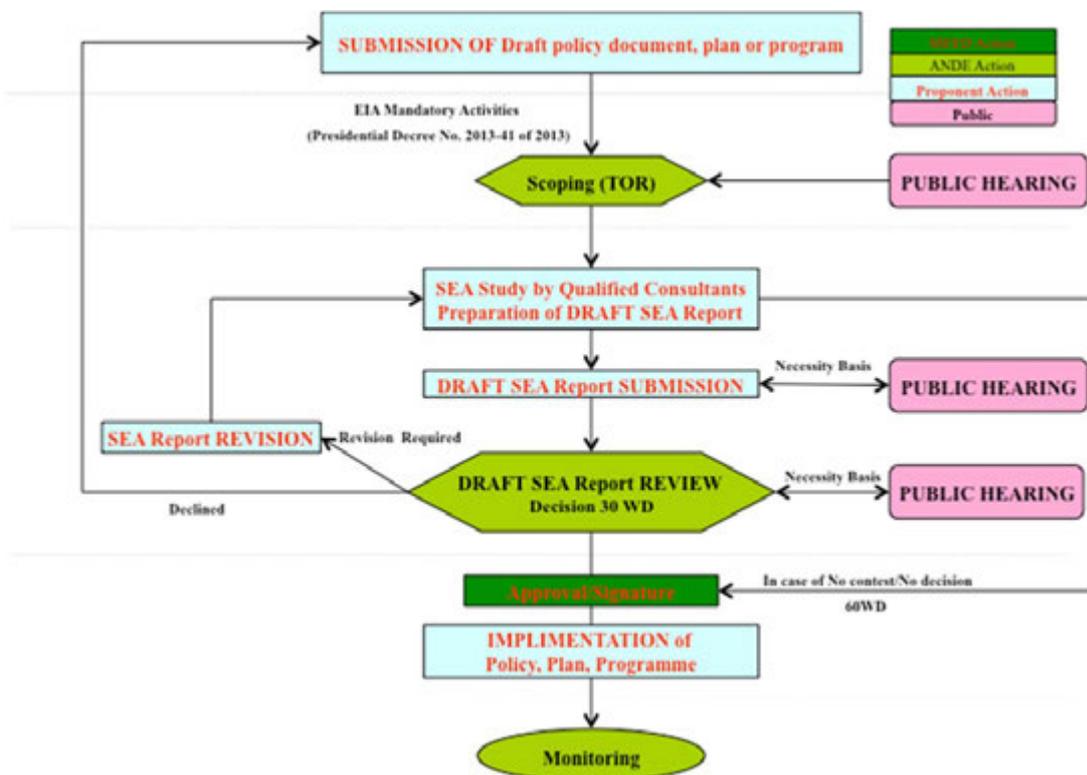
Source: Decree No. 2013-41 of 30 January 2013 on strategic environmental assessment for policies,

ANNEX of the Decree 2013-41 gives general guidelines for the SEA report (Table 2.10).

Table 2.10 Suggested Contents of SEA

Non-technical summary
Presentation of the policy, plan or program, its objectives and its links with other policies, plans and programs as well as the National Development Program
Description of the owner or petitioner and SEA consultancy
Institutional and regulatory environment affected by the policy, plan or program
Environmental characteristics of areas likely to be significantly affected or generic environmental parameters
Major environmental issues identified from the likely significant effects on the environment, including issues such as biodiversity, population, human activities, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage (archaeological heritage, landscape), and the interrelationship between these factors
Summary report of the public consultation and the opinions issued by the audience
Recommendations and measures to prevent, reduce, or offset any negative impact of the implementation of the policy, plan or program on the environment
Summary statement of the reasons why other alternatives were selected, and a description of how the assessment was undertaken including any difficulties encountered, technical deficiencies or lack of know-how in collecting the required information
Description of the environmental monitoring plan

Source: ANNEX I Decree 2013-41



Source: ANDE, Decree No. 2013-41 of 30 January 2013

Figure 2.6 SEA Procedure in Cote d'Ivoire

The same as the ESIA process, ANDE is responsible for providing a TOR for a SEA report and an evaluation of the SEA report. The authority/proponent is responsible for preparing a SEA report with support of environmental consultants registered by ANDE. An appraisal committee will be formed and make the decision. Details of the committee shall be defined by a decree in the future. General procedure of the SEA is shown below.

2.2.2 International Agreements

International agreements are listed as follows:

Table 2.11 International Agreements

CONVENTIONS RATIFIED			
	Title	Date and place of the convention	Date of accession
1	Convention on the use of white lead in paint	Geneva on October 25, 1921	October 21, 1952
2	Convention on the African Migratory Locust	Kano May 25, 1962	April 13, 1963
3	Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and water	Moscow August 5, 1963	February 5, 1965
4	International Convention for the Prevention of Pollution of the Sea by Oil	London May 12, 1954 and amended on 11 and 21 October 1962	June 17, 1967
5	African Convention on the Convention of Nature and Natural Resources	Algiers September 15, 1968	June 15, 1969

Part 1 Current Conditions and Planning Prerequisites for the Urban Master Plan

6	Treaty prohibiting placing nuclear weapons and other weapons of mass destruction on the bottom of the oceans and seas, and in the basement	London-Moscow-Washington February 11, 1971	May 18, 1972
7	Amendment to the International Convention for the Prevention of water pollution by oil on the provision of bunkers and limits the size of the bunkers	London October 15, 1971	May 18, 1972
8	International Convention for the Conservation of Atlantic Tunas	Rio on 14 May 1966	December 6, 1972
9	Convention concerning the protection against the risk of benzene poisoning	Geneva 1971	February 21, 1974
10	Convention concerning the Protection of World Cultural and Natural Heritages	Paris November 23, 1972	November 21, 1977
11	International Convention on Civil Liability for Damage caused by oil pollution, subsequently amended	Brussels, 29 November 1969	May 28, 1979
12	Convention establishing the authority of the Niger and protocol development fund of the Niger Basin	Farana on 21 November 1980	December 3, 1982
13	United Nations Convention on the Law of the Sea	Montego Bay December 10, 1982	March 26, 1984
14	Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships	London on 17 July 1978	January 5, 1988
15	Protocol on cooperation in the fight against pollution in cases of emergency	Abidjan March 23, 1981	August 5, 1984
16	International Convention on Intervention on the High Seas in Cases of accidents causing or that may cause pollution by oil	Brussels, 29 November 1969	August 12, 1984
17	Convention on Marine Pollution by Dumping of Waste	London and Mexico City December 29, 1972, amended on 12 October 1978 and 24 September 1980	July 16, 1986
18	International Convention on the Establishment of an International Fund for Compensation for damage caused by oil pollution	Brussels on 18 December 1971 and subsequently amended	January 3, 1988
19	Vienna Convention for the Protection of the Ozone Layer	Vienna March 23, 1985	30 novembre 1992
20	Montreal Protocol on Substances that Deplete the Ozone Layer	Montreal September 16, 1987	November 30, 1992
21	Convention on Wetlands of International Importance especially as Waterfowl Habitat	Ramsar February 2, 1971	February 1993
22	Convention on International Trade in Endangered Species of Wild Fauna and Flora	Washington 3 mars, 1973	February 3, 1993
23	Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer	London June 29, 1990	October 26, 1993
24	Bamako Convention on the Ban of the Import into Africa of hazardous waste and on the Control of Transboundary Movements of Hazardous Wastes and management in Africa	Bamako January 31, 1991	June 9, 1994
25	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	Bale March 22, 1989	June 9, 1994
26	Rio Convention on Biological Diversity	Rio June 5, 1992	November 24, 1994
27	United Nations Framework Convention on Climate Change	New York May 9, 1992	November 24, 1994
28	Convention on Desertification	Paris June 17, 1994	January 6, 1997
29	Convention on Persistent Organic Pollutants (POPs)		January 20, 2004
30	The Kyoto Protocol		April 23, 2007
CONVENTIONS PENDING RATIFICATION			

1	Bonn Convention on the Conservation of Migratory Species of Wild Animals	September 1993	
2	International Convention on Preparedness, Response and Cooperation regarding Oil Pollution (OPRC)	London November 30, 1990	
3	Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade		
4	The Copenhagen Amendment to the Montreal Protocol	1992	
5	The Montreal Amendment to the Montreal Protocol	1995	
6	The Beijing Amendment to the Montreal Protocol	1999	
7	The Cartagena Protocol on prevention of biotechnological risks relating to the Convention on Biological Diversity		

2.2.3 Institutional Framework

2.2.3.1 Ministry of Environment and Sustainable Development

The Ministry of Environment, Urban Waste and Sustainable Development (MINESUDD: Ministère de l'Environnement, de la Salubrité et du Développement Durable) is the principal ministry to manage environmental protection and enforce the legal frameworks in Cote d'Ivoire. MINESUDD is a relatively new ministry among the other ministries, which was separated from the former Ministry of Environment, Water and Forests in 2011 after the assumption of the current president, Alassane Ouattara (Presidential Decree No. 2011-432 of 30 November 2011 organizing the Ministry of the Environment and Sustainable Development). MINESUDD is composed of two major departments, namely the general department of the environment and the general department of sustainable development under the cabinet of MINESUDD. In addition to the departments of MINESUDD, there are three external agencies specialized for environmental protection, namely the National Environmental Agency (ANDE: l'Agence Nationale de l'Environnement), National Parks and Reserve Office (OIPR: l'Office Ivoirien des Parcs et Reserves), and Ivorian Antipollution Centre (CIAPOL: Centre ivoirien Antipollution). The simplified structure of MINESUDD and each body's functions are as follows.

Table 2.12 Functions in MINESUDD

Ministry of the Environment, Urban Waste and Sustainable Development (MINESUDD) responsible for the implementation and monitoring of government policy on environmental protection and sustainable development	
Secretary General	
Cabinet	
<ul style="list-style-type: none"> • Department of Environment • Planning and control of the policy environment assessment studies and plans; • Implementation of the environmental law and relevant regulations; • Management and monitoring of projects funded by the Global Environment Fund (GEF) and the United Nations Environment Program (UNEP); • Enhancement of the environmental services network of national parks and nature reserves in conjunction with the Ministers of Tourism and Forestry; • Protection and enhancement of aquatic, river, lagoon and coastal ecosystems and wetlands; • Management of national parks and nature reserves in collaboration with the Minister of Water Affairs and Forestry; • Control installations classified for environmental protection; • Coordinating the management of major natural hazards; • Information, education and awareness in the field of the environment in collaboration with the Ministries of Education, Higher Education and Communication; • Capacity building and monitoring of industrial waste control in conjunction with the Ministers concerned; • Participation in monitoring the operation of sewerage and drainage systems, in conjunction with the Ministry of Construction Sanitation and Urban; • Participation in the development of sewerage and drainage policies, in conjunction with the Ministry of Construction, Sanitation and Urban Development; • Supervision and monitoring of the management of industrial, agricultural, toxic or dangerous waste in conjunction with the Ministers concerned. 	<ul style="list-style-type: none"> • Department of Sustainable Development • Development and implementation of government policy in the areas of sustainable development; • Preparation and implementation of the Government's policy on renewable energy development and promotion of green technologies contributing to the improvement of the quality of the environment by reducing toxic releases to water, air and soil and the reduction of energy consumption in conjunction with the Minister of Mines, Oil and Energy; • Development and implementation of the policy against global warming and air pollution; • Promoting sustainable management of scarce resources; • Participation in international climate negotiations; • Ensure the integration of sustainable development objectives in the development and implementation of all policies implemented by the Government and their assessment; • Contribution to the development of policy to involve citizens in the determination of choice for projects with a significant environmental impact; • Propose any measures to improve the quality of life; • Contribution to the development of education, training and information to citizens on the environment; • Establishment of the Commission for Sustainable Development; • Development, implementation and coordination of water policy and the protection of biodiversity. •
External Agencies:	
<ul style="list-style-type: none"> • ANDE/ National Environmental Agency • OIPR/ National Park and Reserve Office • CIAPOL/ Ivorian Antipollution Centre 	

Source: MINESUDD website < <http://www.environnement.gouv.ci/missions.php>>

<MINESUDD reference> Presidential Decree No. 2011-432 of 30 November 2011, <http://www.environnement.gouv.ci/>

2.2.3.2 National Environmental Agency (ANDE)

By Article 74 of the Environmental Code, the National Environmental Agency (ANDE) was established to enforce the environmental code and implement the environmental protection activities. ANDE is the sole responsible agency to provide guidelines for environmental impact assessments, evaluate environmental and social impact assessments (ESIA) as well as strategic environmental assessments (SEA), and monitor environmental management activities to ensure the environmental protection under

the environmental law (Decree #97-393 (1997)). ANDE is composed of three functional branches and one administration, namely Planning, Maintaining and Evaluation of Projects, Environmental Audits (known as ESIA and SEA), Economic and International Affairs, and Administrative and Financial Affairs respectively. ANDE also takes the responsibility of the national focal point for the Clean Development Mechanism (CDM)-Designated National Authority.

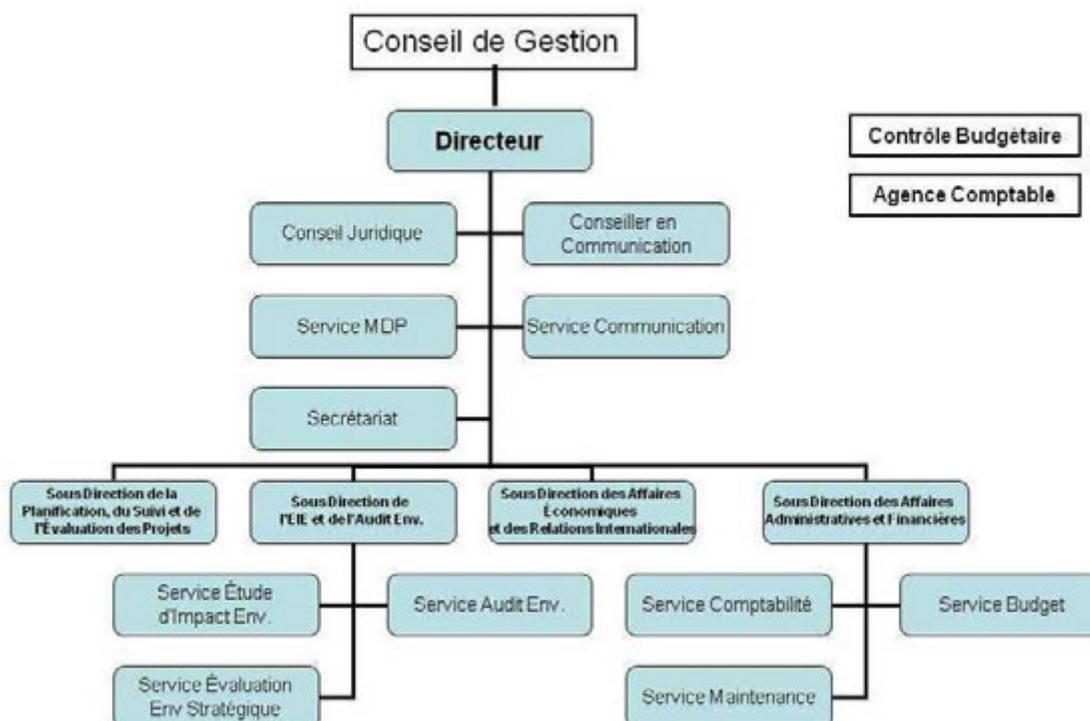


Figure 2.7 Organization Chart of ANDE

ANDE also takes the responsibility of the national focal point for environmental consideration. Major jurisdictional powers of ANDE are as follows:

- Ensuring that development activities are of an environmentally sound nature
- Ensuring the establishment and management of a national environmental information system
- Proceeding assessment and evaluation of the environmental impact of macro-economic policies
- Developing environmental profiles and plans of local government management
- Performing environmental audits
- Improving public awareness of environmental protection through education and other enlightenment activities.

Source : <ANDE reference> <http://www.ande.ci>. Decree No. 97-393 of 9 July 1997, Order No. 445/MINEME/CAB of 24 March 2004

2.2.3.3 Ivorian Anti-pollution Centre (CIAPOL)

The Ivorian Anti-pollution Centre (CIAPOL) was established in 1991 as a public institution to monitor and control pollution in Cote d'Ivoire. In order to effectively enforce the pollution control measures,

CIAPOL is headed by MINESUDD, but board members of CIAPOL are composed of the following ministers:

- Ministry of Economy and Finances
- Ministry of Planning and Development
- Ministry of Mines, Petroleum and Energy
- Ministry of Environment, Safety and Sustainability
- Ministry of Economic Infrastructure
- Ministry of Trade, Craft and SME promotion
- Ministry of Higher Education and Scientific Research
- Ministry of Animal Resources and Fishery
- Ministry of Agriculture
- Ministry of Construction, Housing, and Urban Sanitation
- Ministry of Industry
- Ministry of Water and Forests
- Ministry of Defense

Responsibility of CIAPOL is:

- Establishment and management of environmental monitoring systems for general meteorological information, water (sea, lagoons, rivers, groundwater) and other substances (solid, liquid, gases and residues),
- Evaluation of pollution and nuisances,
- Collection and accumulation of environmental data,
- Publication of environmental and monitoring data for the general public and agencies to improve public awareness and clarify the accountability of polluters.
- Focal point of national, regional, and international conventions on waters (sea, rivers, lagoons, groundwater).
- Establishment of emergency response structures for water pollution accidents at sea, in lagoons or inland waters.

Based on the discussions with one of the general directors of CIAPOL, CIAPOL has not been able to execute its given responsibilities due to the loss of collected information and monitoring systems during the political crisis over the last 10 years. CIAPOL does not have the appropriate instruments to monitor the pollutants at this moment even though CIAPOL is the responsible public service in case public or/and private entities do not have monitoring capabilities.

As a result, the majority of emissions and effluents from factories do not meet the environmental standards of Cote d'Ivoire. Especially the contamination of waters has been notable and become a serious issue for safe drinking water supply, agriculture, and fisheries. Contamination of groundwater has also appeared. Immediate coordinated action for ground water source protection has been highly demanded among public agencies. However, due to the weak collaboration of agencies, the protection has not been implemented.

2.2.3.4 National Parks and Nature Reserves (OIPR)

National Parks and Nature Reserves (OIPR) was established in 2002 as the principle agency for the management of environmentally protected areas in the nation under MINESUDD. It is administered by a board of management open to people from outside government, including non-governmental organizations, environmental organizations and representatives of local communities. OIPR's responsibilities are:

1. management of wildlife, flora and their habitat
2. management of property assets representing the basis of the fauna, flora and water bodies
3. exercise of administrative and judicial police under law n ° 2002-102 referred to above
4. implementation of a policy of sustainable management through the promotion of activities permitted by law depending on the legal nature of the park or reserve considered and its peripheral area
5. the appropriate coordination or conducting studies for the creation, expansion or development of a park, reserve or its surrounding areas;
6. information, education and communication.

The national park and nature reserve is defined as follows in Law No. 2002-102 of 11 February 2002 on the creation, management and funding of national parks and nature reserves.

"National Park" means an area:

- Under the control of the State and whose limits cannot be changed nor any portion alienated except by the competent legislative authority;
- Exclusively for the propagation, protection, conservation and management of vegetation and wildlife populations, and the protection of sites, landscapes or geological formations of particular scientific or aesthetic value in the interest and for public recreation;
- In which the killing, hunting and capture of animals and the destruction or collection of plants are prohibited except for scientific purposes or for the purposes of development and provided that such operations take place under the direction and control of the competent authority;
- Covering any aquatic environment to which all or any applicable provisions of paragraphs 1 and 3 of this definition.

"Nature Reserve" means an area:

- Under the control of the State and whose limits can not be changed nor any portion alienated except by the competent legislative authority;
- On the extent to which any kind of hunting or fishing, all logging, agriculture or mining, any grazing, any excavation or survey, any survey or excavation, any structure, any work tending to alter the appearance of the land or vegetation, any water pollution and, in general, any Law likely to harm or disturb the fauna or flora, including introduction of zoological or botanical species, whether indigenous or imported, wild or domesticated are strictly forbidden;
- Where it shall be forbidden to reside, enter, traverse or camp and will be forbidden to fly at low altitude, without special written permission of the competent authority and in which scientific investigations (including removal of animals and plants in order to maintain an ecosystem) may be made only with the permission of the authority.

List of national parks and natural reserves and their approximate locations are shown below.

Table 2.13 List of National Parks and Natural Reserves

Name	Prefecture	Date & Decree	Area (Ha)
Azagny National Park	Grand Lahou	Decree No. 536 of 06.25.1960 and Decree No. 81-218 of 02/04/1981	19,400
The Banco National Park	Abidjan	Decree of 10.31.1953	3,474
National Park COMOÉ	Bouna	Decree No. 68-81 of 09/02/1968	1,149,150
National Park ISLANDS Ehotilé	Adiaké	Decree No. 74-179 of 25/04/1974	550
National Park Marahoué	Bouaflé	Decree No. 68-80 of 09/02/1968	101,000
Parc National du Mont PEKO	Duekoué	Decree No. 68-79 of 09/02/1968	34,000
Parc National du Mont Sangbé	Biankouma	Decree No. 76-215 of 19/02/1976	95,000
National Park TAI	Guiglo Soubré	Decree No. 72-544 of 28.08.72 and No. 77-348 of 03/06/1977	330,000
NATIONAL PARKS TOTAL			1,732,100
Wildlife Reserve of Abokouamekro	Yamoussoukro	Decree No. 93-695 of 08.19.93	20,430
Wildlife Reserve of Haut Bandama	Katiola	Decree No. 73-133 of 21/03/73	123,000
Scientific Reserve of Lamto	Toumodi, Tiassalé	Order No. 857/AGRI/DOM of 07/12/1968	2,500
Integrated Reserve of Mount Nimba	Danané	Decree of 05/07/1944	5,000
Wildlife Reserve of N'zo	Tai	Decree No. 72-545 of 28/08/1972 and No. 73-132 of 21/03/73	92,700
2ndary Protecting Park of Tai	Soubré	Decree No. 77-348 of 03.06.77	96,000
NATURAL RESERVES TOTAL			339,630

Source: ANNEX II of Law No. 2002-102



Source: <OIPR reference> Law No. 2002-102 of 11 February 2002, Decree No. 2002-359 of 24 July

Figure 2.8 Location Map of National Parks and Natural Reserves Managed by OIPR

As the other decree for land use control, there is “Public Domain and Public Utility Easements regulation, Decree 29th September 1928, modified 7th September 1935 and June 1952”. The land reserves are non building public land to enable access for management and maintenance. No other land uses are permitted. The width of the zone is: 100 m from the sea, 25 m from rivers and lagoons.

At this moment, direct impacts to the National Parks and Natural Reserves are not expected. However, special careful attention should be observed when some projects will be proposed near the Banco National Park located in the centre of the study area.

2.2.3.5 Society for the Development of Forest Plantations (SODEFOR)

The Society for the Development of Forest Plantations (SODEFOR) was established in 1993 for the protection and management of woodland resources and forests in Cote d'Ivoire. After the separation of MINESUDD and the Ministry of Water and Forest in 2011, SODEFOR has been under the technical supervision of the Minister of Water and Forest and the economic and financial supervision of the Minister of Economy and Finance. Although SODEFOR also conserves some forests, its principle objective is to effectively and appropriately manage forests.

SODEFOR participates in the development and implementation of government policy in terms of enrichment of the national forests, the development of forestry production, enhancement of forest products, and the safeguarding of forest areas. According to Decree No. 93-2006 of 3 February 1993, SODEFOR shall be engaged in:

- managing and equipping forests and public lands entrusted by the Administration under the general and specific conventions,
- designing and implementing management models capable of allowing the execution of forest plans, then gradually self-financing and financing of regional development,
- running or doing any work related to maintenance, equipment or restoration of public and private forest lands,
- contributing to the organization to manage rural forest areas,
- enhancing its expertise outside of Cote d'Ivoire,
- in general, participating in any activity and study related to the corporate purpose as described above.

The SODEFOR designated the reserve forest. The list of reserved forest is shown in Table 2.14. List of reserved forests and their approximate locations are shown in Figure 2.9.

Table 2.14 List of Reserved Forests

Name of reserved Forest (Forets Classees)	Area (Superficie)
Vridi	327.8 ha
Lac M'Brakre	532.21 ha
Ile Boulay	1,131.53 ha
Audouin	5,286.07 ha
Languedou	9,316.88 ha
Tagbadie	7,405.95 ha
M'Brago	7,482,57ha
Mafe	18,534.43 ha
Seddy	3,523.94 ha
Bebasso	6,000 ha
Yapo Abbe	22,250.85 ha
Hein	6,098.69 ha
N'Zodji	13,426.47 ha
Yaya	14,343.32 ha
Bongo	1,378.45 ha
N'Guechie	3,643.14 ha
Djibi	2,216.54 ha

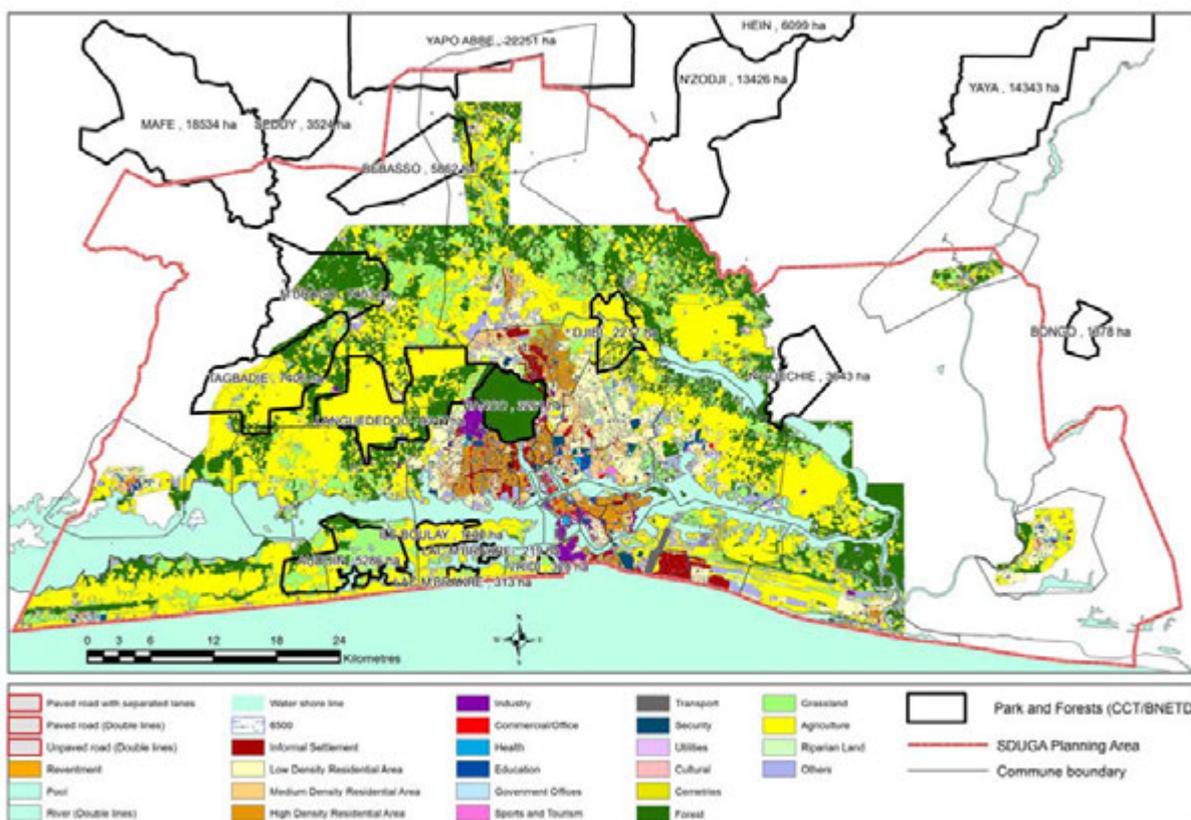
Source: Summary of Decree regarding some Reserved Forest (Recapitulatif d'Arrete de Classement de Certaines Forets), SODEFOR direction Technique (Application Date of Decree by SODEFOR (Arrete de Mis A La Disposition de La SODEFOR): L'arrete collectif No 33/MINAGRA du 13 fevrier 1992)



Source: Summary of Decree regarding some Reserved Forest (Recapitulatif d'Arrete de Classement de Certaines Forets), SODEFOR direction Technique (Application Date of Decree by SODEFOR (Arrete de Mis A La Disposition de La SODEFOR): L'arrete collectif No 33/MINAGRA du 13 fevrier 1992)

Figure 2.9 Location Map of Reserved Forest (including Banco National Park)

The shown Reserved Forests and number of Area (ha) are not same in Table 2.14 and Figure 2.9. The following figure shows reserved forest and national park on the existing land use map. The national park is keeping its forest, however reserved forests are already changed other land use such as land for agriculture.



Source: JICA Study Team

Figure 2.10 Reserved Forest and National Park on the existing land use map

2.2.3.6 National Agency for Urban Safety (ANASUR)

The National Agency for Urban Safety (ANASUR) was established in 2007 as the result of the enforcement of Law No. 2003 of July 07 on the transfer and distribution of state powers to local authorities (Decree No. 060 of 11 October 2007), opening activities related to the safety and management of solid waste and urban waste of the National Agency for Urban Safety.

ANASUR is responsible for “Regulating” the operation of waste management and all types of concessions for public cleaning services and the cleanliness of cities, municipalities and districts of Côte d'Ivoire, the concession for the treatment and processing of waste, the control of the control operation of the licenses given by the state to third parties or authorities for the transfer sorting infrastructure, and processing of garbage and waste, organization and operations management, emergencies, and the management of funds to support Urban Safety Programs, and fight against undesirable substances and pollution in urban areas (article 2, Decree No.60-2007).

3.0 Digital Topographic Mapping

3.1 Introduction

3.1.1 Background and Objectives

This mapping work is part of the SDUGA project currently under development. The following activities were implemented to provide fundamental information for land use planning, with the objective of contributing to the urban master plan in the Greater Abidjan.

- Data collection and assessment of the existing maps
- New map production - 1:10,000 topographic maps (Simplified digital base map)
- Map compilation - 1:10,000 topographic maps (Simplified digital base map) and 1:100,000 topographic maps (Wide-area simplified digital base map) using existing maps

3.1.2 Scope of Work

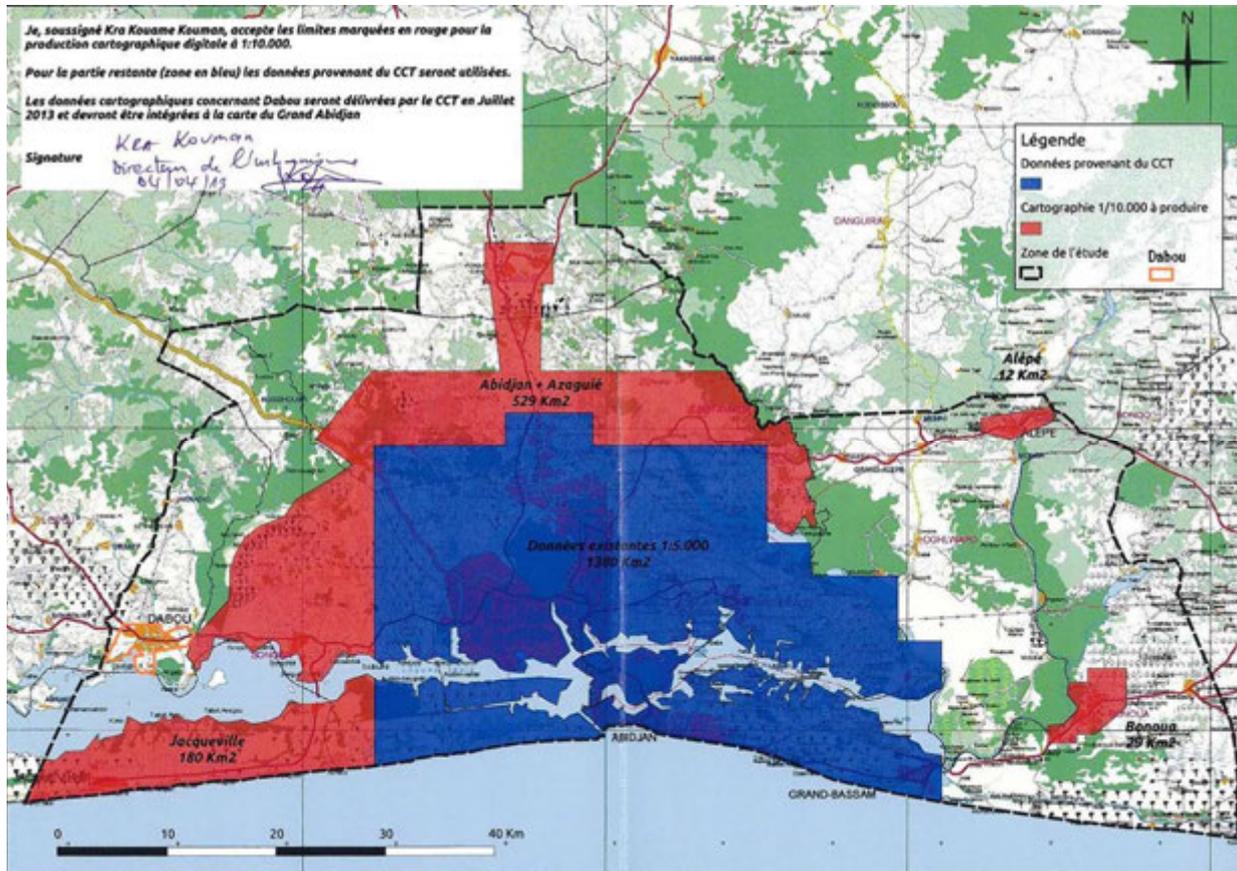
3.1.2.1 Target area

Originally this work was planned to create 1:10,000 scale simplified digital base maps for the Greater Abidjan covering an area of 750 km² in order to support the formulation of the Urban Master Plan. However, during the first meeting with the counterpart agency, a discrepancy was discovered concerning the size of the Greater Abidjan area. After several official meetings, an agreement was made stating that the final total mapping area would be approximately 2,150 km². Table 3.1 below shows a detailed comparison between planned and actual implemented work volume. Figure 3.1 shows the extent of both “Red” and “Blue” areas.

Table 3.1 Comparison of work items and areas

Work Item	Utilization of existing maps (Blue area)		New map production (Red area)		Total area (km ²)
Originally planned area	1) Satellite imagery acquisition	750 km ²			750 km ²
	2) Compilation of existing maps	750 km ²			
	3) Update by satellite imagery	750 km ²			
	Total	750 km²			
Actual implemented area	1) Satellite imagery acquisition	1,380 km ²	1) Satellite imagery acquisition	770 km ²	2,150 km ²
	2) Compilation of existing maps	1,380 km ²	2) New map creation by satellite	750 km ²	
			imagery	Dabou 20 km ²	
	Total	1,380 km²	Total	770 km²	

Source: JICA Study Team



Source: JICA Study Team

Figure 3.1 Overall mapping area

3.1.2.2 Detailed volume of the work

3.1.2.2.1 Area for utilization of existing maps (Blue area)

This area is covered by the existing 1:5,000 scale maps. The existing maps were used directly without any updates. Nevertheless, the latest satellite imagery for the same area was obtained for reference purpose. The area is approximately 1,380 km². (Hereinafter referred to as the “**Blue area**”)

3.1.2.2.2 Area for new map production (Red area)

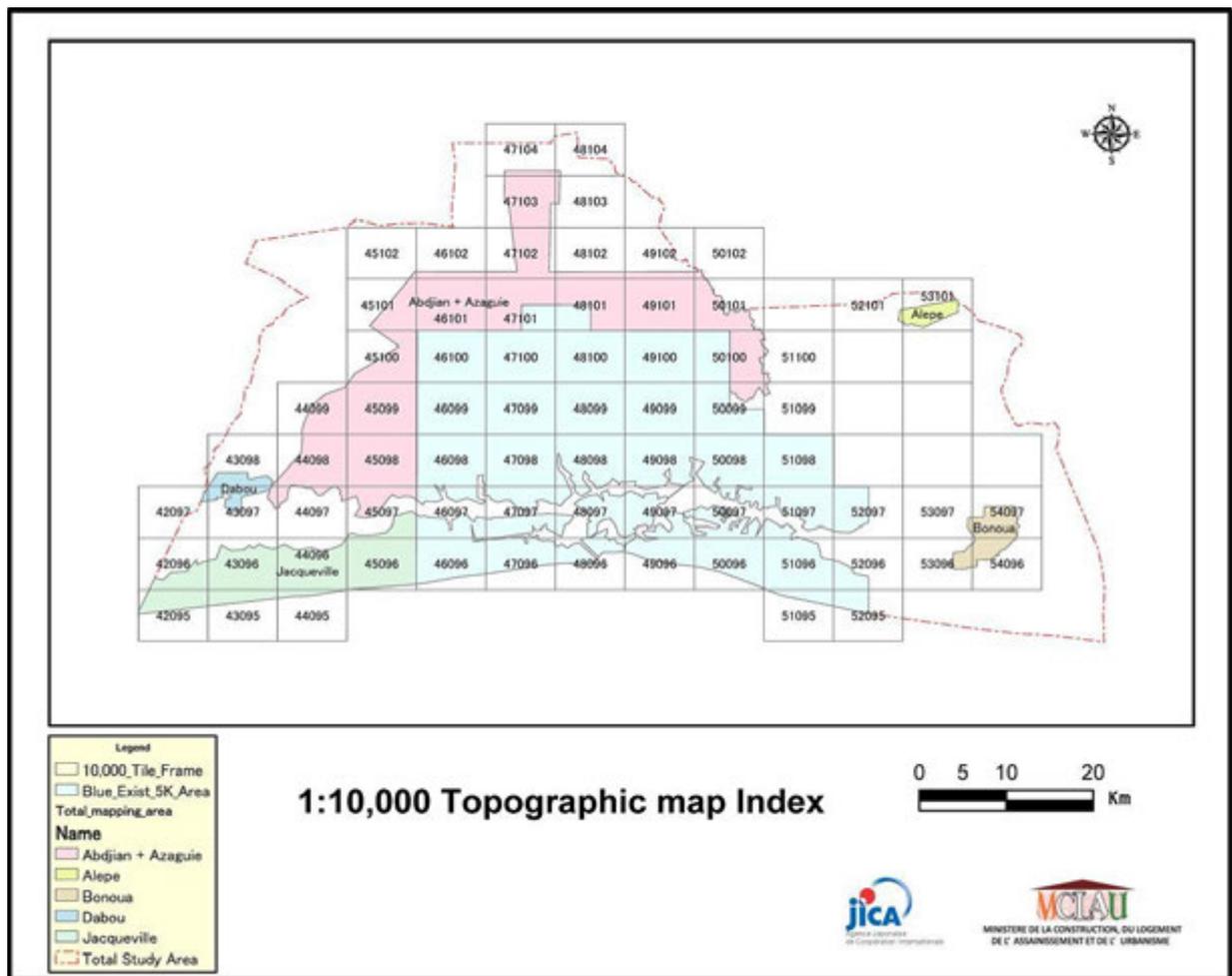
New 1:10,000 scale simplified digital base maps were created using the latest satellite imagery. The area covered those locations where the 1:5,000 scale map was not available in order to cover the Abidjan suburb area surrounding and adjoining the “Blue Area”. The area is approximately 770 km². (Hereinafter referred to as the “**Red area**”)

3.1.2.2.3 Dabou

Dabou area having approximately 20 km² was added to the Red area.

3.1.2.2.4 Map sheet layout

As mentioned above, MCLAU and the JICA Study Team selected the target areas taking into account the land use planning for the urban master plan. A total of 73 map sheets covering 2,150 km² (shown Figure 3.2) were produced in this work. The map sheet numbering rule was defined based on the existing 1:5,000 scale numbering rule as shown in Figure 3.2.



Source: JICA Study Team

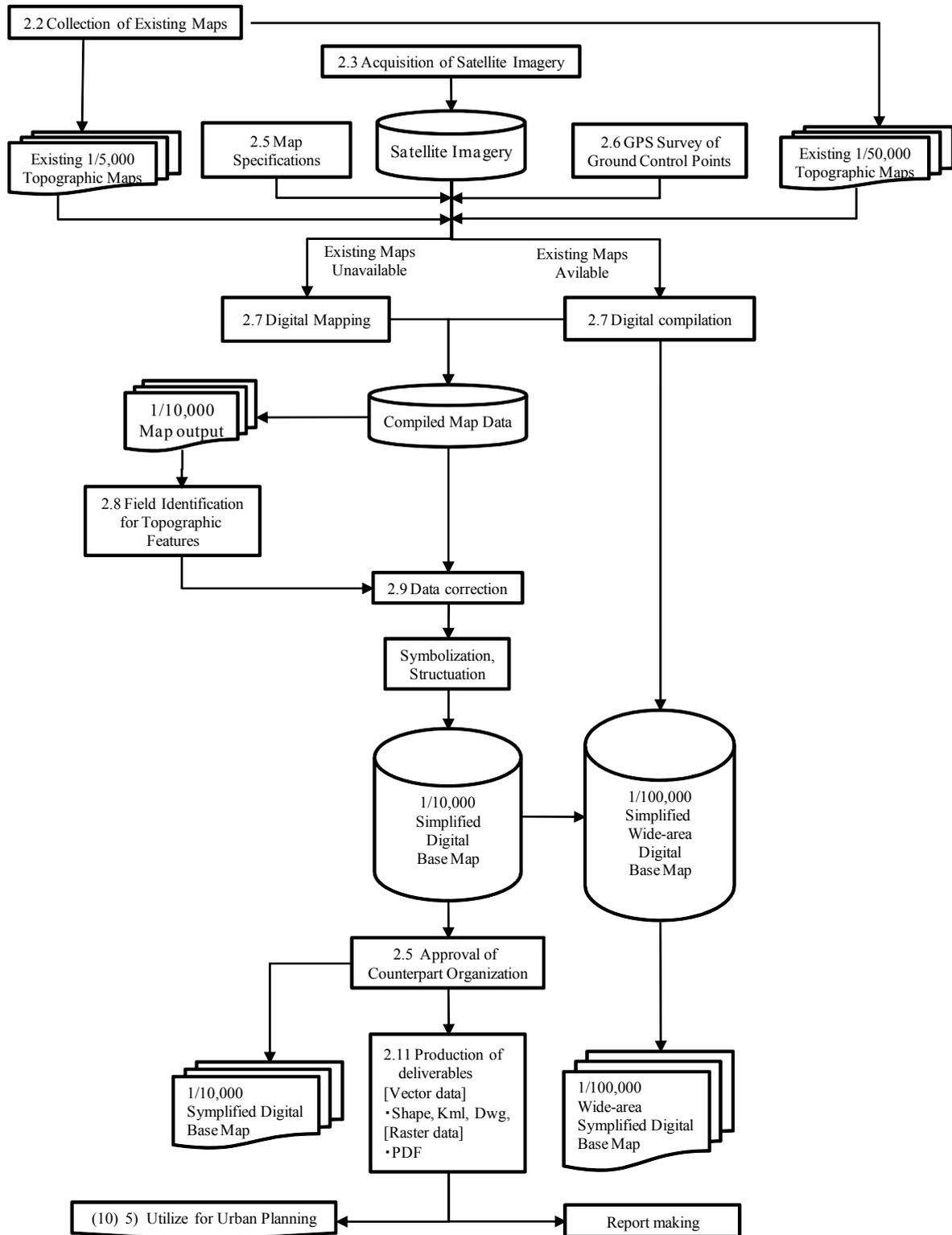
Figure 3.2 Topographic map index

3.2 Mapping Procedure and Methodology

3.2.1 Overall workflow

Figure 3.3 shows the overall workflow for the 1:10,000 and 1:100,000 scale topographic mapping and the production of the map datasets. Worldview-1, Worldview-2 as well as QuickBird satellite images

observed between 2010 and 2013 covering the whole of the target areas were used to create pan-sharpened images, which were employed during the field identification survey in the Red area and confirmation of secular changes in the Blue area. An initial interpretation was conducted in order to identify the major map features in the Red area. Based on the results of the initial interpretation in accordance with the map specifications, the field identification survey was conducted taking into account major road distribution, artificial structures as well as natural features in the Red area. All the information that covers the major map features and unclear features were identified during the field identification survey, which was conducted from July 2013 to September 2013. In the Blue area, all the data were compiled for the 1:10,000 scale simplified digital base maps based on gathered topographical information. Finally, the collected and gathered information was transformed into GIS shape data, which was overlaid upon the pan-sharpened images to finalize the digital compilation.



Source: JICA Study Team

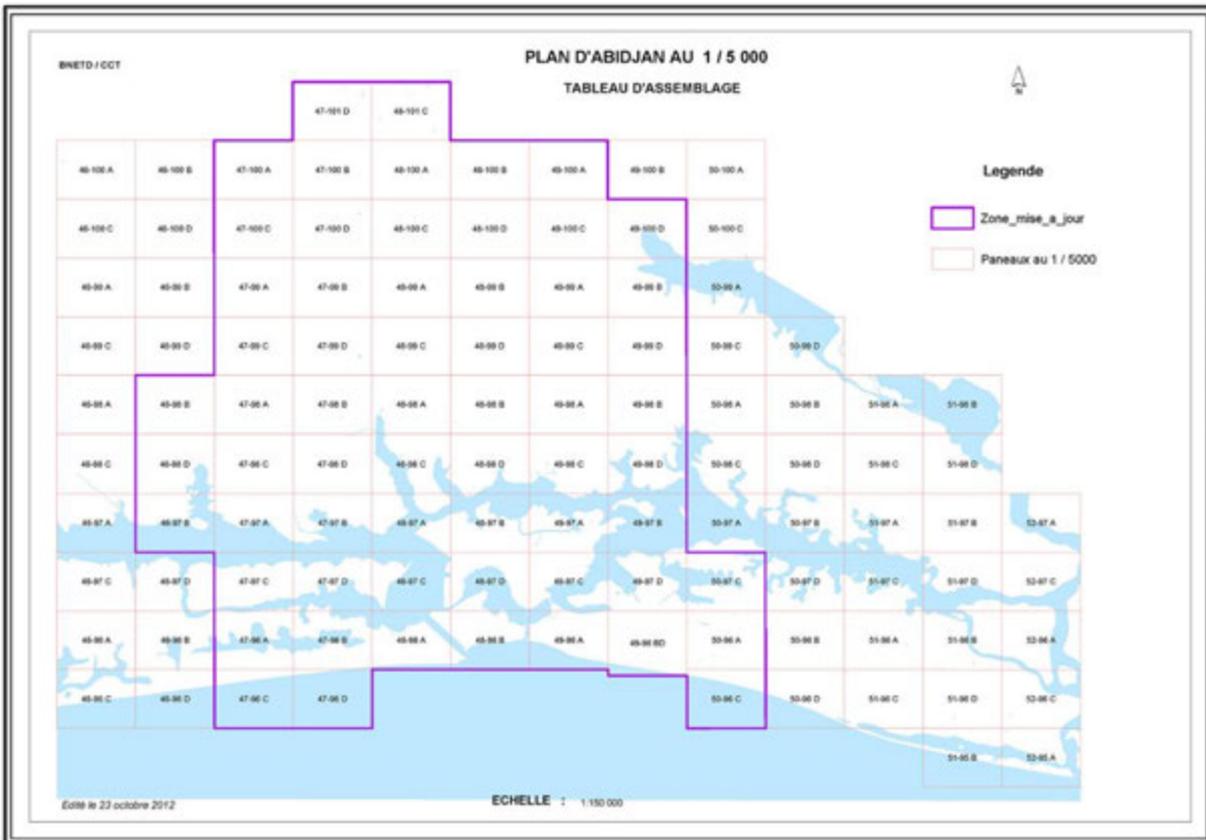
Figure 3.3 Overall workflow for topographic mapping

3.2.2 Collection of existing map data

The objective of this task was to collate GIS and topographical information, which were identified by the relevant government authorities such as DTC (Direction de la Topographie et de la Cartographie) and CCT (Centre de Cartographie et de Télédétection) as well as INS (Institut National de la Statistique). Prior to topographical mapping, existing topographical data and reference information were collected mainly from the CCT as an inventory survey. All the collected existing data were subsequently converted to the after-mentioned reference system. In order to accomplish this task, both analog and digital data were acquired. Furthermore, the existing data such as paper maps were digitized and stored in a raster format (Geotiff files) and vector format (shape files). Geometric correction and orthorectification were performed on the digitized datasets. In addition, map features such as administrative boundaries and geographical names were extracted from existing maps and GIS data.

3.2.2.1 1:5,000 scale topographic maps

A total of 113 map sheets were originally created in the 1980's. Afterwards, all the map sheets were digitalized. The 63 sheets contained within the purple line boundary shown in Figure 3.4 were updated only for 2-dimensional features using satellite imagery observed from 2004 to 2008.



Source: CCT

Figure 3.4 1:5,000 Topographic map index

The acquired data specifications are as follows.

- Reference ellipsoid: WGS84
- Coordinate system: UTM 30N
- Height datum: Abidjan
- Data file format: Shape file

The following datasets are available in shape file format.

Table 3.2 1:5,000 datasets

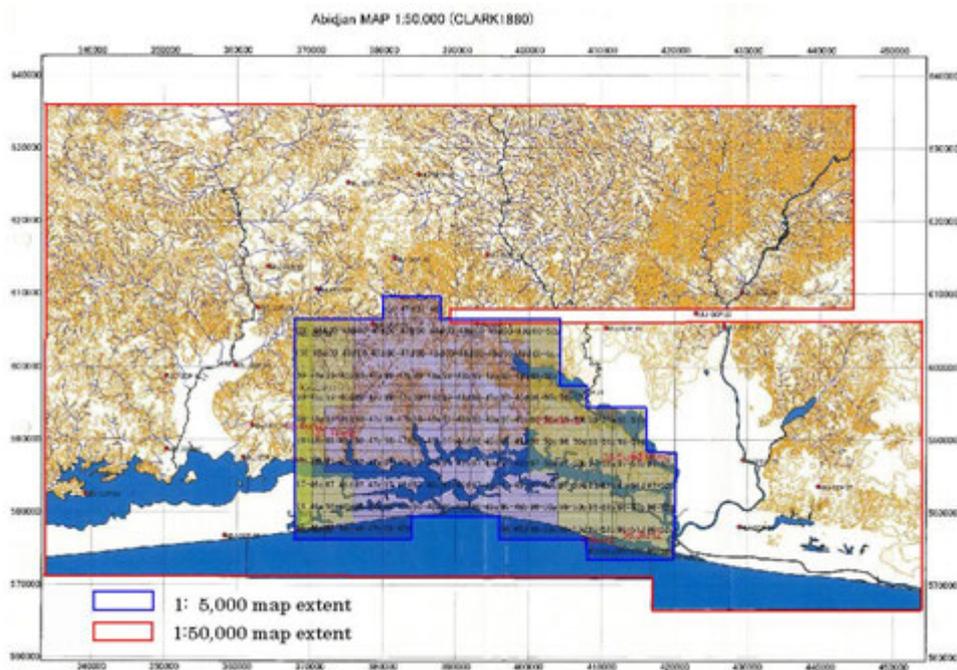
No.	Data file name (French)	Description	No.	Data file name (French)	Description
1	Aeroport.shp	Airport	18	Hydro_Lineaire.shp	Water body
2	Aire_de_Jeu.shp	Playing yard	19	Jardin.shp	Garden
3	Aire_Protegee.shp	Protected area	20	Monument.shp	Monument
4	Antenne.shp	Antenna	21	Parking.shp	Parking
5	Autres_Installations.shp	Other facilities	22	Pipe_line.shp	Pipeline
6	Batiment_en_Construction.shp	Building under construction	23	Piscine.shp	Pool
7	Batiment_Isole.shp	Isolated building	24	Piste_Sentier.shp	Foot path
8	Batiment_Precaire.shp	Informal building	25	Plantation.shp	Plantation
9	Chateau_d_eau.shp	Water tank	26	Point_Cote.shp	Spot height
10	Cimetiere.shp	Cemetery	27	Pont_Passerelle.shp	Practicable bridge
11	Cloture.shp	Fence	28	Route_non_Revetue.shp	Unpaved road
12	Construction_Precaire.shp	Complex housing	29	Route_Revetue.shp	Paved road
13	Courbe.shp	Contour line	30	Stade.shp	Stadium
14	Culture.shp	Cultivation	31	Talus.shp	Embankment
15	Cuve.shp	Tank	32	Vegetation.shp	Vegetation
16	Ensemble_de_Batiments.shp	Assembly building	33	Voie_Ferree.shp	Railway
17	Haut_Talus.shp	Head of slope	34	Zone_Inondable.shp	Inundation zone

Source: JICA Study Team

3.2.2.2 1:50,000 scale maps

Figure 3.5 shows the collected map data extent which is bounded by the red line.

Part 1 Current Conditions and Planning Prerequisites for the Urban Master Plan



Source: JICA Study Team

Figure 3.5 1:50,000 Topographic map coverage

The acquired data specifications for 1:50,000 scale Topographic map are as follows.

- Reference ellipsoid: CLARK1880
- Coordinate system: UTM 30N
- Height datum: Abidjan
- Data file format: Shape file

The following datasets are available in shape file format.

Table 3.3 1:50,000 datasets

No.	Data file name (French)	Description
1	foret.shp	Forest
2	habitat.shp	Housing
3	hydro.shp	Water body
4	hydro_200.shp	Water body retrieved from 200K scale map
5	ligne_HT.shp	High tension power line
6	lim_adm.shp	Administrative boundary
7	ocs.shp	Land cover
8	oro_200.shp	Contour line retrieved from 200K scale map
9	oro.shp	Contour line
10	plan_eau.shp	Water surface
11	route.shp	Roads

Source: JICA Study Team

of the map data were updated using only 2D-dimensional features by simply overlaying satellite imagery based on the 1980's maps. On the other hand, for 1:50,000 scale map data, some of the data were retrieved from a smaller scale map of 1:200,000, which is an unusual way for map compilation. As a result, data positional accuracy may vary in different locations, due to the use of different data sources, methodologies, time frame and accuracy level verification especially in the "Blue area" and in the portions between the Blue and the Red areas.

3.2.5 Map Specifications

3.2.5.1 Reference system

A reference coordinate system following the specifications of CCT was applied for the topographical mapping in this work. Parameters for the selected reference coordinate system are shown below:

Parameters for the selected reference coordinate system:

- Projection: Universal Transverse Mercator zone 30 North
- Meridian of origin: Greenwich
- Latitude of origin: Equator
- Longitude of origin: 3° 00' West of Greenwich
- Scale factor: 0.9996
- False easting: 500,000 m
- False northing: 0 m
- Reference Ellipsoid: World Geodetic System 1984
- Datum: WGS 1984

3.2.5.2 Determination of the map specifications

Symbolization is a process of transforming GIS point, line and polygon data into symbolized map features using map specifications regarding the symbols and styles. First, based on MCLAU's instruction, the map specifications for the 1:10,000 scale simplified digital base maps were determined through discussions with DTC and CCT staff. The map symbols and styles were extracted from the existing 1:5,000 scale topographic maps. The map specifications include feature name, feature code, shape of symbol, definition of feature, data structure as well as data type. Symbol properties such as line characters, line weights, color, size, etc., were determined based on the map symbol specifications. Table 3.4 below shows an example of the map specifications for road features, while appendix C includes the complete map specifications.

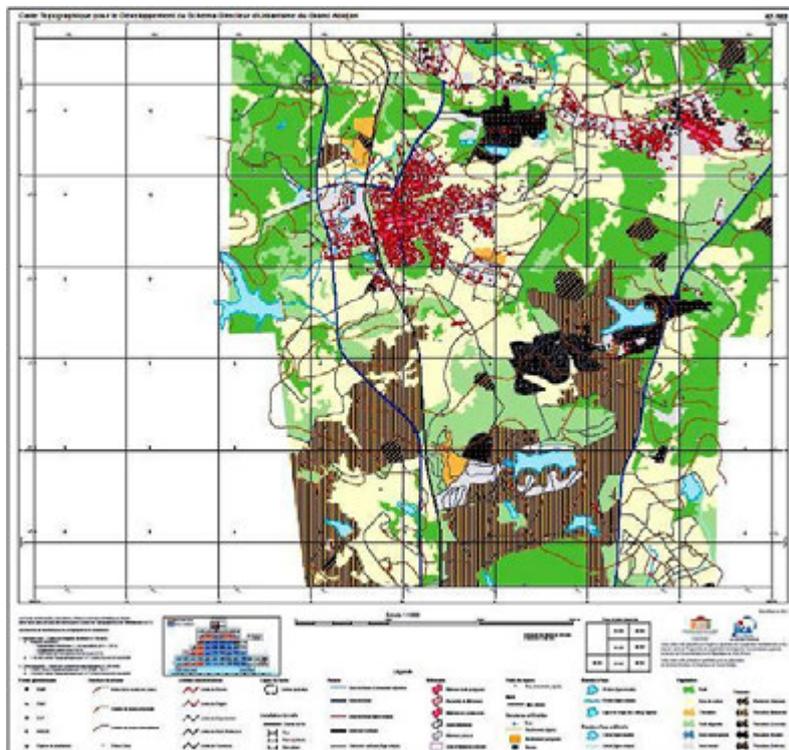
Second, a draft design of marginal information was created based on the map specifications. After discussing with DTC and MCLAU, a revised final version was created. Figure 3.7 below shows the final marginal information. Subsequently, map sheets were arranged with marginal information, and print-ready digital map files were produced in PDF (Portable Document Format).

Furthermore, on-scale paper maps approximately corresponding to A0 size are produced and delivered to MCLAU.

Table 3.4 An example of road features

18	Transport	Routes	4	1	Voies revêtues à chaussées séparées	4102	•	Nom		La route à chaussées séparées sera défini par les deux côtés de bord de route avec une épaisseur de 0,2 mm, de couleur R= 0 G= 66 B=255 avec un remplissage intérieur de couleur R= 255 G= 33 B=59. Un trait central d'épaisseur 0,1 mm de couleur R= 0 G= 66 B= 255 complètera la representation.
19	Transport	Routes	4	1	Voies revêtues	4103	•	Nom		Une voie revêtue indique une voie goudronnée ou pavée d'une largeur de 10m ou plus connectant une zone urbaine et une zone locale et / ou une route principale dans la municipalité. La voie revê tue sera définie par les deux côtés de bord de route avec une épaisseur de 0,1 mm, de couleur R= 0 G= 66 B=255 avec un remplissage intérieur de couleur R = 255 G= 0 B=0.
20	Transport	Routes	4	1	Voies revêtues (ligne unique)	4104	•	Nom		Une ligne centrale de la route goudronnée avec une largeur de 10 m ou moins doivent être acquises. En outre, un nœud doit être acquis à l'intersection de deux routes.
21	Transport	Routes	4	1	Voies non revêtues	4105	•	Nom		Une voie non revêtue indique une voie non goudronnée ou non pavée d'une largeur de 10m ou plus. La voie non revêtue sera définie par les deux côtés de bord de route avec une épaisseur de 0,075 mm de couleur R= 0 G= 0 B=0 avec un remplissage intérieur de couleur R = 242 G= 242 B=242.
22	Transport	Routes	4	1	Voies non revêtues (lignes unique)	4106	•	Nom		Une ligne centrale de la route en terre battue avec une largeur de 10 m ou moins doit être acquises. En outre, un nœud doit être acquis à l'intersection de deux routes.

Source: JICA Study Team



Source: JICA Study Team

Figure 3.7 Sample of the Final marginal information

3.2.6 GPS Survey of Ground Control Points (GCPs) for satellite imagery orientation

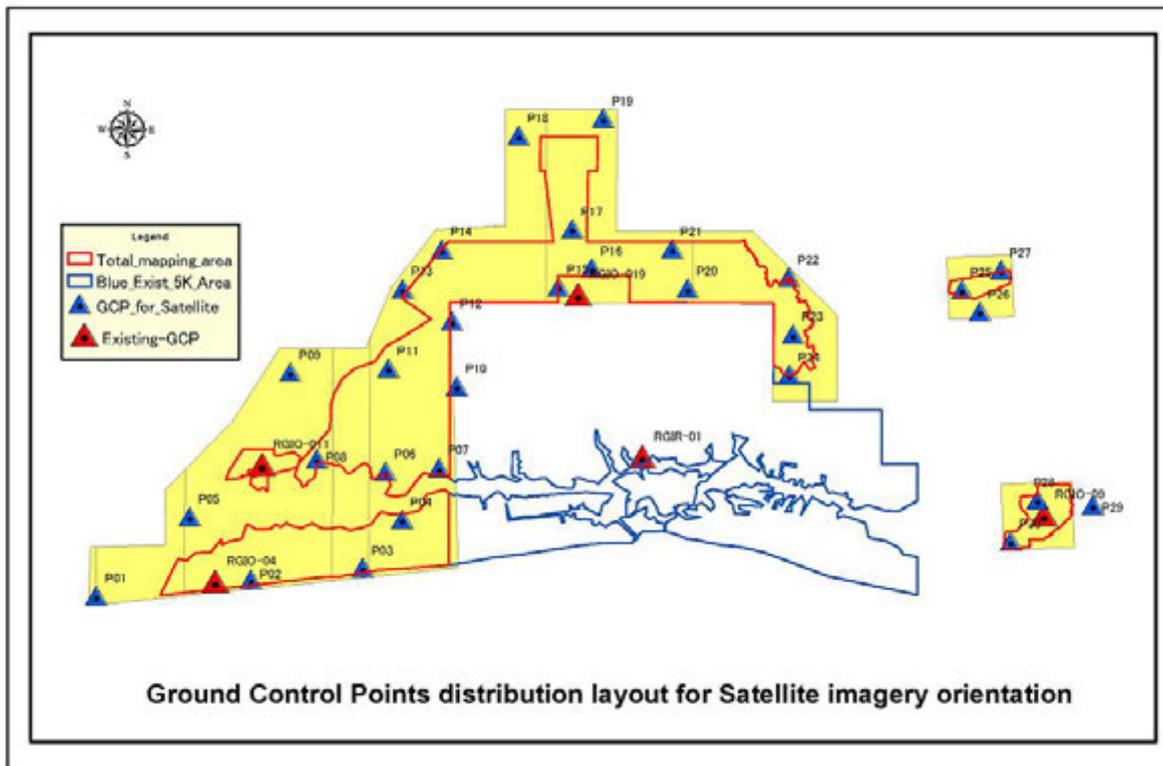
A ground control point is a point on the surface of the Earth where both image coordinates (measured in rows and columns) and geographic coordinates (measured in meters for northing and westing) can be identified. The objective of a GCP survey is to acquire geographic coordinates using Global Positioning System (GPS) instruments. The collected geographic coordinates of the GCPs were subsequently used for orthophoto rectification and geometric correction as mentioned above.



GPS observation at a road intersection
 Source: JICA Study Team

GPS observation was executed from March to April 2013 by the CCT under the supervision of the JICA Study Team. Taking into consideration the distribution of satellite images, GCPs establishment sites were selected mainly from road intersections as well as large objects and structures, which are clearly visible on satellite images. As a result, a total of 30 GCPs were established.

Figure 3.8 shows the locations of GCP establishment sites. Red colored triangles indicate the existing national geodetic points, while blue colored triangles indicate newly established GCPs sites.



Source: JICA Study Team

Figure 3.8 GCP establishment sites

All the triangles were linked to either national geodetic control points or adjacent triangles. Finally, a positional accuracy assessment was conducted for the acquired GCPs. Table 3.5 below shows the overall precision of the closure error of baseline measurement analysis from the existing national geodetic control points for each GCP. The precision is indicated by standard deviation in X, Y and Z directions for each GCP. The standard deviation for X and Y (Horizontal accuracy) is 0.11 meters and Z (Vertical accuracy) is 0.08 meters which are both within the required accuracy of 0.5 meter. As a result of the good accuracy achieved, the acquired GCPs were employed for the subsequent image processing.

Table 3.5 GCP precision by baseline measurement analysis

Point No.	$\Delta X(m)$	$\Delta Y(m)$	Vector length	$\Delta H(m)$	Point No.	$\Delta X(m)$	$\Delta Y(m)$	Vector length	$\Delta H(m)$
P01	0.02	0.02	0.03	0.05	P16	0.01	0.01	0.02	0.04
P02	0.02	0.02	0.03	0.05	P17	0.07	0.24	0.25	0.21
P03	0.01	0.01	0.02	0.04	P18	0.02	0.02	0.03	0.08
P04	0.01	0.01	0.02	0.03	P19	0.02	0.04	0.05	0.07
P05	0.01	0.01	0.02	0.04	P20	0.01	0.02	0.02	0.03
P06	0.01	0.02	0.02	0.05	P21	0.02	0.02	0.02	0.06
P07	0.01	0.02	0.03	0.05	P22	0.02	0.02	0.03	0.07
P08	0.02	0.02	0.03	0.09	P23	0.16	0.33	0.36	0.29
P09	0.01	0.02	0.02	0.03	P24	0.12	0.42	0.43	0.31
P10	0.02	0.02	0.03	0.06	P25	0.01	0.02	0.02	0.04
P11	0.02	0.03	0.03	0.08	P26	0.02	0.02	0.03	0.07
P12	0.01	0.01	0.02	0.04	P27	0.02	0.02	0.03	0.06
P13	0.03	0.02	0.04	0.07	P28	0.02	0.02	0.02	0.05
P14	0.02	0.02	0.03	0.07	P29	0.02	0.02	0.03	0.05
P15	0.14	0.15	0.20	0.27	P30	0.01	0.02	0.02	0.04

Source: JICA Study Team

3.2.7 Digital mapping and compilation

The satellite images covering the entire Red area were geometrically corrected taking into consideration terrain conditions. Firstly, the satellite images observed between 2010 and 2013 were ortho-rectified using *Shuttle Radar Topography Mission* (SRTM) data with a spatial resolution of 90 m and ground control points (GCPs) acquired during the GPS survey work. Subsequently the satellite image mosaics were registered to the Universal Transverse Mercator (UTM) map projection (Zone 30N) using ground control points (GCPs) obtained from the ortho-rectified satellite image mosaics and the rational polynomial coefficient (RPC) model which is a generalized sensor model, with a geometric (location) error within 1.88 meters in standard deviation (Table 3.6). Note that all the satellite images were ortho-rectified. Additional information such as existing topographic maps and Google Earth were used to fill in blanks created from cloud cover and shadow removal. Lastly, based on the map specifications, all the map feature data were acquired from these ortho-rectified images.

Table 3.6 Overall geometric errors in the ortho-rectified satellite images

Point No.	$\Delta X(m)$	$\Delta Y(m)$	Vector length	Orientation	$\Delta Z(m)$	Remarks	Point No.	$\Delta X(m)$	$\Delta Y(m)$	Vector length	Orientation	$\Delta Z(m)$	Remarks
P01	0	0	-	-	-3.19	Height control	P16	-5.21	3.6	6.33	SE	-0.59	
P02	-0.2	1.21	1.23	S	-9.89		P17	0.07	3.65	3.65	S	0.3	
P03	-1.17	3.88	4.06	S	-6.15		P18	0.33	-1.39	1.43	N	0.08	
P04	4.09	2.13	4.62	SW	-4.19		P19	-3.3	1.3	3.55	SE	-3.76	
P05	0.61	-0.49	0.78	NW	-3		P20	0.27	-2.31	2.33	N	-1.09	
P06	-3.63	-1.47	3.92	NE	1.54		P21	-0.0004	-0.0004	0.0006	NE	3.59	
P07	-1.54	2.49	2.93	SE	-1.93		P22	-0.74	3.42	3.5	SE	-1.47	
P08	3.16	-4.47	5.47	NW	-3.25		P23	-0.97	1.25	1.58	SE	-5.25	
P09	-0.52	2.73	2.78	S	-1.51		P24	1.28	-3.01	3.27	NW	-3.51	
P10	0	0	-	-	-9.8	Height control	P25	1.85	4.24	4.63	SW	-2.6	
P11	6.38	-4.47	7.79	NW	-4.18		P26	-0.0001	0	0.0001	E	-5.33	
P12	-13.36	-3.74	13.88	NE	-1.79		P27	-1.02	-1.08	1.49	NE	-2.93	
P13	1.68	3.28	3.69	SW	-0.38		P28	1.91	4.07	4.49	SW	-7.39	
P14	1.53	-1.7	2.29	NW	-3.7		P29	0	0	-	-	-5.74	Height control
P15	3.17	-2.71	4.18	NW	-3.67		P30	0.71	1.68	1.82	SW	-4.65	

Source: JICA Study Team

Alternately, the ortho-rectified images for the Blue area were generated for reference purpose using existing topographic data based on GCPs obtained from the geometrically corrected existing 1:5,000 scale topographic maps. Furthermore, the satellite images were ortho-rectified using SRTM data with the same technology used in the Red area.

3.2.8 Field identification survey

A field completion survey was performed in order to obtain three main components, field identification for features (specifying feature segments), field identification for annotations (identifying correct names and position) and field identification for land use (identifying categorized areas, especially plantation categories) based on the map specifications prepared in this work (Table 3.7).

Table 3.7 Items of data acquisition through field completion survey

Data theme (Détails Thème)	Data type (Type de données)				
	Point	Line	Polygon	Attribute 1	Attribute 2
Contrôle du réseau géodésique	5	-	-	Point name	Height
Hypsographie	1	3	-	Height	-
Limites	-	1	6	Name	-
Transport	-	10	-	Name	-
Utilitaires	-	3	6	-	-
Utilitaires	1	-	-	Name	-
Hydrographie	-	2	4	Name	-
Environnement naturel	-	-	7	Name	-
L'utilisation des terres	-	-	13-20	Name	-

Source: JICA Study Team

During the field identification and completion of features the results of the photo interpretation, digital mapping and editing for identifying necessary features in the field were used. Through this work, any

queries encountered during the image interpretation, mapping and editing as well as specifying feature segments such as a code, name, data and type were clarified.

The field identification survey was conducted from 31st July to 3rd September, 2013 and a total of 1,585 point data were collected from the whole of the Red area.

3.2.9 Digital compilation of field identification survey results

Based on the above-mentioned three main components, the collected field data that consists of GPS point data as well as data sheets were used as absolute reference data for digital compilation, especially the identification of plantation categories such as oil palm, rubber, coconut and banana, which were particularly complex using only satellite images.

3.2.10 Checking on data for output maps

Based on the result of the field identification survey and the agreed marginal information, all the map feature data were finalized. A visual check was performed on each map sheet created and recorded into the quality control sheets shown in Table 3.8.

Table 3.8 A sample of quality control sheet

Digital data for mapping/editing/print				CHECK LIST			Checked Date : _____				
Project Name	Sheet Name/No.		Mapping Scale	Volume		Executive Organization			Chief Engineer	Checked by	
				Km ²							
Marginal Information			Item	Missing	Error	Building & Related Features			Vegetation		
Item	Missing	Error	Building/Other Structure Name			Item	Missing	Error	Item	Missing	Error
Sheet Name/No.			Place Name			Built-up Area			Vegetation Boundary		
(include Adjoining Sheet)			Road, Railway			Prominent Building			Symbol		
Neat & Grid Line			Terrestrial Name			Building Symbol			Topography		
Coordinates Value etc.			River, Lake, etc.			Others			Item	Missing	Error
Administrative Index			Others			Small Objects			Contour		
Azimuth			Roads & Related Features			Item	Missing	Error	Distorted Surface Area		
Sheet History			Item	Missing	Error	Symbol			Contour Value		
Planning Executing Org.			Road Symbol			Position			Relative Height		
Others			Road Shape			Restricted Area			Boundary		
Control Points			Cross & Elevated Section			Item	Missing	Error	Item	Missing	Error
Item	Missing	Error	Bridge, Tunnel			Symbol			Symbol		
Triangulation Point			Cutting, Embankment			Position			Shape		
Bench Mark			Others			Limitation			Other Check Items		
Direct Leveling			Railway & Related Features			River, Lake, Pond and the Like			Item	Missing	Error
Spot Height			Item	Missing	Error	Item	Missing	Error	Matching		
Pass & Tie Point			Railway Symbol			Shape			Line Density		
Annotation			Railway Shape			Related Structure			Line Weight		
Item	Missing	Error	Cross & Elevated Section			Direction of Flow			Scratch, Smear, etc.		
Administrative Name			Station, Switchyard			Shore Line					
Residential Name			Others			Others					

Source: JICA Study Team

3.2.11 Creation of digital data files

The digital data of the 1:10,000 scale simplified digital base maps and the 1:100,000 scale wide-area simplified digital base maps were stored on DVD.

3.2.11.1 Topographic feature dataset

The digital data of the 1:10,000 scale simplified digital base maps and the 1:100,000 scale wide-area simplified digital base maps were stored on DVD. The data file formats are indicated below. The data export was done within the range that is manageable by a computer and manual correction work was not done in accordance with the contract technical specifications.

- 1:10,000 scale simplified digital base map
 - Vector data : SHP, DWG (Ver.2008) and KML
 - Raster data : PDF format
- 1:100,000 scale wide-area simplified digital base map
 - Raster data : PDF format

3.2.11.2 Format optimized for print

Print-ready raster data maps for both at 1:10,000 and 1:100,000 scale were produced in PDF format for enabling viewing and printing using PDF software.

3.2.11.3 Paper maps

In addition to the digital products, the following output maps were delivered.

- 1:10,000 scale simplified digital base maps (73 sheets * 2 sets = 146 sheets)
- 1:100,000 scale wide-area simplified digital base maps (1 sheet * 6 sets = 6 sheets)

3.2.12 Arrangement of simplified digital base maps

The digital data files were stored on DVD, which are attached to the Progress Report as a supplemental volume.

3.3 Conclusions and Recommendations

As mentioned above, in the Red area, ortho-rectified images were produced by an adjustment of the results of the GPS survey, while in the Blue area, the ortho images were oriented based on the control points obtained from the existing topographic maps. On the other hand, accuracy level checking of height information in both areas was conducted using SRTM-3.

As a result of the data assessment, different specifications (such as satellite sensors, observation timing, survey method for ground control points, field identification survey and a combination of the existing map data usage) between the Red and the Blue areas affect multiple locations provoking discrepancies. Consequently, the topographic maps in two areas produced in this work have different accuracy as well as inconsistent data of uncertain origin.

It is therefore, implied that the products of this work should be used solely for the specific purpose of the urban master plan. Given the above mentioned reasons, the final products will not be suitable for future updates or studies. The creation of comprehensive new and accurate digital data is therefore, strongly recommended in order to harmonize all the data and to have up-to-date high quality digital mapping data.

Japan International Cooperation Agency (JICA)

Ministry of Construction, Housing, Sanitation and Urban Development (MCLAU)

The Project for the Development of
the Urban Master Plan in Greater Abidjan
in the Republic of Côte d'Ivoire (SDUGA)

Final Report

March 2015

Volume II

Urban Master Plan for Greater Abidjan and
Other Project Related Tasks

Part 2

Urban Master Plan for Greater Abidjan

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1.0 Introduction

1.1 Greater Abidjan Urban Master Plan 2030

The Urban Master Plan 2030 for Greater Abidjan is based upon the results of available data collected, evaluation of the Master Plan 2000, analysis of the current pressures for growth, and status of existing and proposed development throughout the study area. The Final Report stage of the SDUGA Study describes the Greater Abidjan Urban Master Plan 2030 a major deliverable of SDUGA Study.

The Urban Master Plan has been prepared in tandem and fully integrated with the Urban Transport Master Plan that forms a self-contained part of the Final Report.

The Urban Master Plan was guided by:

- The Framework of Greater Abidjan
- Regional Land Use Policies
- The Framework for New Urban Development / Area Development

The Côte d'Ivoire planning law defines the requirements for a Schema Directeur. The Urban Master Plan prepared by the JICA Study Team is formulated with due consideration of the requirements for the plan as set out under that law. The Urban Master Plan therefore, provides an urban planning framework to guide the MCLAU in fulfilling their statutory responsibility to prepare the final Schema Directeur d'Urbanisme for Greater Abidjan. In addition the Urban Master Plan includes two items beyond those defined in the law. These items are considered essential to achieve sustainable urban development for Greater Abidjan over the master plan period. One is a comprehensive set of land use sector policies to unify the actions of the many stakeholders and thus ensure a fully integrated master plan. The other is an implementation framework that takes account of the statutory decentralization responsibilities of all stakeholders, enacted since the Master Plan 2000, to enable full coordination in plan making, funding, implementation of projects and development control.

The Greater Abidjan Urban Master Plan 2030 under the SDUGA Study comprises the following, as set out in the Inception Report and subsequently agreed with MCLAU;

- Spatial Strategy 2030
- Implementation Strategy 2015 – 2030
- Land Use Framework 2030 - for 10 Urban Units, including the expansion areas
- Land Use Sector Policies for Greater Abidjan - 191 no.
- Detailed Urban Plans for 2 suburban growth areas, including land use zoning guidelines.

1.2 Background

Abidjan is the economic capital of Cote d'Ivoire. The city has developed around the Port of Abidjan, a premier economic growth driver of the country, and the main port for the inland nations of Mali, Burkina Faso and Niger. Master Plans for Abidjan have been formulated and passed into law on a regular basis since Cote d'Ivoire independence to guide future spatial and economic development and address issues arising from rapid urbanization, urban area expansion and population growth. In the case of the later, comprising both native Ivorian's as well as a substantial immigrant population from other West African countries.

The earlier Master Plans for the city directed the expansion of the city from its original core of the mainland Plateau and Adjame communes and the island communes of Petit Bassam, along each of the cardinal points. On the mainland this growth has been; north to Abobo, west to Attecoube and Yopougon, and east to Cocody. In the south growth has been along the 'cordon littoral' of the Atlantic coast within Port Bouet commune. With this expansion the urban area of the Abidjan outgrew first its core communes and then its District environs (some 10 communes) to become by 2002 the Abidjan Autonomous District (AAD), comprising a total of thirteen communes with the incorporation of Anyama, Bingerville and Songon.

The rate of expansion, urban spread and population, has outpaced the implementation of the major projects set out in the various Master Plans for Greater Abidjan over the past twenty years. An unfortunate combination of economic slowdown in the late 1980's, and more recently the socio-military crisis has left unresolved, amongst other things:

- the urgent urban renewal initiatives for Plateau first formulated in the 1960's;
- the implementation of major strategic roads, drainage and sewage projects since the mid 1980's; and
- the provision of industrial zones, urban centre revitalization in older communes, removal of informal settlements, upgraded social infrastructure and the provision of a quality public transit system identified in the 1990's.

The proposals contained in the earlier Master Plans are dynamic and were well-targeted to address the problems of the city and capture the opportunities for economic growth and a better quality of life for its residents and workers. Unfortunately, the problems have continued and the urban and social environment of the city has deteriorated since the 'MP 2000'. With the peace agreement now in place the Government has identified the need to revisit the earlier plans both in ensuring sustainable growth for the city and supporting the achievement of the national vision set out in the "Strategy for Relaunching Development and Reducing Poverty 2012 -2015".

In setting the scope for SDUGA Government has recognized that the pressure for urban growth has not been curtailed within AAD. The economic engine of Abidjan is currently stimulating development, both Government planned and private sector opportunistic, beyond AAD. In some cases new development is to service the city and in other cases to take advantage of the city's proximity. Thus large rural towns, some as far as 40km from Abidjan city centre, are undergoing increased urbanization and themselves creating the demand for housing and employment opportunities. The influence of Abidjan is currently extending to a regional scale that includes a substantial rural hinterland.

The SDUGA study covers some 4,311km² of area as coloured in Figure 1.2. Within this study area, it includes the planning area as outlined in the previous figure by the red dotted line, which covers some

3,492km² to include the AAD (green colour) and six new commune areas (yellow colour and hatched sub prefectures); Alepé, Azaguié, Bonoua, Dabou, Jacqueline and Grand Bassam. In total the area contains a current population of some 5.0 million in 2014 that is projected to grow to 7.6 million by 2030.



Figure 1.1 View toward Abidjan Port from Plateau



Source: JICA Study Team

Figure 1.2 Greater Abidjan Study Area and Planning Area

1.3 Strategic Planning Documents

The Urban Planning Law for Cote d'Ivoire "LAW N° 62-253 OF JULY 31st, 1962 ON URBAN PLANS" sets out the role and contents of the Urban Master Plan ("Des Plans d'Urbanisme Directeur"). It is under this Planning Law that the Schema Directeur d'Urbanisme du Grand Abidjan 2000 was gazetted in 2000. The responsibility for formulating the plan lies with the Ministere De La Construction, du Logement, De L'Assainissement Et De L'Urbanisme (MCLAU).

The SDUGA project Greater Abidjan Urban Development Framework is the urban planning document to set out the broad spatial strategy for the sustainable development of Greater Abidjan. Its primary component will be the land use framework and supporting land use policies to cover the Greater Abidjan region. The Greater Abidjan Urban Development Framework together with Transport Master Plan, both to be issued under separate cover, will comprise the Development of Urban Master Plan in Greater Abidjan submission for the SDUGA project.

The JICA Study Team has no legal standing to prepare Master Urban Plans for statutory approval. The role of the Greater Abidjan Urban Development Framework report is to provide land use planning direction and justification to enable MCLAU to develop the proposals and further to fulfil the statutory requirements for the Urban Master Plan for Greater Abidjan.

1.4 Purpose of the Greater Abidjan Urban Development Framework

The Greater Abidjan Development Framework will set out an urban planning strategy in the form of land use and policy framework to direct and manage growth, taking into account the proposals of the Schema Directeur d'Urbanisme du Grand Abidjan 2000, in a sustainable and equitable manner. The strategy will balance the opportunities for beneficial economic growth with the physical and inherent natural landscape character of the area. The aim is to establish urban renewal and urban expansion areas as well as satellite settlements that provide high quality living and working environments for residents, workers and visitors. The underlying intention of the spatial strategy is that it should be:

- directed by government thorough the normal development control process, and by the implementation of strategic, catalyst transport and urban centre development on public land with the support of private sector investment, and
- driven by the private sector through the development of privately owned land and redevelopment of urban centres through urban renewal.

2.0 | Socio-Economic Framework for Greater Abidjan

2.1 Introduction

The purpose of this chapter is to provide the socio-economic framework for the Greater Abidjan. It is a framework for the Urban Master Plan and the Urban Transport Master Plan, and not intended to be a comprehensive socio-economic study. As such, it determines major indicators, including population, employment and economic growth in the Greater Abidjan.

A socio-economic framework plays two major functions in planning. Firstly, it provides various sectors of urban activities and their geographical extent with common baselines and broad indicative targets for planning. This function is important particularly in multi-sector planning, including urban planning. With those common baselines and targets, a development can be harmonized among various sectors and their corresponding geographical extent in planning. Secondly, it provides a base for the estimates of demand for facilities, infrastructures or services required for sector planning, including transport planning.

In the planning of the Greater Abidjan, the socio-economic framework analysis focuses on the magnitude and speed of urbanization in the national and international economic perspectives. It also focuses on the spatial consequence of the urbanization. The socio-economic framework has thus been prepared based on the analysis result of past trends and assumptions on conceivable changes in future economic, social, spatial and policy environments. Special attention has been paid to the growth potential of Abidjan as a magnet of the Western African economy to attain a sustainable development speed and patterns of urban space expansion.

This socio-economic framework is based on two major constituents that are national and regional development in the future. Firstly, the national economy is now back on the track of a sustained growth in the long-term, after experiencing large fluctuations due to the repeated socio-military conflicts during the past two decades. Secondly, Abidjan is and will be a major trade and business city, which holds one of the largest international ports in Africa. The trade and business as a leading sector of Abidjan will keep attracting increasingly diversified investments such as those in construction, transport, manufacturing, finance, etc.

The socio-economic framework at the metropolitan level has been translated into the one at the commune level, taking into account the spatial aspect of socio-economic activities at present, the proposed spatial pattern of urban and transport development and the proposed scenario for urban land use and infrastructure development.

The socio-economic framework makes reference to the base year being 2014 and the target years being 2020, 2025 and 2030. The base year indicators are set on the available statistical data or estimates by the JICA Study Team when required. The indicators for the target years are set based on the reference to

relevant national/international authorities, projections and policy assumptions prepared by the JICA Study Team. Data from the Cote d'Ivoire Government are primarily used, such as 1998 and 2014 Censuses and PND. Data from such international organisations as IMF, United Nations, and the World Bank has been used as the supporting data. Unfortunately, the 2014 Census results were not completely available at present but confined only to the population data. Therefore, the analysis of the socio-economic framework, such as the employment by industry and school enrolment, made best use of results from the Home Interview Survey (HIS), which was conducted in the current SDUGA Project.

2.2 Development Perspectives of Cote d'Ivoire and Greater Abidjan

2.2.1 National Development Plan (PND) 2012-2015

The government announced PND 2012-2015 in March 2012. Keywords of the plan are reconciliation, rule of law (for equity), cooperation, agriculture, employment, industry, education and health. In economic terms, it aims primarily at recovery, investment and growth. In the long-term, the plan envisages that Cote d'Ivoire will be an emerging country and a leading country in Sub-Saharan Africa by 2020. The plan describes that the national economy will be supported by a large middle income group and closely integrated in the global economy by that time.

For the planning period, the national economic growth is targeted at 10.0% a year, based on comparisons of three cases: the "Triumph of the Elephant" at 10.0%, the "Awaking of the Elephant" at 6.3% and the "False Start of the Elephant" at 3%. 10% economic growth is likely, taking into account the recent growth performance at 8.8% in 2012 and 8.9% in 2013. For comparison, the latest IMF estimate of the national economic growth rate is 9.6% in 2012 and 6.6-6.7% during the period from 2012 to 2016 in US\$ term adjusted by PPP.

PND intends to realize "a solid, sustainable and environmentally friendly growth" by reducing the heavy dependence of the national economy on a limited number of primary products, including cocoa and crude oil. To this end, PND emphasizes the elimination of bottlenecks to investments and competitiveness, and addresses the cross-cutting issues such as security, obstacles to transport, land registration and property, human resource development and damaged infrastructures. At the same time, PND emphasizes the integration of different regions and people through such policies as national territorial development, financial and administrative decentralization, the financial support to small- and medium-sized enterprises and urban social housing.

PND does not give explicit descriptions on Abidjan; however, it is apparent that Abidjan is going to play a leading role in strengthening competitiveness and diversifying the structure of the national economy. A solid, sustainable and environmentally friendly growth is exactly the desirable direction for the development of Abidjan. The cross-cutting issues raised in PND are all crucial to the development of Abidjan, especially the obstacles to transport, land registration and property, human resource development and damaged infrastructures. Likewise, a series of the policies to integrate different regions and people are an important premise to discourage Abidjan from expanding at an unmanageably fast speed and encourage regions is benefitted from the development of Abidjan. In this way, development of Abidjan is for the people not only in Abidjan but in all of Cote d'Ivoire.

2.2.2 Economy of Cote d'Ivoire and Abidjan

The GDP of Cote d'Ivoire has steadily expanded in the past 30 years in terms of US dollars at current prices, in spite of occasional socio-economic conflicts. Major factors to this long term growth have been:

- 1) Continued export of major cash crops, including cacao.
- 2) Production and refinement of petroleum, especially recently with the petroleum refinery capacity at Abidjan being the third largest in Africa.
- 3) Supply of services and products to Western African countries.

Actually, Cote d'Ivoire is a surplus exporting country of all of the African countries, except South Africa and Egypt. It is the third largest country after South Africa and Nigeria in the amount of export to African countries. It is number two after Kenya in terms of relative magnitude of African countries in the total amount of export. It is virtually Abidjan that supplies these services and products.

- 4) The service sector, which supports factors 1), 2) and 3) above, i.e. transport, distribution, communications, repair, finance, construction, etc.

Cote d'Ivoire has a relatively large proportion of the service sector in GDP among African countries.

A key to these factors has been the Abidjan Port. The port handles the largest volume of bulk and general cargo in Africa and the second largest volume of container cargo.

The economic structure above has naturally associated itself with a large degree of urbanization. The proportion of the urban population has increased from 28% to 51% during the period 1970-2010, compared to 20% in 1970 to 36% in 2010 on average in the whole of Africa (estimated by the UN Population Division). The urban concentration is remarkable particularly in Abidjan. Among African cities, Abidjan is the sixth largest in population and fifth largest in urban primacy that represents a proportion of city population in the national total.

The fast urbanization in the past has been contributed to by a large amount of immigration from surrounding countries. About half of the migrants are supposed to have been absorbed into agriculture and the remaining half into the urban informal sector, particularly in Abidjan. The national population has increased at a very high rate, which was 4.2% per year during the period 1955-85. Recently, the growth has slowed down to reach about 2.6% a year (1998-2014), which is almost the same rate of Sub-Saharan African average.

Meanwhile, agriculture is coming to a limit. An alarming issue is food self-sufficiency. It is 70% at present. The proportion of domestic production in the total cereal consumption has declined from 81% to 55% during the period 1979-2009. Cereal import has rapidly been expanding especially from Thailand and other Asian countries. The area of arable lands expanded until the mid-1990s but reached a ceiling since then. It is reported that recent social conflicts have been triggered partly by the price hike of foods. Protection of agriculture is now important for national stability, because one often finds the agricultural lands with sufficient precipitation and good market access in places where urban areas are expanding. Reduction of area is also remarkable in forested areas. Cote d'Ivoire once had the largest forest area in West Africa. However, the proportion of the forest area in the total area of the country has declined from 42% to 33% during the period 1990-2010.

Foreign Direct Investments (FDI) is a major possibility for the national economy in the future. FDI has rapidly been recovering upon the start of the current administration. The total amount of FDI was 190 million US dollars in the 1990s, 320 million in the 2000s and 480 million in 2012. The amount is anticipated to keep increasing. Major contents of the investments include food processing, petroleum production and mining. In connection with these, FDIs are also active in transportation, distribution, construction, hotels and communications. Investors are traditionally from France, Lebanon and Switzerland. Recently, investors are active also from China, India and Singapore. These investments are made mostly in Abidjan. FDI will be a major engine for the national growth. In addition, it will play a leading role in broadening the technical and managerial base of Cote d'Ivoire and of Abidjan in particular.

2.2.3 Implication of the National and International Economy for Abidjan

Abidjan is the hub of the cross national linkages in Western Africa as well as the inter-regional linkages within the country, as shown in Figure 2.1.

The economic functions of Abidjan have evolved in the following order and a multi-level structure of these functions should basically remain the same in the future.

- 1) Buying in, secondary processing and export of agricultural fishing and forestry products.
- 2) Services in association with 1) above, including transportation, distribution, repair, financing, construction and communications.
- 3) Services as the centre of the domestic market as well as the markets of neighbouring countries, including transportation, distribution, repair, financing, construction, communications, medical service, education, training, etc.
- 4) More recently, logistics in support of the production, transportation and processing of petroleum and gas (the petroleum and gas exists close offshore of Dabou).
- 5) Commercial and service activities which are growing in response to the physical expansion, diversification and upgrading of the market of Greater Abidjan.
- 6) International businesses, including financing, tourism and airport based/related logistics. At present 21 out of the top 500 enterprises in Africa are located in Abidjan. This number is the largest agglomeration of leading businesses in Western Africa

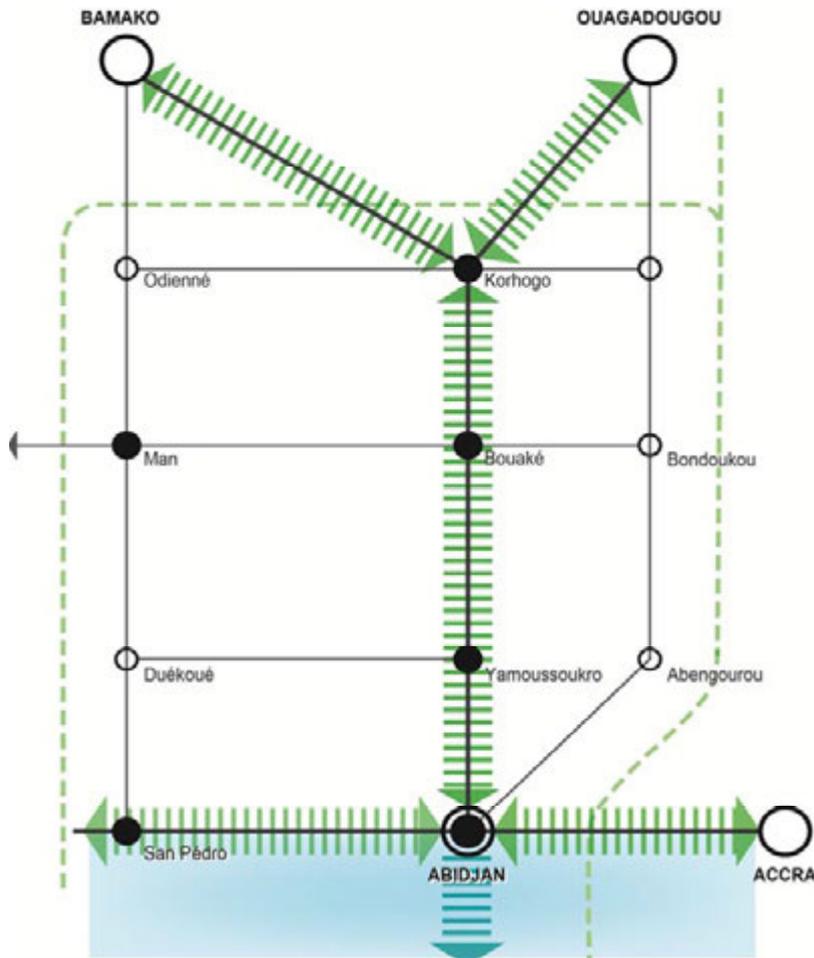


Figure 2.1 Major Linkages among Major Cities in and around Cote d'Ivoire: A Conceptual Diagram

In addition to the aforementioned economic functions of Abidjan, it is possible in the long-term for modern manufacturing activities to be attracted to Abidjan, such as electric, machinery and car industries. However, these industries cannot specifically be planned by the government. The role of the government is to continue to improve the climate for potential investors.

The economic functions above have been supported by the formal and the informal sectors. The informal sector is most likely predominant in the functions 1), 2) and 3) above. The informal sector employment accounts for more than 90% of the total employment according to INS statistics, though the statistical definition of “informal sector employment” is not clear. In any case, the relative proportion of the formal sector will increase in the future, especially in the functions 4), 5) and 6) above.

The urban space of Greater Abidjan has been expanding. However, the expansion is likely to bring about the reduction of good agricultural lands and undermine national food security. A compact city is not only an important issue for a sustainable environmental and efficient urban management, but also for national food security. It is now worth making various efforts toward achieving the concept of a compact city, since the influx of a migration rush has finished.

2.3 Future Socio-Economic Framework

2.3.1 Prospects of Economic Growth in Greater Abidjan

Based on the review of the PND and its performance, the economic prospects of the country and Abidjan, and the implications for the national and international economy for Abidjan, the annual rate of economic growth of Greater Abidjan (GRDP) is assumed for the short-term to be about 10% being the same target rate of the “Triumph of the Elephant” scenario of the ongoing PND and, for the long-term to be about 6.3% on average being the same target rate of “Awakening of the Elephant” scenario of PND. Table 2.1 and Figure 2.2 below show a likely growth path during 2013-2030.

Table 2.1 Estimated GRDP Growth Rates for Greater Abidjan

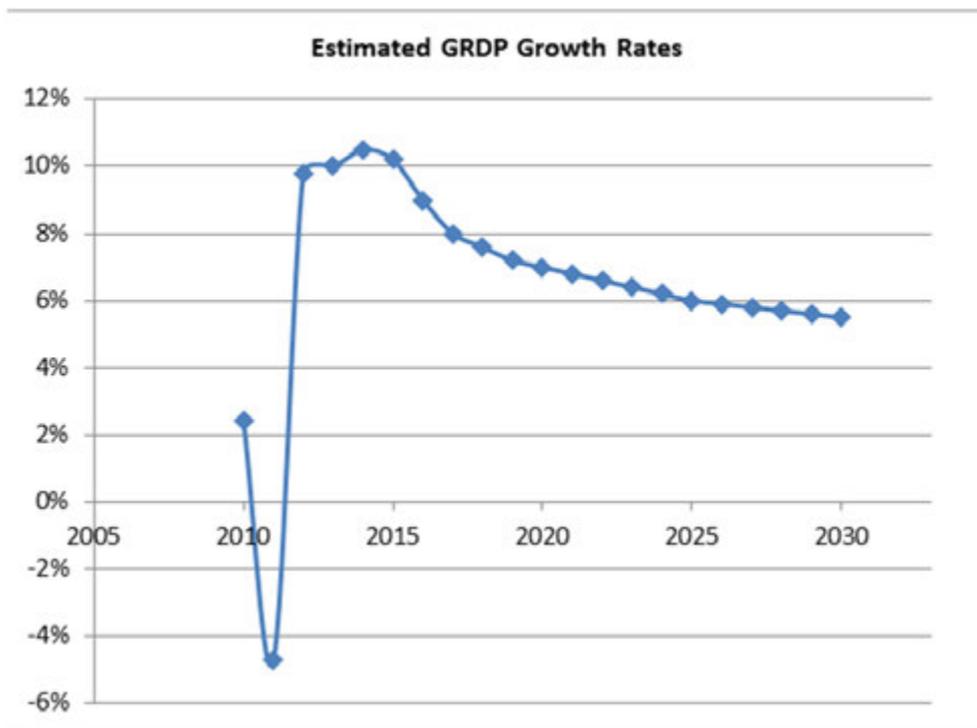
Year	Estimated GRDP Growth Rate	
2010	2.4%	}
2011	-4.7%	
2012	9.8%	
2013	10.0%	}
2014	10.5%	
2015	10.2%	
2016	9.0%	}
2017	8.0%	
2018	7.6%	
2019	7.2%	
2020	7.0%	
2021	6.8%	
2022	6.6%	
2023	6.4%	
2024	6.2%	
2025	6.0%	
2026	5.9%	
2027	5.8%	
2028	5.7%	
2029	5.6%	
2030	5.5%	

Social Military Conflicts

PND "Triumph of the Elephant"

PND "Awakening of the Elephant:"

Sources: PND Côte d'Ivoire Government, IMF and World Bank; JICA Study Team



Sources: PND Côte d'Ivoire Government, IMF and World Bank; JICA Study Team

Figure 2.2 Estimated GRDP Growth Rates for Greater Abidjan

2.3.2 Population of Cote d'Ivoire and Greater Abidjan

(1) Population of Cote d'Ivoire

The total national population grew at a very high rate at 4.2% a year for 30 years from 1955 to 1985 (Table 2.2). This is due to rapid migration from surrounding countries. The population growth, however, slowed down with the end of a migration rush and a greatly fluctuating national economy during the period from the early 1980s until the early 2000s. At present, the growth rate is steadily slowing down from 3.4% (1988-1998) to 2.6% (1998-2014) a year.

There has been no explicit policy on immigration in Cote d'Ivoire; however, the Presidential Emergency Program announced in April 2011 made reference to a possible immigration policy in a more in-depth manner than before. It states that those immigrants and their families who have already immigrated to Cote d'Ivoire are an essential part of the society. At the same time, it states that certain decisions will have to be made whether the country will continue to accommodate unrestrained immigration or to manage immigration more practically. It goes on to say that the national economy needs immigration while the government has to pay sufficient attention to the speed of immigration and the poor living conditions of immigrants in urban areas. The program describes the possibility to monitor immigration in line with the ECOWAS policy framework for migration.

Immigration is thus unlikely to increase as fast as before, due to the possible introduction of the policy to manage immigration and a declining income gap between Cote d'Ivoire and neighbouring countries. To be an emerging country, the current national development plan (PND 2013-15) emphasizes advanced

productive base and a broad range of middle income people, rather than an economy based on continuous input of unskilled labour.

Table 2.2 Population Trend of Cote d'Ivoire

Year	Total population (‘000 persons)	Period	Annual growth rate (%)
1950	2 630		
1955	3 072	1950-1955	3.1
1960	3 638	1955-1960	3.4
1965	4 424	1960-1965	4.0
1970	5 416	1965-1970	4.1
1975	6 768	1975-1975	4.6
1980	8 501	1980-1985	4.7
1985	10 495	1980-1985	4.3
Above Data Source: World Population Prospects, 2011 (Projection by UN for 1950-1985)			
1988 (Mar)*	10 816	-	-
1998 (Nov.)*	15 366	1988-1998	3.4
2014 (Jan.)*	22 671	1998-2014	2.6

Note*: Results of Population Census in 1998 and 2014, Data from INS

Based on the observation above, it is assumed that the national population will grow at a moderate level and the growth rates projected by the United Nations (UN Population Division, World Population Prospects: The 2012 Revision. File POP/1-1, Medium Fertility 2010-2100) have been adopted. Accordingly, the national total population in the future is estimated in Table 2.3 below.

Table 2.3 Future Population of Cote d'Ivoire

Year	Estimated Total Population (‘000 persons)	Growth Rate * (% p.a.)
2014	22 671**	-
2015	23 211	2.38
2020	25 904	2.22
2025	28 783	2.13
2030	31 841	2.04

Source:* UN Population Division, World Population Prospects, the 2012 Revision; ** 2014 Census Results

(2) Population in Greater Abidjan

The population has been concentrated in Abidjan. According to the Census in 2014, AAD represents 20.8% and Greater Abidjan represents 22.3% of the national total population. This percentage is already large by African standards. There are 25 primate cities with more than one million persons in Africa (Table 2.4). Among these African primate cities, Abidjan ranks, based on the UN projection for 2010, the sixth in population size and the fifth in relative proportion to the total national population. The urban primacy, in terms of the relative proportion of the primate city in the national total population, has been increasing in many African cities, including Abidjan. Out of the 25 cities, 17 of them show growing

primacy. These trends suggest that Abidjan would continue to increase its relative magnitude in the national total population without government intervention.

The Presidential Emergency Program 2011 devotes a chapter to regional decentralization with a stress on the administrative and financial decentralization to the regional and local levels, and a special facility to financially support development especially in remote regions. Accordingly, the government, the Ministry of National Planning and Development (MNPD) in particular, intends to encourage the rural areas to attract investments and promote employment, thereby discouraging Abidjan from urban expansion beyond the current government capacity to manage. This intention is reflected in a series of sector policies under the PND 2012-15, though it does not explicitly provide a regional decentralization policy. Thus, one can reasonably assume that the government will make every possible effort to manage the speed of urbanization so that it can maintain a balanced national development.

According to MNPD, Abidjan has been taking a large chunk of benefits from national economic expansion, while it has been faced by many urban problems. These problems are detrimental to not only Abidjan but also to the rest of the country. It is therefore conceivable that MNPD anticipates Abidjan will not further expand in population and urban area, but will be developed as a competitive city against other African cities in trade, industries, tourism, education and infrastructure. Consequently, Abidjan would remain as a major growth pole of Western Africa as well as Cote d'Ivoire.

Table 2.4 Urban Primacy in Africa

Country	Urban agglomeration	Proportion to the National Total				Population
		1980	1990	2000	2010	2010
Egypt	Al-Qahirah (Cairo)	16.3	15.9	15	13.6	11,031
Nigeria	Lagos	3.4	4.9	5.9	6.8	10,788
Democratic Republic of the Congo	Kinshasa	7.6	9.7	10.9	12.8	8,415
Angola	Luanda	12.6	15.2	18.6	25.1	4,749
Sudan	Al-Khartum (Khartoum)	15.4	23.1	25.4	26.9	4,516
Côte d'Ivoire	Abidjan	16.3	16.8	18.3	21	4,151
South Africa	Johannesburg	5.7	5.2	6.1	7.5	3,763
United Republic of Tanzania	Dar es Salaam	4.5	5.2	6.2	7.6	3,415
Kenya	Nairobi	5.3	5.9	7.1	8	3,237
Morocco	Dar-el-Beida (Casablanca)	10.8	10.8	10.2	9.4	3,009
Ethiopia	Addis Ababa	3.3	3.7	3.6	3.5	2,919
Algeria	El Djazair (Algiers)	8.6	7.2	7.5	8	2,851
Ghana	Accra	7.9	8.1	8.7	10.1	2,469
Benin	Cotonou	9.3	10.6	9.9	10	1,933
Mali	Bamako	6.8	8.6	10.1	12.6	1,932
Burkina Faso	Ouagadougou	3.7	5.8	7.5	11.6	1,911
Madagascar	Antananarivo	6.7	8.4	8.9	9.2	1,900
Zambia	Lusaka	9.2	9.6	10.5	13.1	1,719
Uganda	Kampala	3.7	4.3	4.5	4.8	1,594
Congo	Brazzaville	24.8	29.4	32.6	38.5	1,557
Togo	Lomé	12.9	15.3	18.9	24.1	1,453
Somalia	Mogadishu	8.6	15.7	16.2	15.3	1,426
Niger	Niamey	4.7	5.5	6.2	7.9	1,222
Mozambique	Maputo	4.5	5.7	5.6	4.8	1,132
Libya	Tripoli	21.6	19.9	19.5	17.5	1,111

Source: UN Population Division

Having in mind the current trends and the government intention above, the future population of Greater Abidjan was projected as follows:

1. The Greater Abidjan area is defined from different viewpoints. One is the GA area delineated by the administrative boundaries of the most outer Communes/Sub-Prefectures to be included in Greater Abidjan, and which is referred to as the “Study Area”. The other is the GA area delineated by such geographical features as rivers, mountains and roads which are considered the most likely limit of the development area for the urban master planning, and which is referred to as the “Planning Area” as shown in Figure 1.2.
2. The “Study Area” consists of Former AAD (10 communes), an additional 3 Communes/Sub-Prefectures that constitute the periphery of the Current AAD (13 communes/sub-prefectures in total) and 6 Communes/Sub-Prefectures adjoining to the Current AAD. These three areas are defined as “Core AAD”, “Peripheral AAD” and “Outside AAD”, respectively.
3. The recent inter-census population between 1998 and 2014 revealed that the growth rate of the Greater Abidjan population to be 2.68% p.a. for the Study Area, and it is very close to that of the national population growth rate of 2.6% p.a. Therefore, it is assumed that the future growth rate of GA population remains the same as it is at present (2.68% p.a.), despite the national population declines from 2.6% p.a. in 2014 towards 2.0 % p.a. in 2030.
4. The trends of current population growth in each area of GA are adopted for estimating the respective future population and which are adjusted to the GA total as set forth in the previous item. The estimation result is shown in Table 2.5.
5. The population of the GA Study Area is converted to that of GA Planning Area where only the Outside AAD population is affected as shown in Table 2.6
6. As a consequence, the population growth of both Core AAD area and Peripheral AAD area will slightly decrease in their speed but that of Outside AAD area will increase from 1.44% p.a. in 2014 to 1.86% p.a. in 2030.
7. A share of the population in the future, however, will be dominated by Core AAD, i.e. 89.7% followed by the Peripheral AAD to be 5.8% and Outside AAD to be 4.5% in 2030.

Table 2.5 Estimated Future Population of Greater Abidjan (Study Area)

Estimated Population by Area					
	1998	2014	2020	2025	2030
1 Core AAD	2,875,093	4,395,243	5,193,129	5,965,059	6,849,227
2 Peripheral AAD	224,071	312,161	355,522	396,054	441,045
3 Outside AAD	286,834	346,853	373,519	397,130	422,079
4 Greater Abidjan	3,385,998	5,054,257	5,922,170	6,758,243	7,712,351

Average Annual Growth Rate of Population by Area					
	1998	2014	2020	2025	2030
1 Core AAD	-	2.84%	2.82%	2.81%	2.80%
2 Peripheral AAD	-	2.21%	2.19%	2.18%	2.18%
3 Outside AAD	-	1.26%	1.24%	1.23%	1.23%
4 Greater Abidjan	-	2.68%	2.68%	2.68%	2.68%

%Share of Population by Area					
	1998	2014	2020	2025	2030
1 Core AAD	84.9%	87.0%	87.7%	88.3%	88.8%
2 Peripheral AAD	6.6%	6.2%	6.0%	5.9%	5.7%
3 Outside AAD	8.5%	6.9%	6.3%	5.9%	5.5%
4 Greater Abidjan	100.0%	100.0%	100.0%	100.0%	100.0%

Source: JICA Study Team

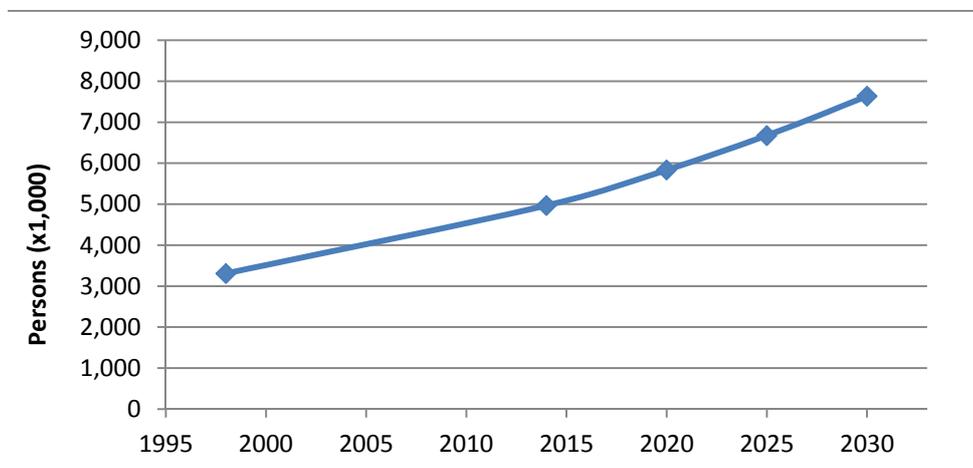
Table 2.6 Estimated Future Population of Greater Abidjan (Planning Area)

Estimated Population by Area					
	1998	2014	2020	2025	2030
1 Core AAD	2,875,093	4,395,243	5,193,129	5,965,059	6,849,227
2 Peripheral AAD	224,071	312,161	355,522	396,054	441,045
3 Outside AAD	209,389	260,140	287,610	313,733	343,994
4 Greater Abidjan	3,308,553	4,967,544	5,836,261	6,674,846	7,634,266

Average Annual Growth Rate of Population by Area					
	1998	2014	2020	2025	2030
1 Core AAD	-	2.84%	2.82%	2.81%	2.80%
2 Peripheral AAD	-	2.21%	2.19%	2.18%	2.18%
3 Outside AAD	-	1.44%	1.69%	1.75%	1.86%
4 Greater Abidjan	-	2.72%	2.72%	2.72%	2.72%

%Share of Population by Area					
	1998	2014	2020	2025	2030
1 Core AAD	86.9%	88.5%	89.0%	89.4%	89.7%
2 Peripheral AAD	6.8%	6.3%	6.1%	5.9%	5.8%
3 Outside AAD	6.3%	5.2%	4.9%	4.7%	4.5%
4 Greater Abidjan	100.0%	100.0%	100.0%	100.0%	100.0%

Source: JICA Study Team



Source: JICA Study Team

Figure 2.3 Greater Abidjan Population Projection

2.3.3 Age Structure, Number of Households and Students in Greater Abidjan

Given the target population of Greater Abidjan as reported in the previous section, the age structure of the population, the number of households and the number of students are estimated as follows:

(1) Age Structure

Since the result of 2014 Census could not provide a detailed data on the age structure for the relevant Greater Abidjan area in time, the UN Population Division estimates were utilised, and which indicated the age structure of the population in Cote d'Ivoire in the past as well as for the future, such as 16.51% in 1998 and 13.88% in 2030 for the population 0-4 age group. Meanwhile, the 1998 census reveals the age structure of former AAD to be 11.32% for the same 0-4 age group.

Relative age cohort trends from the UN estimates for the country were used and adjusted based on the 1998 census age distribution for the Core (Former) AAD.

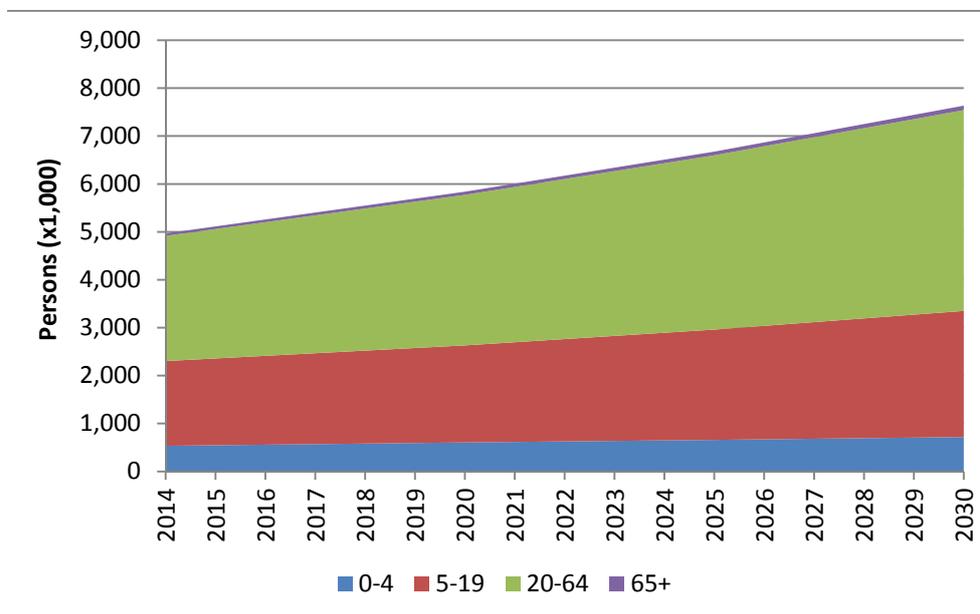
It is assumed that the Core AAD will resemble Greater Abidjan in the age structure as a whole, thus the population by age group for Greater Abidjan was estimated as shown in Table 2.7 and Figure 2.4.

Table 2.7 Age Breakdowns for Greater Abidjan Population Projection (Planning Area)

(x1000persons)

Year	0-4	5-19	20-64	65+	Total
2014	535	1 769	2 610	55	4 968
2020	603	2 028	3 140	66	5 836
2025	658	2 302	3 637	77	6 675
2030	717	2 632	4 193	92	7 634

Sources: United Nations for age breakdowns using medium fertility rates, JICA Study Team for population control totals



Source: JICA Study Team

Figure 2.4 Age Breakdowns for Greater Abidjan Population Projection

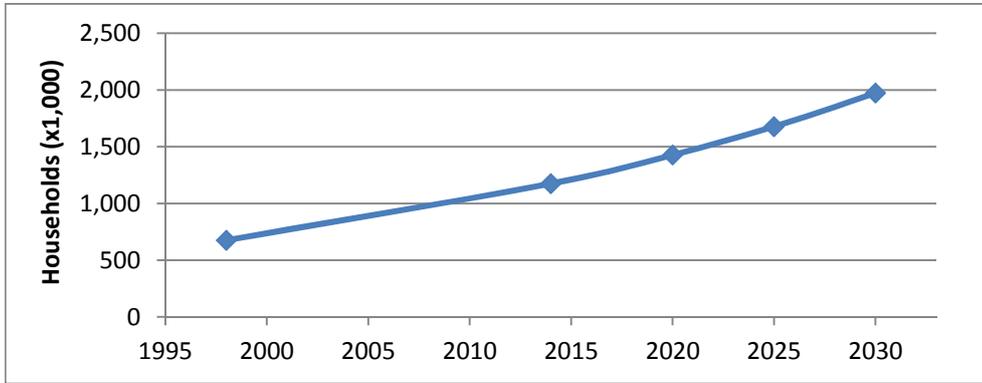
(2) Number of Households

Based on the 1998 census, a household size in Abidjan was found to be 5.01 persons per household but it decreased to 4.26 persons per household in 2013 as surveyed in 2013 for the Household Interview Survey (HIS) by JST. Applying such a declining trend as found between the two surveys, future household numbers as well as household size are estimated as shown in Table 2.8 and Figure 2.5.

Table 2.8 Greater Abidjan Households Projections

Year	Households (000 households)	Household Size
1998	675	5.01
2013	-	4.26
2014	1 174	4.23
2020	1 427	4.09
2025	1 677	3.98
2030	1 973	3.87

Sources: HIS by JICA Study Team for 2013; INS 1998 Census for 1998



Source: JICA Study Team

Figure 2.5 Greater Abidjan Households Projections

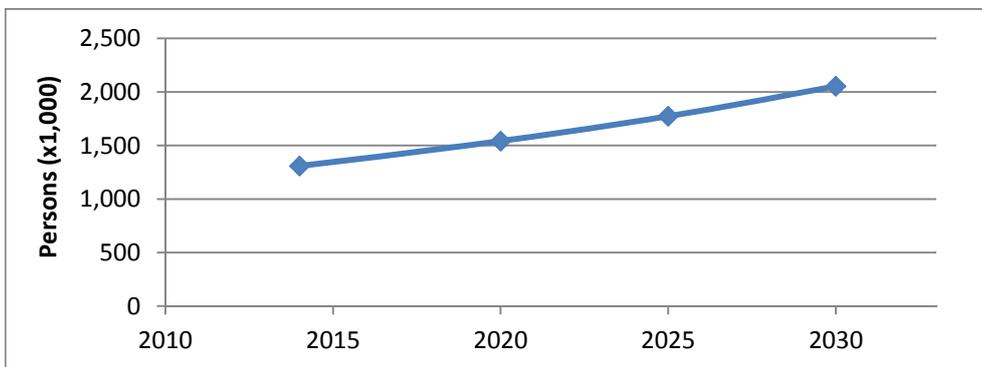
(3) Number of Students

The student enrollment is assumed to grow proportionally to the total population growth as shown in Table 2.9 and Figure 2.6 below.

Table 2.9 Greater Abidjan Student Enrollment Projection

Year	Students (000persons)
2014	1 308
2020	1 541
2025	1 773
2030	2 053

Source: JICA Study Team



Source: JICA Study Team

Figure 2.6 Greater Abidjan Student Enrollment Projection

2.3.4 Employment in Greater Abidjan

In view of the importance of an employment indicator in urban planning, the employment in Greater Abidjan is estimated, though relevant data are much less sufficient than many other socio-economic data. The method of estimation is explained as follows:

(1) Total Employment of Greater Abidjan

Based on the 1998 Census, the economically active population or the population over 15 years old are estimated at 57.5% of the total population for the whole country and 65.3% for the former Abidjan District as shown in Table 2.10. Changes of the age structure for the country are estimated by the UN and thus a percentage of the Age 15 years and over in 2014 and 2030 will be 58.5% and 61.6%, respectively.

Assuming that the percentage of the Age 15 years and over for the AAD changes proportionally to the case of the whole country, it is estimated at 66.2% and 69.7% for 2014 and 2030, respectively, and which are conceived relevant to apply to Greater Abidjan. As the result, the population over 15 years old in Greater Abidjan is estimated at 3,289 thousand people in 2014 and 5,322 thousand people in 2030, respectively.

Table 2.10 Proportion of the Population Aged 15 Years Old and Over

(x1000persons)

Year	Whole Country			Former AAD			Greater Abidjan		
	Total	Age15+	%Age15+	Total	Age15+	%Age15+	Total	Age15+	%Age15+
1998	15 366	8 873	57.5	2 875	1 876	65.3	-	-	-
2014	22 671	13 263	58.5	4 460	2 970	66.2	4 968	3 289	66.2
2020	-	-	-	-	-	-	5 836	3 940	67.5
2025	-	-	-	-	-	-	6 675	4 580	68.6
2030	31 841	19 614	61.6	5 887	4 113	69.7	7 634	5 322	69.7

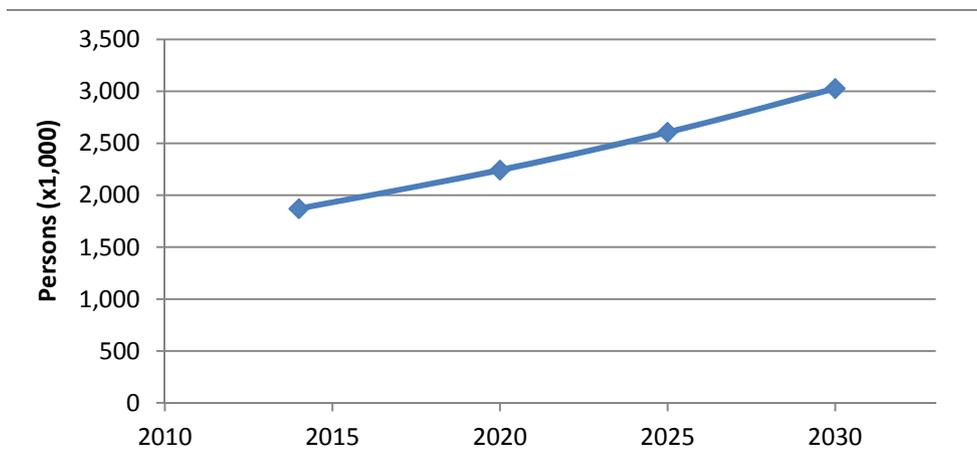
Source: Whole Country: UN Population Division, World Population Prospects: The 2012 Revision, File INTPOP/1-1, Medium Fertility 2010-2100; Former AAD: INS, Population Census 1998; Greater Abidjan: JICA Study Team

Further, the nation-wide employment survey of Agence d'Etudes et de Promotion de l'Emploi (AGEPE) in 2012 finds that a labour force participation ratio is 56.9 % against the population aged 15+. This ratio is eventually assumed to remain unchanged in future, based on the observation of the labour force participation ratio in the African countries with GDP per capita higher than 1,000 USD and population greater than 10 million during the period 1991-2011. At the same time, the future employment in the intermediate years is interpolated between those in 2014 and 2030 and thus, a future total employment in Greater Abidjan is estimated as shown in Table 2.11 and Figure 2.7.

Table 2.11 Greater Abidjan Employment Projection

Year	Employment (000 persons)
2014	1 871
2020	2 242
2025	2 606
2030	3 028

Source: JICA Study Team



Source: JICA Study Team

Figure 2.7 Greater Abidjan Employment Projection

(2) Methods of Distribution of Population and Employment to INS Zones

a. Population

Distribution to Commune/Sub-Prefecture

Future population of the communes/sub-prefectures in 2030 for the SDUGA Planning Area is assumed initially to grow at an average annual rate derived from the respective commune/sub-prefecture population between 1998 and 2014. These growth rates are then adjusted by considering current population density, planned future development potentials such as the existence of urban centres, urban expansion, urban renewal and development of a public transport network exhibited in the future land use framework plan.

Planned potentials per commune/sub-prefecture which underlie the land use framework plan are summarized in Table 2.12.

Table 2.12 Indicative Development Potentials by Commune/Sub-Prefecture for Population Distribution

	Current Population Density	Future Urban Centre Plan	Extent of Future Urban Expansion*	Future Urban Renewal Plan	Future Public Transport Plan
Commune Abobo	Extremely-high	Primary Urban Centre	Small	Planned	Rail
Commune Adjame	Extremely-high	Economic Capital Centre	None	Planned	Rail
Commune Attecoube	Extremely-high	Economic Capital Centre	None	None	Rail
Commune Cocody	High	Primary Urban Centre	Few	Few	Rail
Commune Koumassi	Extremely-high	Economic Capital Centre	None	Planned	Rail
Commune Marcory	Extremely-high	Economic Capital Centre	None	Planned	Rail
Commune Plateau	High	Economic Capital Centre	None	Planned in Almost entire Communes	Rail
Commune Port-Bouet	High	Primary Urban Centre	Extensive	None	Rail+Future Urban Expansion
Commune Treichville	Extremely-high	Economic Capital Centre	None	Planned	Rail
Commune Yopougon	Fairly-high	Primary Urban Centre	Extensive	Planned	Rail+Future Urban Expansion
Sub-Prefectures Anyama and Brofodoume	Low	Secondary Urban Centre	More Extensive	None	Rail+Extensive Future Urban Expansion
Commune Bingerville	Low	Secondary Urban Centre	More Extensive	Planned	BRT
Sub-Prefecture Songon	Low	Secondary Urban Centre	Extensive	None	BRT
Commune Grand-Bassam	Low	Primary Urban Centre	More Extensive	None	Rail+Extensive Future Urban Expansion
Sub-Prefectures Alepe and Oghlawopo	Low	Tertiary Urban Centre	Small	None	None
Sub-Prefecture Azaguie	Low	Tertiary Urban Centre	Small	None	None
Sub-Prefecture Bonoua	Low	Secondary Urban Centre	Wider	None	BRT
Sub-Prefecture Dabou	Low	Secondary Urban Centre	Wider	None	BRT
Commune Jacquville	Low	Tertiary Urban Centre	Wider	None	None

*Note: Extent of urban expansion by rank: none<little<small<wider<extensive<more extensive

Source: JICA Study Team

Distribution to INS Zones

Future population increase by commune/sub-prefecture is distributed to INS Zones (quartier and non-quartier) by the following method:

- Distribute the increased population with priority given to the areas of low density in the existing urban area,
- Distribute the increased population that is not accommodated in the existing urban area to part of the natural/agricultural area,

- Categories of population densities are defined in the land use plan as a low density to be less than 70 persons/ha, a medium density between 70 to 220 persons/ha and a high density more than 220 persons/ha.

b. Employment

Distribution of Employment to INS Zones

The current 2014 employment by INS Zone and by industrial sector was based on the HIS result, and which was eventually adjusted to the total employment in 2014 as previously estimated in Table 2.11.

The number of employment in the SDUGA Planning Area is distributed to INS Zones by primary, secondary and tertiary industries based on the development potentials identified for each commune/sub-prefecture for employment (as shown in Table 2.13) and also the implementation plan of the land use framework for the target years 2020, 2025 and 2030 using the following method:

1) Primary Industry

- It is assumed that the existing agricultural land in central urban areas such as the communes of Adjame, Attecoube, Koumassi, Marcory, Plateau and Treichville is transformed to residential land; and eventually the number of employment of the primary industry becomes zero in those communes.
- It is assumed that part of the natural land in the suburban areas are developed for the use of new agricultural land, while existing agricultural land will be transformed to residential land.
- It is estimated that the agricultural land in the suburban area is converted to the residential area as the consequence of allocating population to INS zones.
- The number of future employment of primary industry is estimated, based on the total agricultural areas that remain after the urban penetration into the agricultural land and the current existing employment density in the agricultural land.

2) Secondary Industry

- It is assumed that the number of employment of the secondary industry by INS zones increases evenly over the planning area at a rate of 1.0 % per annum.
- It is estimated that the additional number of employment that exceeds the agglomerated increase of 1% p.a. is allocated to the extended industrial areas and new strategic industrial areas, referring to the employment density of the existing industrial zones.

3) Tertiary Industry

- It is assumed that the number of employment of the tertiary industry by INS zones increases evenly over the planning area at a rate of 2.0% per annum.
- It is estimated that the additional number of employment that exceeds the agglomerated increase of 2% p.a. is allocated to the catchment areas of proposed urban centres, urban rail stations, assuming 50 workers per ha.

4) Total Employment by industrial Sector in Greater Abidjan

- The total employment in 2030, which is derived from the above distribution method by the industrial sector, is adjusted eventually to the total employment as previously estimated in Table 2.11. As a result, 2030 employment for the primary industry is estimated at 94,000 people, for the secondary industry at 1,005,000 people and for the tertiary industry at 1,929,000 people in Greater Abidjan, which are 3.1%, 33.2% and 63.7% of the total employment respectively.
- Employment structures in the intermediate years of 2020 and 2025 are estimated by interpolation between those in 2013 and 2030 as shown in Table 2.14. Eventually, the industrial employment by sector is estimated as shown in Table 2.15.

Table 2.13 Indicative Development Potentials by Commune for Employment

Communes / Sub-Prefectures	Agricultural Land Areas in 2030	Additional Employment of Secondary Industry that exceeds more than 1.0% annual increase	Additional Employment of Tertiary Industry that exceeds more than 2.0% annual increase
Commune Abobo	579ha	0	46,000
Commune Adjame	0ha	0	24,000
Commune Attecoube	0ha	0	25,000
Commune Cocody	1,435ha	0	69,000
Commune Koumassi	0ha	0	3,000
Commune Marcory	0ha	1,000	18,000
Commune Plateau	0ha	0	30,000
Commune Port-Bouet	577ha	61,000	59,000
Commune Treichville	0ha	0	23,000
Commune Yopougon	40ha	49,000	54,000
Sub-Prefectures Anyama and Brofodoume	14,775ha	119,000	16,000
Commune Bingerville	4,885ha	30,000	22,000
Sub-Prefecture Songon	16,623ha	1,000	16,000
Commune Grand-Bassam	1,215ha	20,000	30,000
Sub-Prefectures Alepe and Oghlawopo	377ha	20,000	0
Sub-Prefecture Azaguie	1,566ha	19,000	0
Sub-Prefecture Bonoua	677ha	30,000	16,000
Sub-Prefecture Dabou	1,054ha	30,000	16,000
Commune Jacquerville	7,513ha	20,000	0

Source: JICA Study Team

Table 2.14 Estimated Future Employment Structure by Industrial Sector in Greater Abidjan

Year	Primary Industry	Secondary Industry	Tertiary Industry	Total
2014	7.7%	32.2%	60.2%	100.0%
2020	5.4%	32.7%	61.9%	100.0%
2025	4.1%	33.0%	62.9%	100.0%
2030	3.1%	33.2%	63.7%	100.0%

Source: JICA Study Team

Table 2.15 Estimated Future Employment by Industrial Sector in Greater Abidjan

(unit: 1,000 persons)

Year	Primary Industry	Secondary Industry	Tertiary Industry	Total
2014	144	602	1 126	1 871
2020	121	733	1 388	2 242
2025	107	860	1 639	2 606
2030	94	1 005	1 929	3 028

Source: JICA Study Team

3.0 Master Plan 2000 Evaluation

3.1 Background

3.1.1 Schéma Directeur d'Urbanisme du Grand Abidjan

The Schéma Directeur d'Urbanisme du Grand Abidjan (Master Plan 2000) is a statutory plan that was gazetted by the Government of Cote d'Ivoire on 16th November 2000. The evaluation of the Master Plan 2000 has been undertaken with reference to the following documents as well as discussions and information received from relevant Government Ministries and organizations. The key documents upon which the evaluation is undertaken are:

- 'Journal Officiel de la République de Cote D'Ivoire, Quarante Deuxième Année No. 45, Jeudi 16 Novembre 2000.' September 6th...Decree n°2000-669 on the approval of the Urban Master plan of Greater Abidjan.
- Ministry of Construction, Housing, Sanitation and Urban Planning, Master Plan of Greater Abidjan Synthesis Report 1st Phase, October 1998, National Bureau of Technical Studies and Development.
- Schéma Directeur d'Urbanisme du Grand Abidjan – « structure scheme, a long term plan, August 2000 Edition, BNETD »

3.1.2 The Function of the Schema Directeur d'Urbanisme du Grand Abidjan

The following translated directly from the approved Master Plan 2000:

“Schema Directeur d'Urbanisme du Grand Abidjan has not been designed as a precise image of the future city, but as an instrument of minimum coordination of space activities of the different public and private urban actors. In this respect, it will only indicate the likely location of major road networks and urban areas of the whole site. This plan could be periodically updated to adapt to future developments. This plan proposes to continue and strengthen the major orientations of the 1985 plan which are namely:

- *Rebalancing the location of activities and housing,*
- *Improving communal and internal transit facilities.*

In addition to these guidelines, the plan mainly focuses on:

- *slowing down spatial growth to reduce the high costs of urbanization*
- *promote the development of mixed areas*

- *ensure a better connection between Abidjan and peripheral municipalities (Anyama, Bingerville, Grand Bassam and Songon) on the long run.*”

3.1.3 Previous Master Plan Evaluation

An evaluation, or comparison, process was undertaken previously in the drawing up of the Master Plan 2000. In that case the 1985 Urban Structure Plan of Abidjan was compared with the real situation of 1993. The analysis was based upon the following five points (translated from French into English):

- The demographic development
- The expansion of the urban territory
- The road network
- The zones of expansion
- The activities zones
- The public facilities planning

3.1.4 SDUGA Evaluation Scope

In the TOR for the project proposed by MCLAU the evaluation was described as involving the following aspects (translated from French into English):

- The quality of the process of urban planning, especially the conceptual approach, the management committees, communication and mobilization of stakeholders
- The efficient means of implementation of the urban master plan of development by an executive committee, overseeing change during the course of implementation, following the calendar of implementation, the cost and means of financing
- Expected objectives will be focused on the relevance of the project, the level of achievement of the objectives and final results
- The impact of the projects will be institutional, socio-economic and environmental impacts and other major factors that will influence the implementation and the results of the project.

Anecdotal evidence indicates that to clarify the above, the MCLAU counterpart has specifically requested the following four items to form the fundamental structure of the evaluation. They are:

- i. Organizational System
- ii. Enforcing Process
- iii. Attainment of Targets
- iv. Impacts

3.1.5 Proposed Evaluation Methodology

The evaluation methodology comprises three parts:

1. An evaluation matrix covering assessment of the items requested by MCLAU as part of the discussions with JICA in preparation of the TOR. This is basically about the performance of the

Schema Directeur d'Urbanisme Du Grand Abidjan 2000 in terms of its objectives, proposed actions / projects and implementation for the future development of Greater Abidjan.

2. The more detailed evaluation specific to sector work streams as the basis for justification of strategic decisions to arrive at the new Master Plan i.e., why certain elements of the original master plan are taken forward or discarded. The recommendations from this detailed evaluation should be directed towards Item 3 pages 11 and 12 of the Inception Report 'Approach that will be applied to the Project'.
3. A SWOT analysis, pulling together the findings of 1 and 2 above as a summary of the evaluation, to provide direction for the Master Plan 2030.

3.2 Master Plan 2000 Evaluation

3.2.1 Overview of Abidjan's Spatial Organization

The underlying spatial structure for the future planned development of Abidjan was set under Abidjan Structure Plan 1985. A significant number of the major development project proposed under the Structure Plan, as well as the population growth target and rate of development in identified growth areas were not implemented or attained. The objectives, goals, targets and projects were either modified and or taken forward into the Master Plan 2000 proposals.

Under the review of the Structure Plan, the spatial organization of Abidjan in 1998 was described as follows, with reference to 'Master Plan of Greater Abidjan Synthesis Report 1st Phase, October 1998' (in bold italic), and is compared with the current 2013 state:

- ***Fragmentation of urban sprawl in large geographic areas separated by a set of physical stratifications.*** The constraints on development imposed by the Ebrie lagoon, incised valley terrain, forests and plantations still fragment the urban form of the city. Links to overcome some of these constraints have not been implemented.
- ***A structuring roads network of concentric transportation serving all areas of the site following the four cardinal directions.*** The road network has not been enhanced and now is now under capacity for the volume of traffic. There is also a large volume of heavy goods vehicles moving through residential areas.
- ***Maximum polarization, where the city was originally developed.*** The central plateau area including Adjame and Petit Bassam are still the focus of the city functions in a north to south axis, although growth in Cocody and Yopougon provide a vibrant west to east axis. The pressure for future growth is being experienced:
 - along the Port Bouet to Grand-Bassam corridor;
 - to the north west of Abobo and Anyama; and
 - the western edge of Yopougon toward Songon.
- ***A persistent attractiveness of the port area as far as location of secondary employment is concerned.*** Alternative employment areas, especially industrial zones (except for Yopougon and Grand-Bassam) have not been developed. Thus the spatial distribution of major employment centres

has not changed. The southern part of the city is preeminent and this increases the pressure on the two bridge crossings from the mainland to Petit Bassam.

- ***A strong segregation of habitat resulting from choices made during the colonial period and land use principles adopted by the various development plans formerly made.*** The differing urban pattern structures across the city remain.
- ***An increase of the population on the north-south axis more significant than the east-west development.*** The influx of immigrants of the past two decades has seen parallel population growth on both axis through, development of new land, densification and illegal settlement. East to west in Yopougon and Cocody, and north to south in Abobo and Koumassi.
- ***The presence of major facilities of national interest in all sectors.*** The provision of both utility infrastructure and community facilities has not kept pace with the population growth.

It was noted that the future urbanization trend of the city will be orientated towards growth in peripheral urban areas with “the cost per capita investment and maintenance costs induced increasing proportionally faster than the rate of urban growth”. Due to constraints on public investment over the past decades the private sector, through land development and illegal land occupation is the driver of this urbanization trend both at the periphery and within the established urban areas. The public sector has not been able to keep pace and thus redressing the negative externalities of this trend, such as increased social costs due to poor hygiene and reduced quality of living standards, will be of prime importance in the future master plan for sustainable development in Greater Abidjan.

3.2.2 Evaluation

The Part 1 evaluation, of the performance of the Master Plan 2000, is set out in the following five tables each focuses on the main points highlighted by the MCLAU counterpart as well as relevant ‘Index of Evaluation’ items in the Inception Report. Table 3.1, covers the relevance of the Master Plan’s objectives. Table 3.2, evaluates the performance of the Master Plan. Table 3.3, assesses the impact of the implementation or non-implementation of the Master Plan proposals. Table 3.4, considers the quality of Master Plan in fulfilling the Cote d’Ivoire planning system requirements. Table 3.5, reviews the effectiveness of the current organization strategic planning system to deliver an implementable Master Plan.

Table 3.1 Objectives of the Master Plan

ITEM	PERFORMANCE AND COMMENT
• Fulfilled over the timeframe	
Improve the living condition and urban environment	Generally not fulfilled as no significant evidence of urban environment improvements
Improve the means of access to urban services for the majority of the population	On-going although many areas are under provisioned or have inadequate community facilities
Slow spatial growth of the city, reduce high urban cost of living by building more houses in densely populated areas	Growth in terms of expansion has not been to the extent envisaged. However, there has been uncontrolled and spontaneous densification across the city. Private housing development has been slow and major public programme commenced in 2013.
Improve access to communes and intra-commune transport	Partial implementation. The majority of proposed strategic roads and all of the water crossings are yet to be completed. Comprehensive public transit is under development i.e., more extensive bus network, but no rail projects constructed.

ITEM	PERFORMANCE AND COMMENT
Improve zones of mixed activities (employments, industries, commercial and residential) in order to reduce the large amount of commuting workforce	Not fulfilled.
Enhance a better link between the geographical communities of Abidjan and its 4 surrounding communes (Anyama, Bingerville, Grand-Bassam and Songon).	Proposed major road links have not been implemented.
• Relevant to current 2013 development of Greater Abidjan	
Six Objectives above	All are still relevant to 2013 Master Plan. However, additional objectives required for expanded area of plan coverage.
• Support relevant National Development Plan (NDP) Projects	
Objectives, goals and priority action projects programme to 2015	An expanded set of objectives will be required to enable the on-going development post-2015 of the NDP initiatives, inter alia for: tourism; craft; women, family and child; agriculture; education, sanitation, health, poverty reduction etc.
• Supports relevant Sector Policies	
Culture and Francophonie - Protection of World Heritage as well as Cultural, Architectural and Natural Heritage - Protection, Conservation, Development and Promotion of historical monuments and cultural sites	Not highlighted as objectives of the Master Plan.
Economy and Finances/Cadastre - Ensure the control of the urban population fragmentation in order to increase state revenues in term of property tax - Ensure land security in urban areas.	Not highlighted as objectives of the Master Plan.
• Supports future "Smart Growth"	
Compact Neighbourhoods	Implicit in the objective but lack of directing policies
Transit-oriented development	Implicit in the objective but lack of directing policies
Pedestrian-and bicycle- friendly design	Not a targeted strategy
Mixed-Use development	Implicit in the objective but lack of directing policies
Inclusion of Affordable Housing	Implicit in the objective but lack of directing policies
Inclusion of Parks and Recreation	Not a targeted strategy
Preserving natural habitats	Not explicit as a prime objective though in the Master Plan
Historic and Cultural Preservation	Not addressed in the objectives
Prohibiting development to protect natural and agricultural areas	Not explicit as a prime objective though partially addressed in the Master Plan but lack of directing policies
Robust development control system	Implementation not addressed in the objectives
• Attained population growth forecast	
Resident population of 4,700,000 in 2010 for the 13 communes covered by the Master Plan	A 460,000+ over estimate. The JICA Study Team forecast population for 2010 of the 13 communes is 4,236,000 indicating a continuing slowdown in the growth rate over the decades upon which the 2000 Master Plan was estimated. The 2014 population is now estimated at 4,707,000, slightly above the Master Plan estimate.

Table 3.2 Achievement of Master Plan

ITEM	PERFORMANCE AND COMMENT
• Identified Major Projects	
Unit 1 – Attécoube, Adjame, Plateau	5 major projects. Only the Rehabilitation of the University of Abobo-Adjame completed. The new bus station of Adjame partially complete. The Casse of Adjame land converted to other uses. The two road and infrastructure projects still at study stage.
Unit 2 – Port Bouet	16 major projects. The expressway to Grand Bassam has just recently commenced construction. No other projects have started, 6 are at the study stage the remainder are unrealized.
Unit 3 – Abobo	3 major projects. 2 have been completed and the Housing SICOGI Concorde PK18 is under construction.
Unit 4 – Cocody	6 major projects in Cocody. Two have been completed. Two, the Exchange (3 rd Bridge) of Riveria 2 and the Rehabilitation and depollution of Cocody bay are in progress. The other two are at study stage.
Unit 5 – Yopougon	4 major projects in Yopougon. None implemented, all at study stage
Unit 6 – Marcory, Koumassi, Treichville	3 major projects. The Place of Culture (Phase 1) completed. The 3 rd Bridge under construction. The bridge
• Spatial Development Expansion Areas (serviced land)	
Plain of Banco and extn north - 1,000 ha	Fully developed
Abobo, Anyama - 2,500 ha	Partially serviced and developed – current growth area
Cocody and Eloka – 12,000 ha	Partially serviced and intermittent scattered development – current growth area
Easter Lagoon Strip (airport – Grand Bassam)– 8,500ha	Mainly undeveloped though under pressure for development immediately.
Western Lagoon Strip (Vridi canal – Jacqueline) – 8,000 ha	No significant development. However with the soon to be completed new bridge the will be a growth area.
Infill of undeveloped land in existing urban areas	Densification and development has occurred to all these areas and very limited land available for new development.
• Spatial Development (un-serviced land)	
Informal slum housing areas relocation of residents form Unit 3, Unit 5 to new resettlement areas.	Only Unit 3 resettlement area completed. Affordability of resettlement accommodation and non-implementation of public housing projects has delayed resettlement.
• Short to Medium Term Action Plans	
Target non occupied land for high rise buildings	Only two projects completed – Djibi and Palmeraie, no others started.
• Main Medium Term Development Plans	
Unit 1 – 5 road projects; 1 potable and sanitation project; 5 public amenity projects; public housing initiative; commercial development initiative;	Intercity Bus Station just started, no other development plans started.
Unit 2 – 1 Mass Urban Transport, Abidjan-Bassam Highway; 2 potable and sanitation projects; 6 public amenity projects; 4 housing initiatives; 3 activity zones;	Abidjan-Bassam Highway under construction. No other development plans started.

ITEM	PERFORMANCE AND COMMENT
Unit 3 – 4 road projects, Urban Train; 7 potable and sanitation projects; 3 public amenity projects; 3 housing initiatives; 2 activity zones;	Link road between Sagbe / Abobo Baoule / Boulevard Latriille completed. Slaughter House under construction. Biabou resettlement completed. Justice Palace started. No other development started.
Unit 4 - 3 road projects, Riviera-Marcory Bridge; Lagoon Ferry Station; 5 potable and sanitation projects; 3 public amenity projects; 4 housing initiatives; industrial zones	Riviera-Marcory Bridge under construction; Lagoon Ferry Station completed. Middle class housing development – CTU3/Djibi, North Genie and Akouedo completed. No other development plans started
Unit 5 - 1 road project; 5 potable and sanitation projects; 4 public amenity projects; 4 housing initiatives;	Social housing site Sonaco completed. Middle class housing Azito started. Justice palace completed. No other development plans started.
Unit 6 – 2 potable and sanitation projects; 2 public amenity projects; public housing indicative; Industrial zone rehabilitation.	No development plans started.
• Long Term Strategic Targets	
Urban development zone extension	Not commenced
Strategic Roads	Not commenced
Urban Train	Not commenced
• Development Options	
Intensification of the central communes (Adjamé Plateau and Petit-Bassam island)	This has occurred in a controlled manner through Government action, but it is a product of the densification of existing properties by private residents.
The quick development of the North and East area including Djibi, Palmeraie, Mbadon, Mpouto and Abata, the Banco plateau in the Amonkoua Kouté 's area and the coastline of Port-Bouet (area around the airport)	Development has taken place and is on-going.
the creation of structuring roads and rapid service roads	Development focused along the main city axis has occurred. Only discrete sections of Y3 has been constructed no other rapid service routes started.
The long-term achievement of a network of roads and crossings facilities to interconnect the communes of Grand Bassam, Port-Bouet and Bingerville on the one hand and those of Yopougon, Abobo and Anyama Songon on the other hand.	Roads not implemented and routes in some cases occupied by illegal settlement.
The creation of new activity areas: several areas of the town are concerned.	These activity areas have not been fully established.
The creation of new structuring facilities to meet the needs of populations in terms of equipment and services in economic and social fields.	The majority of specific projects are generally in progress at an early stage of implementation or committed on detailed plans. However, the warehouse in Abobo has not commenced.
The organization of the habitat expansion areas in frames having each a services centre supposed to welcome proximity facilities (schools, clinics, shops, etc.).	Even though these are considered preferential areas for community facility development the provision has lagged behind demand.

Table 3.3 Impacts

ITEM	PERFORMANCE AND COMMENT
• Environment	
Air pollution caused by road operation	Air pollution by traffic congestion will be resolved by new and rehabilitated road projects and improvement of traffic management system. However some area faced to new road will have impacts of air pollution. Adequate mitigation measures, such as installation of buffer zone, will be required.
Water pollution/ offensive odor/ pollution of bottom materials caused by port/ harbour operation	Port/ harbour and its facilities will make water pollution/ offensive odor/ pollution of bottom materials. Management system, especially water and bottom material management program at lagoons, should be planned and implemented.
Problems of solid waste by transport facilities user	Inadequate behaviour, such as solid waste dumping from cars/ trains and at stations, will make solid waste problems. Management system should be planned.
Noise problems caused by road/ railway operation	Noise by traffic congestion will be resolved by new and rehabilitated road/ railway projects and improvement of traffic management system.
Impacts to topography	Embankment and cutting will have the landslide. Adequate mitigation measures should be planned and implemented.
Impacts by resettlement	Projects will have resettlement problems. It might be critical issues to develop. Adequate resettlement programme with sufficient discussion with resettlers should be planned and implemented.
Impacts to living condition	Change of land use/ change or loss of livelihood means/ area dividing will be occurred by new road construction. Mitigation measures should be planned and implemented.
Impacts to socially vulnerable	Minorities/ indigenous people/ women/ elderly/ children might have impacts from development. Careful attention should be paid
• Unplanned development	
Habitat de cour	Constraining planned development, over burdening infrastructure. Removal delays infrastructure implementation.
Precarious (Slums)	Occupying unstable terrain – landslip and flooding hazard. Pollution through uncontrolled sewage and solid waste disposal. Removal delays infrastructure implementation.
Industrial	Causing localised impediment to traffic flows. Pollution source noise, air quality and ground conditions.
• Transport – Private Freight	
Traffic on the expressways	Mixture of freight and passenger road traffic causing heavy burden Most of the port traffic has no alternative routes. Truck regulation hours (6:00-9:00, 16:00-20:00) are not well observed.
Truck parking situation	Overflowing trucks parked around the port. Truck parking area is limited around the port.
Capacity of freight rail transport	Limited due to shortage of the rolling stock and bottleneck of railway traffic on the old F.H. Boigny bridge
Economic and industrial growth of the country	May be limited while Abidjan Port has the highest reception capacity in West Africa.

ITEM	PERFORMANCE AND COMMENT
• Transport - Public	
Informal transport such as gbaka and woro-woro	Causing chaos and competition with the city bus
Number of public transport passengers	Passengers of the city bus and railway have been decreasing.
Level of service	Low level of city bus services such as overloading, unpunctuality, slow speed, and no priority over private vehicles
• Infrastructure – Roads and Bridges	
Infrastructure condition	Poor infrastructure such as many deteriorated roads and bridges in many parts of the city
Traffic condition	Serious traffic jam on every arterial roads connecting to the Plateau area
• Non implementation of PUD's	
Since Master Plan 2000 – 5 PUD's prepared	Delay in implementing strategic actions and occupation of land by illegal development or proposals that constrain rapid service roads.
Port Bouet PUD	Delay in implementing strategic actions.
Areas not covered by PUD	Directed by Strategies and Projects in Master Plan 2000, however, sites subject to illegal development that in some cases cannot be removed thus affecting Master Plan objectives.
• Infrastructure Utilities	
Water – potable supply	Ground water in Adjame, Plateau contaminated and serious risk of contamination to Adjin and Potou Lagoons by uncontrolled tipping and sewage discharge from informal settlements in Abobo, Anyama and Cocody catchment areas.
Power	Electricity is currently adequate, although revenue collection is restricting new investment to support economic growth.
Water – waste water	Discharge of sewage into Ebrie lagoon has potential to contaminate drinking water supply from Adjin and Potou Lagoon in tidal storm conditions.
Solid Waste	Serious environmental and health hazards across the city. Leachate contamination, serious air quality reduction at unsealed landfills. Disruption to residential neighbourhoods along traffic routes to landfills. Unpleasant urban visual character.
Drainage	Measures are now being taken to upgrade storm water system that has deteriorated due to informal settlement and illegal tipping along valleys. Informal development of slopes is also causing landslips which block drainage system.

Table 3.4 Quality of Urban Planning Process

ITEM	PERFORMANCE AND COMMENT
• Detailed Plan (PUD) Preparation	
Improving Major Roads in Abidjan	Submitted to Cabinet in 2010 awaiting approval
PUD Port Bouet	Submitted to Cabinet in 2010 awaiting approval, implemented without approval
PUD Riveria –Bingerville	Submitted to Cabinet in 2010 awaiting approval

PUd M'Pouto – M'Badon	Submitted to Cabinet in 2010 awaiting approval
PUd Songon-Ebimpe	Submitted to Cabinet in 2010 awaiting approval
• Urgent Action Implementation	
The creation of Priority Actions Perimeters (PAP) in the most sensitive areas of the town where occurs a strong land pressure.	This action is still to be implemented
Delimitation of land reserves used for the development of urban facilities and real estate operations essential to the proper functioning of the city.	Although this has been on-going, lack of development control has resulted in land title being given to private entities to develop land reserved for public facilities.
Establishment of housing, urban environment, traffic and public transport observatory.	Traffic observatory has been established. Other observatories in various stages of establishment.
Updating the drainage and sewerage master plan	Not undertaken
Implementation of a traffic plan in Plateau municipality	Not implemented
• Development Control	
Planning Standards	Outdated and not reflective of current land availability in areas of different density.
Development Approval	System in place, but illegal development by-passing process
Monitoring	System in place for removal of illegal development but by-passed by public going directly to Minister and thus Ministry not following process.

Table 3.5 Organization System

ITEM	PERFORMANCE AND COMMENT
• Effectiveness of Strategic Planning Authority	
Preparation of Master Plan	Took over 5 years from commencement to Gazettal. This may be a result that public funding of projects has to be identified, which in some other countries systems is only defined at National and Detailed Plan levels.
Updating of Gazetted Master Plan	Delayed by socio-military crisis to 13 years and counting.
Preparation of Detailed Plans	Preparations of limited number took 5 years and after 3 years still no approval. Delayed by socio-military crisis. In some cases the private sector is taking the lead on this task.
• Effectiveness of implementing authorities in fulfilling strategies and projects	
Administrative Structure	Centralised "5 layer" system did not give power or responsibility to local governments. Simplified to "2 layer" system in 2003. Delegation to local level still not completed and lack of funding prevents implementation.
Ministerial Coordination	Funding allocated on Ministerial basis rather than on project basis has resulted in lack of coordination in achieving Master Plan proposals. A Supervising Unit is currently under consideration but allocation of funding still unclear.
• Effectiveness of decentralised development approval process	
Law of Decentralizing Local Government 2003	Lack of funding prevents urban planning strategies and projects being implemented at local level.

3.3 Components of Master Plan 2000 to Be Taken Forward

3.3.1 Growth Centres (expansion and densification)

3.3.1.1 Spatial Structure

The Master Plan 2000 has been spatially organized into a series of Urban Units that group communes together. However, it should be noted that these Units do not correspond to the groupings set out in the TOR for this study. For clarity the following Table 3.6 sets out both groupings.

Table 3.6 Commune Spatial Grouping

Master Plan 2000	SDUGA Study (TOR)
Unit 1	City Centre
Attecoube, Adjame, Plateau	Adjame, Plateau, Cocody, Koumassi, Marcory, Treichville
Unit 2	Periphery of City Centre
Port Bouet	Abobo, Attecoube, Yopougon, Port Bouet
Unit 3	New Urban Area
Abobo, Anyama	Bingerville, Anyama, Songon
Unit 4	Urban Area in Sounding Communes
Cocody	Alepe, Dabou, Jacqueline, Bonoua, Grand-Bassam, Azaguie
Unit 5	Non-Urban Area
Yopougon	(name of communes are not confirmed)
Unit 6	
Marcory, Koumassi, Treichville	
Communes within Greater Abidjan Area 2000 but not specified for projects	
Anyama, Bingerville, Grand- Bassam, Songon.	

Source: JICA Study Team

With reference to the table, the Master Plan 2000 grouping refers to the spatial proximity in terms of similar historical urbanization. The SDUGA (TOR) grouping has less clarity in terms of proximity and also specifies the groups in terms of the timing of the commune's incorporation into either the expanded Abidjan District or the new area for Greater Abidjan.

It is proposed to take the logic of the spatial grouping of Master Plan 2000 forward to the Master Plan 2030, with the some modifications, see Table 3.7. The main modifications are:

- The designation of a “Special Function Area”, that is the Port of Abidjan which, extends into the communes of Treichville, Port Bouet and Yopougon.
- Definition of the ‘urban area’ communes.
- Definition of the ‘satellite city’ areas, outside the major Abidjan conurbation and within the Greater Abidjan master plan area.

Table 3.7 Spatial Structure Master Plan 2030

Abidjan Autonomous District	
Unit 1 - Central Urban Area	Attecoube, Adjame, Plateau
Unit 2 - South East Coast Urban Area	Port Bouet, Grand-Bassam
Unit 3 - Northern Urban Area	Abobo, Anyama
Unit 4 - Eastern Urban Area	Cocody, Bingerville
Unit 5 - Western Urban Area	Songon, Yopougon
Unit 6 - Petit Bassam Urban Area	Marcory, Koumassi, Treichville
Unit 7 - Special Function Area	Abidjan Port (part of Port Bouet, Treichville, Yopougon)
Satellite Cities	
Unit 8 - Northern Greater Abidjan	Azaguie
Unit 9 - Eastern Greater Abidjan	Alepe, Bonoua
Unit 10 - Western Greater Abidjan	Dabou, Jacquville

Source: JICA Study Team

3.3.1.2 Urban Expansion Areas

The Master Plan 2000 directed future development to accommodate the projected population growth to expansion areas at the edge of the Abidjan urbanized area and through densification within the existing urban areas. In terms of the urban expansion areas, a total of 32,000 ha were calculated as available, within the Greater Abidjan Area of the Master Plan 2000 (a total of 14 communes, see Table 3.6). Of this total, the current 2013 status is that the 1,000 ha in the plain / plateau of Banco has been developed. Due to the lack off or limited sporadic development of these designated expansion areas, this leaves potentially some 31,000 ha either partially developed or still available to accommodate future urban population growth by 2030.

The population projection for 2010 under the Master Plan 2000 was 4.7 million for the 14 communes that are likely to make up the future conurbation (the continuous urban area). The current population within these areas is 4.803 million and forecast, by the JICA Study Team to reach 7.216 million by 2030. Accommodation of this future population within the 31,000 ha expansion areas may be achieved at a population density of 78 persons per hectare. This density calculation does not take account of the population that may be accommodated within older urban areas through densification, or those who currently reside in rental accommodation on subdivide plots moving to single family occupancy properties. Nonetheless it is therefore, considered suitable to contain the urban area of a continuous Abidjan city, at its greatest extent, within that designated on the Master Plan 2000 for the 2030 plan. This will continue to support the Master Plan 2000 objective; “Slow spatial growth of the city, reduce high urban cost of living by building more houses in densely populated areas”.

3.3.1.3 Urban Densification

To meet the demand for accommodation from the population growth since 2000, the older urban areas through Abidjan have experienced densification of existing urban areas by subdivision within individual properties and through illegal settlements. This ad hoc uncontrolled densification strains road and utility infrastructure, the public facilities provided for the local communities, and degrades the overall living quality of the urban environment.

The Master Plan 2000 directed densification within the short and medium term to:

- the provision of high population central communes; specifically Adjame, Plateau and Petit Bassam; and
- the completion of on-going and planned projects, and the development of vacant land through high rise buildings in Abobo, Cocody, Yopougon and Port-Bouet.

Of the above only sporadic densification has occurred, and only in a few areas in the form of high rise buildings. In the case of Plateau the residential population has continued to decline. The principle of densification, both the supporting action of the Master Plan 2000 objectives and an overarching principle of ‘Smart Growth’ will be taken forward to the Master Plan 2030. However, from the evidence on the ground across Abidjan the form of the densification and the localities where it should occur must be clearly defined and supported by policies and regulations.

3.3.2 Urban Renewal

Improvement of the urban environment was a significant goal of the Master Plan 2000, as expressed in the plan’s objectives. Urban renewal projects and actions proposed in the Master Plan were led by the public sector and focused on Plateau and central Adjame. The major urban renewal intervention project was the provision of the monumental Triomphale Road. This would lead to clearance of many private and public properties and replacement with dense and in some high-rise commercial, residential and cultural mixed development.

The delay in new development and the implementation of the projects identified under the Master Plan 2000 have placed stress on the existing urban fabric, road and utility infrastructure and community facilities such as schools and hospitals etc. It is envisaged that a more comprehensive policy of revitalization is now required to many of the older urban areas. Upon the evidence of the lack of urban renewal implementation and the pressure from individual landowners for up zoning and change in more economically viable land uses the private sector will need to be a significant player, if not the major developer of urban renewal projects.

3.3.3 Conservation

A key component of the Master Plan 2000 is the protection of natural areas i.e., forests, water catchment areas. To this can be added the designation of areas where development should not occur, such as; steep sided valleys that are susceptible to soil erosion and landslip, and valley floors. Protection of these areas is essential. However, these areas are now under serious threat from illegal land settlement, clear of forests, disposal of waste both sewage and solid. Protection, rehabilitation and conservation of these natural vegetation and sensitive terrain areas will be taken forward in the formulation of the new Master Plan.

An important component of ‘Smart Growth’ is the conservation of historic and cultural heritage these serve as repositories and memory of the national heritage. They also provide a significant resource to the wider tourism product of the country. These aspects should be addressed under the Master Plan 2030.

3.3.4 Housing

3.3.4.1 Public Housing

The public housing sector has been moribund, except for the completion of projects in hand or some of the planned projects mentioned in the Master Plan 2000. This year, 2013, the MCLAU have announced the implementation of 21,882 units in Abidjan District, and 20,286 across the communes of Dabou, Jacquville, Alepe, and Grand-Bassam by 2015. At the end of July it was announced that 521 ha have been earmarked for public housing in Songon, Anyama and Bingerville. Where public housing has been provided the cost has generally been unaffordable for lower income groups.

3.3.4.2 Private Housing

The slack in housing supply has been taken up by the private sector to meet the middle class housing demand. This is through;

- the building of housing estates, predominately in Cocody,
- single house construction on newly service land in the urban expansion areas of Cocody, Yopougon and Abobo-Anyama, and
- subdivision of existing properties to provide additional rental accommodation, across the entire urban area.

In the case of the latter bullet point, subdivision has increased densities to levels in certain areas that are not sustainable in terms of transport, utility and social infrastructure provision. The development control of densities across Greater Abidjan was not sufficiently addressed in the Master Plan 2000.

3.3.4.3 Illegal Settlement

Land reserved as the right of way for strategic roads proposed under the Master Plan, as well as land reserved for other public programmes have been occupied by illegal settlement and includes villas, habitat de cour¹ and slums. In the case of the first two it appears that land title and development approval has been given; in the first instance by the relevant village authority, and in the second possibly by a local commune official. Habitat de cour, slums and densification of existing properties have arisen for many reasons though the cessation of a public housing building programme and thus a shortage of low income permanent accommodation are likely to be significant factors. Actions in the Master Plan 2000 to remove slums and some habitat de cour should be taken forward, and possibly extended.

3.3.5 Transport

The major transport development focus of the Structure Plan 1985, which was taken forward into the Master Plan 2000, was:

1. accelerating the development of Cocody and the Banco Plateau,

¹ The habitat de cour is composed of accommodation units (for living) and outbuildings (for sanitation and kitchens), and a shared open space, the cour (courtyard), generally in the middle of the plot. A series of contiguous rooms without internal communication make up the accommodation units. The outbuildings are situated in front of the accommodation units and are shared by the residents. The habitat de cour can be built on a plot bought legally or illegally from a customary chief and used either to live in or to rent. The habitat de cour is built with conventional materials; thus, it is not considered slum housing, even if the land has illegal status.

2. implementing strategic roads to service the expansion of port activities on the Banco Plateau, on the Boulay Island and Brake Lake,
3. improving circulation within the town by creating structuring axes and rapid roads networks,
4. the provision of an efficient road network to support the rebalancing of the location of activities and housing,
5. the development of public mass transit,
6. the expansion of airport facilities,
7. upgrading of the road network to enable the progressive development of the eastern part of the town, and
8. the creation of a road network and structures crossing the lagoon to link the communes of Grand-Bassam, Port Bouet and Bingerville in the long run.

The projects necessary to achieve the above have still to be implemented, and therefore must be considered for the Master Plan 2030. Subject to the findings of the JICA Study Team Traffic Survey and the current status of land uses and land availability, as well as relevant Ministry proposals and development programs some of the projects may have to be adjusted.

The Ministry of Transport's primary concerns related to the above first three points are as follows:

1. Development of Cocody, which is a major future road traffic generation area,
2. Improvement of the access to the seaport of Abidjan by developing large roads such as Carena road (Boulevard de la Paix) and spacious parking for a large fleet of trucks, and
3. Restructuring the roads in the city centre, especially Adjamé, in order to be flexible in traffic and to secure more space by removing some houses and constructing new roads.

The JICA Study Team considered particularly the above three issues into consideration to propose better options for the Master Plan 2030.

3.3.6 Public Amenities

The provision of public amenities has not kept with the population growth or distribution. There are shortfalls in all sectors even though the majority of the new development as identified under the Master Plan has been the implementation of public amenities. It is understood that the provision levels have been calculated under the standards published by BNETD. These are now being updated on an ad hoc basis by some Ministries. The provision of adequate and accessible community facilities is a major objective to be taken forward into the Master Plan 2030.

3.3.7 Industry and Commerce

These sectors have suffered during the crises period. One reason is the lack of foreign investment combined with the economic problems at home and internationally. Thus, the objective to create employment near to residences has not been achieved and the situation has deteriorated, with more people having to commute long distance to employment.

Neither of the two primary new industrial zones, in Abobo and Cocody has been implemented. It is that these be fast tracked through review of their location in the Master Plan 2030. Though a new Hi-Tech zone in Grand-Bassam has been developed and work has commenced for a large industrial zone in Attingue.

The commercial sector has also suffered in terms of adequate and modern; office, hotel and retail supply and these will need to be reviewed as major restructuring catalysts for urban renewal.

3.3.8 Infrastructure – Utilities

The main utility infrastructure projects identified in the Master Plan 2000 have experienced significant delay.

- Water; some of the defined water supply projects have been implemented and are on-going to meet demand.
- Sanitation; major projects have only commenced in the past two years. The current Sanitation Master Plan for Abidjan city is out dated. However, an Emergency Urban Infrastructure Project (PUIUR) has been completed and its findings considered will be considered for the Master Plan 2030.
- Power; major projects have not been completed (although under study) i.e., extension of central Thermal Azito (Phase 3), and High voltage link Cote D'Ivoire – Ghana. Both should be taken forward into the Master Plan 2030.
- Solid waste; this is now one of the most urgent planning problems facing Abidjan, the Master Plan does not propose any projects, though it recommends the construction of incinerators within industries and hospitals for hazardous waste. No direction is provided for the improvement of the three existing landfills that are recorded as being either sub-standard or non-structured; Cocody-Akuedo, near Anyama, near Grand-Bassam.

3.3.9 Agriculture

The Master Plan 2000 identified the retention of large industrial plantations. There were no specific proposals for agriculture as the Plan defined projects and medium and long term areas for urban extension. Two factors require a rethinking of this approach. One, the area under study as Greater Abidjan includes a much greater amount of agricultural land. Two, sustainable growth to direct future development within the Greater Abidjan region will require consideration of protection and enhancement of the productivity of agricultural areas that serve the local domestic markets of Abidjan as well as the export market.

3.4 SWOT Analysis Summary

Table 3.8 summarizes the critical points arising from the evaluation of the Master Plan 2000 by setting out the Strengths, Weaknesses, Opportunities and Threats to be considered in the formulation of the Master Plan 2030.

Table 3.8 SWOT Analysis Summary

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • The majority of the Plan's objectives, goals, and actions are still relevant. • The organizational institutions are in place. • Commitment by Government to fulfil Plan • Plan has legal backing. • Detailed plans and projects have been development for some components of the plan. • Some actions have been or are being implemented i.e., the third bridge crossing, which can be catalysts for realisation of the Plans main objectives. • National environmental protection plans, strategies, and regulations are already established. • Implementing agencies are already set up. • International conventions on environmental protection are ratified. • Significant air pollution/ noise/ disaster are not yet occurred. • Development of intermodal (intercity) facilities at for example at North Abobo. 	<ul style="list-style-type: none"> • Plan is dependent on projects for growth however there are no supporting policies or defined responsibilities to achieve implementation. • The future function of each commune role in overall strategy unclear. • Strategies for environment and agriculture not clearly defined or absent. • No defined schedules incorporating design, approval and implementation for critical components i.e., actions and PUD's to be implemented. • Planning standards are out of date and not realistic for land use planning in current inner urban area land availability. • Social, transport and utility infrastructure provision cannot keep up with population growth, especially in land extensive expansion areas. • No clear policies, regulations or government initiatives to encourage sustainable urban renewal / intensification by the private sector. • Limited willingness of the government to monitor projects, share the information on monitoring results among departments and make the urban plans known to line departments, citizens and the private sector. • Limited planning capacity especially at the commune as well as national level. • Limited flexibility of the urban plans to adapt to fast urbanization and changing economy • The urban plans without broad perspective to the surrounding space, particularly, agricultural lands, watershed and network of regional economic centres • Actions in accordance with national environmental protection plans, strategies are not implemented. • Existing conditions and monitoring data on natural/ social environment and pollution control are lacked. • Water pollution/ soil contamination in surface water by inadequate wastewater/ solid waste management and use of fertilizers/ pesticides, and in lagoon by industrial activities. • Little has been proposed regarding the water transport.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Utilizing committed projects as catalysts for complementary new development. • Redressing shortfall in community facilities • Establishing urban centres around multi modal public transit TOD's as the catalyst for densification. • Kick starting urban renewal to create a viable CBD through infrastructure and transport initiatives, • Capturing the economic and tourist benefits of waterfront development linked with upgrade public water transport. • Long-term approach to development enabled by recent national economic recovery and political stability • The expanding borderless economy in the western Africa, which stimulates private investments in Abidjan being a major regional centre. • Accessibilities to public facilities and dissolution of traffic congestions of will be improved by transportation development. • Economic activities and job opportunities will be led by transportation development. • Living and hygiene conditions and aesthetics will be improved by wastewater/ solid waste management and establishment of drainage system. 	<ul style="list-style-type: none"> • Delay in completing PUD's compromises the entire plan. • Lax and / or non-control of illegal settlement and development. • Inadequate funding available to implement actions. • Non buy in by other implementing agencies and governance bodies may affect the realisation of the Plan. • Large scale private sector projects, especially in development of land to increase value may effect spatial development and infrastructure costs • Uncontrolled dependence of the urban transportation on individual cars. Various pollution, especially air/ water pollution and noise/ vibration problems and resettlement problems by developments will be significant • Coastal erosion and flooding problems by sea level rise and disaster by global warming will be increased • No clear classification of the road function has been defined. • Increasing number of automobiles and private vehicle trips. • Urban Sprawl will not produce high ridership corridors needed for either rail or bus mass transit. • Impediments in bureaucracy

3.5 Key Issues

3.5.1 Urban Settlement Pattern and Land Consumption

3.5.1.1 Urban Areas

Abidjan is traditionally a low density and low rise city that is experiencing; high levels of population growth (of which a substantial proportion are foreign migrants), illegal and uncoordinated land occupation and development, and densification / subdivision of existing residential plots. This combination has seen a constant expansion of the urbanized area through the development of both marginal (flood prone and unstable slopes) and agricultural land. The older central Abidjan communes are fully developed. The peripheral communes are the focus of current urban growth; Yopougon, Abobo, Cocody and Port Bouet. In these areas earlier land platting for subdivision is currently being developed and stimulating the pressure on adjacent agriculture land for future development; west into Songon, north to Anyama, and east to Bingerville and Grand Bassam.

In the case of the urban centres of the new communes to be included within Greater Abidjan:

- Bonoua and Dabou are seeing peripheral subdivision growth around their urban cores.
- Azaguie and Alepe are experiencing densification within their central areas, possibly a prelude to peripheral expansion.
- Whilst Jacquville has a significant proportion of seemingly abandoned properties and undeveloped central town land. Although the completion of the new bridge and the leasing of new off shore oil fields will stimulate new development both within the town and along the coastal belt.

3.5.1.2 Urban Expansion

Cote D'Ivoire is committed to a policy of decentralization. This enables local people and their local government to plan and coordinate their own development. However, different interpretations and lack of funding at governance and Ministry levels of the responsibilities for development approval and control have by default, due to the political instability over the proceeding decade, resulted in both planned and opportunistic expansion of the urban area on low priced rural land. Urban expansion is generally considered to be the least sustainable solution to population growth due to the high cost of servicing land (infrastructure and public facilities) at the edge of cities and the distance from the established employment areas.

“Smart-growth” for sustainable development promotes the densification of inner urban areas where returns on investment are higher, as the means to promote public transit, provide easily accessible public facilities, locate centres of employment and constrain the expansion of the urban area. The current pressures for densification and change of land use of private residential plots to commercial uses along major roads within the centres of communes, opens up the opportunity to explore a new urban structure of high density / high rise residential and employment urban centres. This is an alternative to creating new commuter towns that will suffer from the inevitable time lag necessary to attract businesses that would be required to establish large scale employment opportunities.

3.5.1.3 Informal Settlements

3.5.1.3.1 Definitions

The definition of informal housing was set out in the Quartiers Precaires D'Habitat A Abidjan, Octobre 1992, Premier Ministre Ville D' Abidjan, Dcgtx.

“Informal housing is characterized by the absence of legal status on the land use.”

That Study surveyed some 72 informal housing neighbourhoods and ranked them into three different Types. The JICA Study Team has recorded some 114 informal housing areas with the Abidjan Autonomous District, which indicated many of the informal housing areas identified over 30 years ago still remain. The JICA Study Team have categorised the informal housing areas in terms of status of land use. The comparison between the two definitions is shown in Table 3.9.

Table 3.9 Land Use Definition of Informal Housing Categories

Quartiers Precaires -Study	SDUGA
Type 1: structured: mainly neighbourhoods which are physically difficult to distinguish from legal housing areas by their land status.	Structured Informal Housing: land where road and utility reserves have been laid out but have not or only partially been constructed. Individual legally owned plots have been subdivided in a haphazard manner by informal housing.
Type 2: irregular concept: Housings with an irregular concept.	Informal Subdivisions: vehicular access through settlement via non-public route (dirt track). Non-structured haphazard layout of buildings, due to subdivision and densification, on land, some of which have legal owners. In some cases these are traditional village areas. These areas have limited utility provision.
Type 3: poorly or non-structured : poorly or non-structured neighbourhoods	Spontaneous slums: illegal occupation of public land, road reserves, sloping and valley terrain, non-structured haphazard layout of buildings. No formal utility provision. Only peripheral vehicle access from main road network.

Source: JICA Study Team

3.5.1.3.2 Location

Precarious or informal settlements are prevalent in all communes across the Greater Abidjan study area; at the edge of development areas and on marginal land; along the coast of the Atlantic Ocean and Ebrie Lagoon, within water course valleys, alongside major roads, and at the present edge of Abidjan's urban areas. According to the 2002 World Bank “Upgrading Low Income Urban Settlements, Country Assessment Report”, in 1987 a total of 68 neighbourhoods of the Abidjan agglomeration were classified as precarious neighbourhoods. One-third of the precarious neighbourhoods were situated near the Vridi canal and the wharf south of the two bridges (Treichville, Marcory, Koumassi, and Port-Bouët), and two thirds were situated in the northern municipalities. The “Quartiers Precaires d'Habitat a Abidjan”, recorded 72 informal housing settlements with a similar dispersal.

The JICA Study Team site inspection and satellite imagery research of the current slum areas within the Greater Abidjan area have identified 114 slums of varying extent within the 10 communes, including the continuation of those identified in the aforementioned previous studies. The new informal settlements have become established mainly in Abobo, Attecoube, Cocody, Yopougon and Port Bouet. In most cases these are at the periphery of the existing urban edge and in areas which have been identified for

future urban expansion. In some cases this may include the densification by informal housing of traditional village settlements.

Hand in hand with informal settlement is informal employment. The informal employment sector accounts for 81.8% of employment² in Abidjan urban areas and up to 96% in rural areas. Although informal employment also serves people who live within the formal housing sector, it is clear that most informal settlements are close to places of employment and also contain informal markets, commercial areas, recycling premises and vehicle repair yards. These activities compound the problems associated with informal settlements; unsanitary conditions, inadequate storm water drainage, traffic congestion, lack of community facilities, hazardous and bad neighbour uses etc.

3.5.1.3.3 Community

Within the older urban areas some of these informal housing areas have been in place for over 40 years and have a well establish local community, in some cases containing up to three generations of residents. The more recent “Understanding Slums: Case Studies on Human Settlement 2003” Abidjan Case Study compiled from BNETD data recorded that the community of these settlement includes “a mosaic of people with Ivory Coast and other African ethnic groups”. A socio-economic investigation by the AUA in 1994, recorded that 405 were Ivoirians, 20% from Burkina Faso, 9% from Mali, 9% from Ghana, and 12.3% from Togo and Bénin combined. Anecdotal evidence indicates that though the proportions may have changed these informal housing areas support a mixture of country of origins. An INS study in 1998 stated that 81% of the residents were tenants renting there accommodation. Only 13.8% of those residing in the settlement were owners of the property.

A feature of the majority of these informal settlements is that they are loosely structured as neighbourhoods and have resident committees. These committees oversee application for land regularization, the provision of schools and other facilities for the resident community. They also play an important part in the implementation of utility and restructuring projects.

3.5.1.3.4 Government Policy

Cote D'Ivoire has a committed poverty alleviation policy. In the case of slums this does not necessarily mean a commitment to their wholesale removal and rehousing of their residents. In line with the objectives of decentralization, and after many slum alleviation programmes, the “Understanding Slums” study concluded that the most successful strategy is one that promotes a participatory approach with the residents that allows “the beneficiaries to engage in both the process and to have the buildings”. This still leaves issues such as; political support, funding, governance, socioeconomic improvements and secure land tenure for residents, and negative environmental externalities unresolved at policy and implementation levels.

In addition the National Development Plan³ has set out under its “Strategic Result 4: The populations live in a healthy environment and an adequate living environment” the action:

² AGEPE, à partir des données de l'EEMCI 2012

³ Plan National de Developpement 2012-2015

move and re-accommodate populations from non-liveable sites

Coordination between the different authorities who have interest and responsibility for this will be paramount if this action is to be implemented to the benefit of the residents, the reserve of land for and implementation of strategic infrastructure networks, and the rehabilitation / protection of the environment.

3.5.2 Land Capability for Development

There are six major factors concerning the capability of land for development. They are; the physical nature of the land, areas that are under statutory protection, rural land, the governance of development control rights, illegal occupation, and developed urban areas. Each of the above has specific issues or legislation that restricts or constrains the development of land for urban purposes.

3.5.2.1 Physical

The Master Plan 2000 defined land physically unsuitable for development as “Zone Inconstructible”. These areas are those along the main natural water courses and include both their flood plains and the steep sided valley slopes. To this should be added areas that are subject to flooding either marshlands or storm induced along the Atlantic Ocean coast and around Ebrie Lagoon. This land should not be developed due to the hazards to occupation and the high cost of engineering works to safely protect development. In accordance with the National Development Plan action mentioned in 1.0 above development in these areas could be subject to removal and resettlement. This would require new sites to be found to accommodate the existing uses.

In addition legally no development should be within the 25m of public land that borders the lagoon and land reserves; although this has been flouted in numerous instances.

3.5.2.2 Protected

The proposed Greater Abidjan Area includes both the Banco National Park and number of Classified Forests that are legally protection. The Master Plan 2000, stated:

“With an Initial surface area of about 43,000 hectares, only 6,600 hectares of forest remain to the “natural” state which half is attributed to the Banco Park. This heartbreaking situation is mainly cause by a weak management and an “uncontrolled” exploitation of these resources. The loss of these areas will ultimately pose problems for the ecological balance of the area, particularly for the renewal of drinking water resources. The protection of what remains is imperative.”

Urban Planning Study for the updating of the Master Plan of Abidjan, Study N°2 Phase 1, Identification of the Expansion Lands Tenure Regime, June 1994

The protection of these forests has two main aims;

- **The social aspect**, with on the one hand, the objective of recreation, education and training, and on the other hand, the objective of maintaining quality drinking water resource (SODECI groundwater recharge system).
- **The ecological aspect**, with first, a contribution to the conservation of biodiversity, and, secondly, a contribution to the balance of the lagoon system.

In 1926, some 10 Classified Forests and 1 National Park within the proposed Greater Abidjan Study Area were demarcated for protection of their natural habitats of these, for the reason highlighted above, only a few remain. The Master Plan 2000 identified the following areas and remaining classified forests for protection;

- Banco National Park, which is fully protected by law and owned by the State. The national park is managed by OIPR.
- The remaining natural tree stands of the Classified Forest areas of Audouin, Tagbadié, Anguédédou, M'brago, Bébasso in Songon and Anyama Communes. The N'Guiéchié classified forest in the sub-prefecture of Alépé. The three classified forests of Audouin, Anguédédou, and N'Guiéchié are managed by SODEFOR.
- Three areas in Yopougon Commune; where classified forests have been subject to clearance but the areas still require protection as they form part of the Ebrie lagoon hydrological and ecological system. One includes Brakré Lake, and two are on the ocean frontage of Brakré Island.
- In addition the heavily incised valley landscape of the Adjin area east of Cocody that encompasses the Adjin Lagoon is identified as a protected area.

Since the Master Plan 2000, during the period of the socio-military crisis illegal land occupation for local agricultural purposes reduced the classified forest areas further. There have also been some minor incursions of illegal tree felling and occupation at the edges of Banco Park. Following the peace agreement for the country OIPR and SODEFOR have put in place concerted management to protect and enhance the forest areas, both in terms of biodiversity and for leisure and recreation purposes.

The original reason for the protection of these natural forest areas stands true today. With the growing population and the expected improvement in their economic status there will be a demand for a higher quality living environment. The forest and other protected areas will be become increasingly important as new recreation venues to compensate for the limited recreation open spaces within the inner city areas of Abidjan.

3.5.2.3 Rural Land

The majority of land within the Greater Abidjan area is rural and used productively for agriculture. In the case of the palm, rubber and coconut plantations the produce are exported. Other intensively cultivated areas are for local Abidjan area domestic consumption. Rural land is owned by the local village and is generally leased out to private companies for plantation or other development purposes. In some cases large plantations are government owned. In the former private landownership case agricultural land can be and in some cases has been converted to more profitable uses, such as housing; both individual homes and large residential estates. A consequence of decentralisation is that this change of use can be approved by local governance bodies without consideration of wider Ministry strategic planning objectives. These strategic planning objectives could include for instance; eliminating uncontrolled urban sprawl, promoting new technologies to increase agricultural productivity, environmental protection, increasing the agricultural sector employment base, reserving long term

spatially strategic land banks for future development, local food security, widening the tourism product, and providing continuity in the cultural aspects of the local community.

3.5.2.4 Development Control

The development capability of the land is also the prime output of government's urban planning proposals. The Master Plan 2000 (MP2000) is the strategic direction for development in Greater Abidjan, at that time including the 10 city communes and with some broader objectives for Anyama, Bingerville, Grand Bassam and Songon. The plan sets the long term general framework for the development of Greater Abidjan and forecasts the forms and stages of development and modernization. The MP2000 is supported in some cases by detailed urban plans on certain sectors or areas to specify the detail of urban organization and rules of land use. Both these documents are required for development control under the urban planning law for Cote D'Ivoire, "Law n° 62-253 of July 31st, 1962 on Urban Plans"⁴. The drafting of these plans is the responsibility of MCLAU. At a more detailed level subdivision plans are prepared by different government agencies including MCLAU and BNETD.

Development control is through adherence to the following approvals; planning permission (Certificat d'Urbanisme, C.U), Preliminary Agreement for Urban Development (Accord Préalable d'Urbanisme, A.P.U), building permit (Permis de Construire, P.C) and special planning regulation (Réglement Particulier d'Urbanisme, R.P.U). The planning permission is delivered by the ministry of construction and includes information concerning the possibility of use and construction on a land under applicable planning regulation. The building permit is the main control instrument of the administration. (reference: Beijing Study⁵)

The decentralization of planning responsibilities from central to local government (Law N°78-07 of 9 January 1978 applied in 1980) has added further entities, both private and public, into the planning control and implementation process of urban development. For instance, Communes with elected governance have the power to conceive their own development to modernize and improve the living environment, manage the land and the environment.

The recently resolved socio-military crisis has delayed the timely implementation of many initiatives set out under the Master Plan 2000. As a result, to address urgent and localised development issues, other actors both private and public in the development process have taken their own decisions in approving development that does not follow the direction of the Master Plan 2000. In some cases this has resulted in development changes by other approval agencies after the planning permission for the original development granted by MCLAU. A clear manifestation of this is illegal structures of a permanent nature that are fully serviced by utility authorities within the legally reserved right of way for planned major roads.

This procedural violation of subdivision and zonal regulations is an on-going issue and will affect the forward planning of;

⁴ Law n° 62-253 of July 31st, 1962 on Urban Plans

⁵ Journal of Geography and Regional Planning Vol. 5(13), pp. 353-361, 4 July, 2012

Full Length Research Paper : Processes and challenges of urban development in Côte d'Ivoire (Africa) with case study of Abidjan City
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- the optimum land use for the prevailing capability of the land,
- the urban extension zones,
- the creation of land reserves,
- the support to stakeholders in land development, and
- the roles and responsibilities of each decentralized entity under the current legal and regulatory framework.

The different interpretations of the laws that govern planning, development control and implementation by decentralized responsibilities are one of the causes of conflicting yet approved development proposals. The proposed Abidjan Urban Development authority may be the forum to resolve this state.

3.5.2.5 Illegal Land Occupation

Informal development and settlement is a ubiquitous feature of Abidjan as noted earlier in their prevalence across every commune. It is a consequence of Cote D'Ivoire's generosity towards migrants from neighbouring countries; recognition that to achieve sustained economic growth it needs to bolster its indigenous population with migrants. However, the social, military, political and economic disruptions across West Africa over the past decade have led to an influx of migrants at the same time as essential services such as the provision of public housing has been curtailed due to the internal socio-military crisis. Government has now committed itself to providing some 42,000 new public houses in Abidjan over the years 2013-2015. That is the development of around 111ha of land per year.

However, without adequate staffing, funding, and political will, and coordination between all levels of decentralised governance, directed towards the monitoring, control and elimination of illegal occupation of land this problem is likely to continue. Thus land both earmarked at strategic planning level for future development and terrain unsuitable for development will continue to be illegally occupied.

In land use terms the illegally occupied land is designated as "precarious settlements". This definition includes a range of housing and infrastructure standards from slums to the common "habitat de cour". The slums are found on marginal and usually public land, as noted above. The dwelling units are rented from agents usually within the slum community. The main concern of the residents is security of tenure. Generally the quality of the buildings is low utilising salvaged material of a prefabricated nature. Individual dwellings are around 9m² in area.

The habitat de cour are built on a plot bought legally or illegally from a customary chief and used either to live in or to rent. The habitat de cour is built with conventional materials; thus, it is not considered slum housing, even if the land has illegal status. According to the World Bank 2002 report this type of development represented over 70% of the accommodation in Abidjan.

Government, aid agencies and the private sector have all promoted projects to remove or upgrade the illegal settlements, which are health, social and safety hazards to the residents and wider population of the city. Early upgrading initiatives were directed to land legalization and regularization (lotissement - subdivision) of land. However, lack of coordination between agencies due to differing priorities i.e., land legalization, upgrading infrastructure, the improvement of living conditions, provision of schools and health facilities, has not resulted in a comprehensive solution. At present priority is given to primary infrastructure (roads, water, and electricity) and land legalization. Other needs, such as schools and health centres, are in some cases proactively initiated by the local resident community with any outside aid – funding, materials, labour -that they can obtain.

Currently government is undertaking programmes to reinstate land that is considered “Inconstructible” by removing illegal occupation from valley sides as part of slope stability works i.e., in Attecoube around Banco Lagoon; and carrying out remedial drainage and sanitation works to drainage along the main valley floors. These works are essential for the health and safety of the entire Abidjan population and must be the prerequisite criteria across the whole city when considering the status of illegal land occupation in terms of removal, upgrading or formalizing tenure.

3.5.2.6 Urban Agriculture

A notable feature of the urban hinterland and marginal land along river valleys within the developed and partially developed urban areas of the city and outlying settlements are pockets of land for informal agricultural use. These include palm plantations, the growing of bananas, cassava, maize, tomatoes, lettuce, and cabbage etc.; grazing of cattle, and the raising of pigs, goats and chickens. Urban agriculture also includes the production of fuel, such as timber and charcoal. The majority of these produce will be sold in informal markets and in the case of animals they may well be slaughtered in places other than the official and dedicated premises. These activities are an important component of the informal economy and in many cases are the main means of alleviating poverty for many families.

Urban agriculture has been defined⁶ as:

“the production, processing and distribution of divestiture of food including vegetables and animal products within peri-urban or an urban area. Farming in this sense has its main motive to be food production or personal consumption or for sale and or for higher incomes.”

However, even though urban agriculture in practice aids poverty reduction there are serious health implications, arising from:

- the uncontrolled food processing of animals and crops
- indiscriminate use of chemicals
- potential for spread of diseases
- pollution of ground and water bodies

In terms of land use planning informal urban agriculture is a transitory state before full urbanisation of the land. The issue is; does Government have the capability to monitor informal agriculture within urban or peri-urban areas if land is set aside and zoned for urban agricultural uses.

3.5.2.7 Developed Urban Areas

Whilst urbanization to meet population growth and new employment centres is directed towards expansion at the periphery of Abidjan there is also a need to revitalise inner urban areas of; Plateau, Attecoube, Adjame, Treichville, Marcory and Koumassi. Within these older urban areas land is fully developed. In the case of Plateau with a modest resident population of 7,000 residents, large tracts of land are given over the uses whose historic context for location is now obsolete. In most cases the

⁶ Statistics, Research and Information Division of the Ministry of Food and Agriculture, 2005, Ghana

current uses could potentially be accommodated at lower priced land in peripheral areas. This would open up existing inner city land whose full economic value is unrealised (e.g., train depot, three security encampments), for new higher value uses that can accommodate mixed high density private and public development.

Redevelopment of the older urban areas fronting the Ebrie Lagoon to unlock higher value waterfront development and other uses that engage with the water, will both increase the economic vitality and the quality of life of the city; green transport – ferries and water taxis, domestic and international tourist attractions – festivals, parks, and cruise ship terminal.

Future development to revitalise these areas will require a range of development control instruments; change of land use, up-zoning, encouragement of private land assemblage, the redevelopment of public land; as well as the implementation of a comprehensive water and solid waste system, and pedestrian friendly landscape beautification.

3.5.3 Land Ownership Pattern

3.5.3.1 Registered Land

3.5.3.1.1 Urban Areas

The land is under both Public (Government) and Private (individual landowners and relevant traditional village authorities). Illegally occupied land is either state owned or rented from private land owners. Government land is either entirely for public purpose or can be leased by a private developer for a maximum period of 99 years. Government also purchases private land for public development where required.

At the periphery of the urban area where subdivision has already taken place the land is under private ownership and will have been purchased from the traditional village authority.

3.5.3.1.2 Rural Areas

In rural area village lands are legally regulated by custom and land allocations have to be made with village authorities, land ownership being a collective affair. For Government to transform a rural area to an urban one, in the first instant it must negotiate the customary rights with the village authority in the form of indemnity or compensation.

3.5.3.1.3 Agricultural productive land is either:

- held by traditional tribal / village authorities and rented to private companies who then cultivate for crops and plantations, or
- owned by the state for large scale exported related plantation crops.

3.5.3.2 Unregistered Land

The legal status of land tenure is that unregistered land is the property of the Ivorian State.

3.5.3.3 Issues

The main issue will be the identification of land reserves for future urban development that may require change of land tenure from public to private (government land reserves policy), and identify the most appropriate institutional, management and financial resources to ensure the timely establishment of these reserves.

The issue of unclear ownership in urban areas of land that is under private occupation but not registered has been addressed by the recent Ivoirian Government, ordinance n° 2013-481 of July 2nd, 2013 and by the decree n°2013 of July 2nd, 2013, which has instituted the "l'Arrêté de Concession Définitive (ACD) as the only act for the acquisition of urban land. This has resolved the irregularities associated with land ownership, especially in areas of urban expansion, the complexity and long bureaucratic procedures of documents processing and the wrong interpretation of the text related to land ownership. The new reform act streamlines the procedure for the state to legally transfer land ownership to private individuals, with new rapid administrative procedures. In addition, this reform will clear the way for removal of illegally occupied land.

3.5.4 TRAFFIC ROAD – NETWORK, IMPLEMENTATION, CONGESTION AND OTHER MATTERS

3.5.4.1 Implementation of major roads from Master Plan 2000

There has been illegal occupation of the right of way land for major planned roads. Table 3.10 summarises the status of key roads including the rapid service roads, identified for medium or long term construction or road widening implementation under the Master Plan 2000.

Table 3.10 Review of Major Planned Roads

Road	Current Status	Recommendation
Triomphale	Route will require removal of extensive properties, many of which are public facilities.	The road construction will enable major urban renewal to restructure Plateau as the Central Business District of the city.
Y 4	Route blocked in parts of northern section. Southern section restricted width.	Some realignment in northern section. Route diverted along Bld Mitterrand to link with existing road and proposed crossing to Petit Bassam via Ile Desiree.
Bld France	Some illegal buildings within Right of way	Remove illegal buildings to implement entire route.
Bld Latrille	Route is currently available and unimpeded except for small plantation.	Implement.
Bld Mitterrand	Some illegal structures at western end.	Implement.
Parkway / V 23	Route blocked along entire length by extensive illegal settlements.	Consider implementation upon review of issues involved in removal of large residential population along route.
V 28	Southern section of route blocked by extensive illegal settlement. Actual bridge crossing or Ebrie Lagoon unclear.	Check with Ageroute location of Bridge. Removal of illegal settlements and implement.
V 2	Mainly unobstructed and many structures will be cleared for implementation of water supply pipeline.	Remove all illegal structures. Construct road and link at western and eastern with propose route V6.
V 6	Western section and middle section blocked by permanent illegal structures.	If removal of permanent structures unfeasible utilise route V6 as described above a major west to east route across southern Yopougon to link Dabou Road with Plateau.
V 9	Large permanent buildings have been constructed only the route as an expansion of the existing Industrial area.	
Y 3	Restricted width in some sections	Implement with reduced lanes in some sections if removal of buildings that encroach right of way unfeasible.

Source: JICA Study Team

3.5.4.2 Road Planning

3.5.4.2.1 Land acquisition

Most of the roads mentioned in the Master Plan 2000 were already planned for several years. Many attempts have been made to start the construction of those roads and each time, the people living inside the ROW have been compensated to relocate outside the ROW. However, as the road project has not been starting due to a lack of financing, people started to live illegally again in the ROW. Thus if the project is again implemented, compensation will again have to be made. This has an economic impact for the State. For instance, the compensation cost for the Abidjan - Bassam expressway is estimated at 8 billion FCFA⁷.

It is thus very important to find a way to make sure that the ROW is maintained. A special structure should be in charge of checking that no illegal settlement are been installed inside the ROW.

⁷ According to Ministry of Economic Infrastructure (http://www.infrastructures.gouv.ci/affichage_det.php?recordID=77)

3.5.4.2.2 Road Network Integrating Public Transport

The road network has been mainly developed without any consideration to Public Transport. Although public transport has been declining in recent years, the Master Plan 2030 main objective is to restore the credibility of Public Transport lost during the last ten years.

In order to integrate public transport inside the road network, and in particular mass-transit system, the first step is to secure sufficient space for both road users and public transport facilities along the targeted roads. The ROW width will be estimated based on the type of public transport that will be selected.

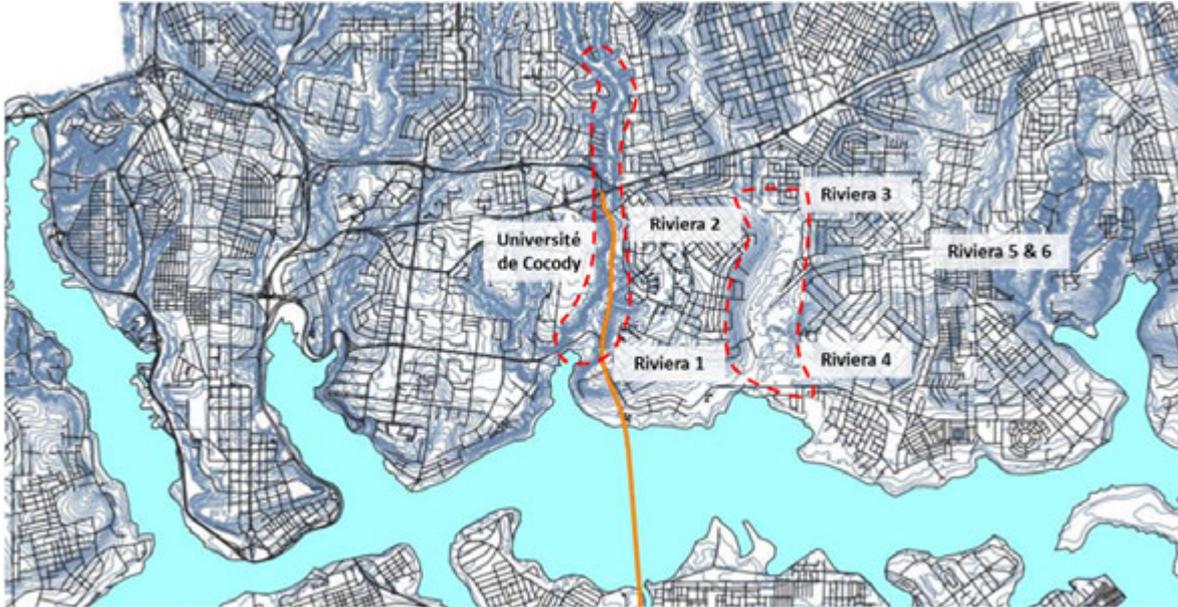
3.5.4.2.3 Fast Urban Development

Around Abidjan, fast urban development can be seen, in particular between Cocody and Bingerville where large residential areas have been built in a very fast pace. To meet the growing demands in habitation, several developers are constructing large residential areas. The transport master plan and thus the road master plan will have to take into account all the latest urban development to make sure that they are consistent to each other.

3.5.4.2.4 Topography

The landscape of Abidjan District is punctuated by many valleys called thalwegs, surrounded by very steep slopes that seem to be very unstable. The thalwegs are creating natural boundaries to quartiers and are most of the time uninhabited as people are reluctant to live in those areas that are used as illegal landfill and can be flooded instantly during raining days. Planners have used this free space to design roads inside those thalwegs as the lands were available, like the access roads of the 3rd bridge (in orange in the Figure 3.1) built inside the thalweg Blingue (25m deep).

Those thalwegs can also be seen as an obstacle as a bridge has to be built to cross the valley. Many quartiers are not linked together. For instance, the thalweg (inside the red dotted lines) seems to cut the road network between Riviera 1 to 6 on Figure 3.1. Specific anti-erosion works have to be carried out on both sides of the crossing to stabilize the ground. Thus, this topographic specificity will have to be taken into account when designing the Master Plan 2030.



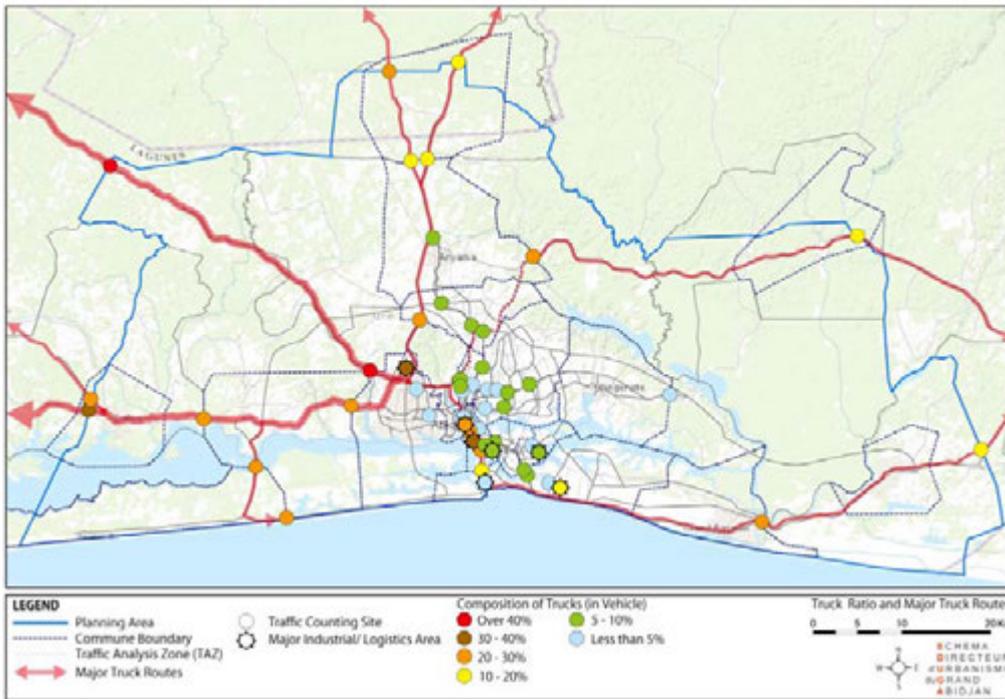
Source: JICA Study Team

Figure 3.1 Thalwegs Segregating the Quartier

3.5.4.2.5 Functional Goods Distribution System

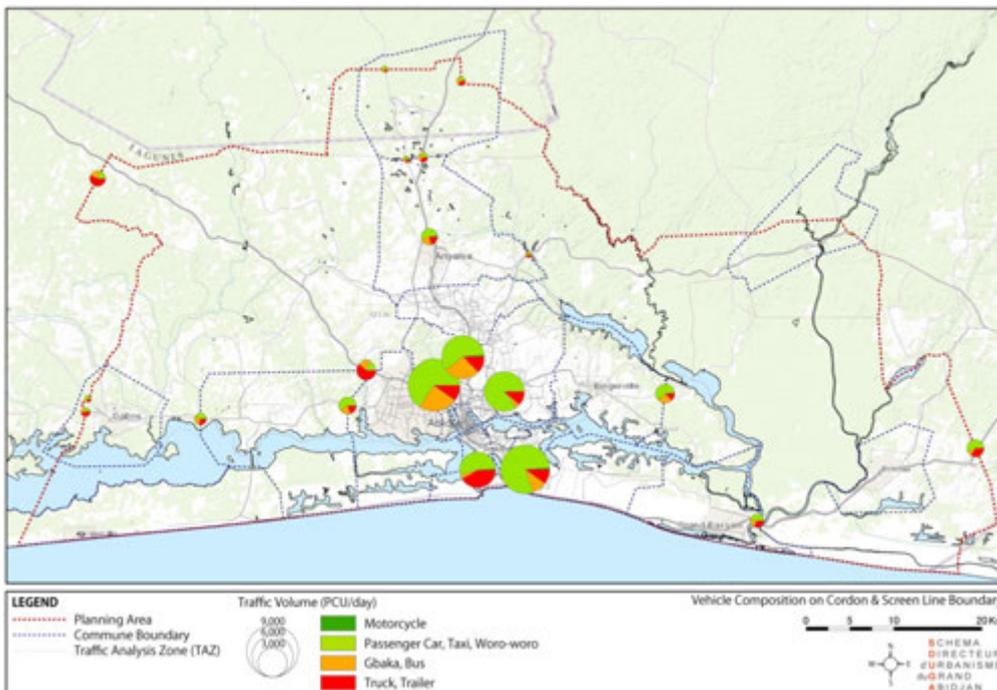
As the main roads with a high capacity, many private vehicles take the primary urban roads. Moreover, since the primary urban roads connect the major industrial areas in Abidjan such as Yopougon, Treichville, and Koumassi, via the primary urban roads to Abidjan Port and other major cities in Cote d'Ivoire, it also serves as a freight transportation corridor. Based on the result of the traffic count surveys, compositions of trucks to all traffic are plotted, and the major truck routes have been identified as shown in Figure 3.2. Above all, the northwest direction and the west direction can be regarded as the heavy vehicle corridors.

For freight vehicles (i.e., trucks with more than 3 tonnes and trucks with more than 15 wheels), although they are banned from entering the central business district (CBD) inside of Plateau except on the expressways around Plateau during the peak hours (i.e., 6:00 - 9:00 a.m. and 4:30 - 8:00 p.m.), these conditions result in high traffic generation and mix with many slow, heavy vehicles on the existing primary urban roads, as shown from the transportation survey as shown in Figure 3.3. Such a burden on the existing primary urban roads should be alleviated by providing alternative roads for both trucks and passenger vehicles.



Source: JICA Study Team

Figure 3.2 Major Truck Routes in Greater Abidjan



Source: JICA Study Team

Figure 3.3 Vehicle Composition at Inner and Outer Cordon Station and Major Roads in the Centre of Abidjan

3.5.4.3 Traffic Control and Management

Traffic condition in Abidjan has already reached an intolerable level and the congestion is serious and widespread. Demand exceeds capacity at many intersections causing severe congestion for many hours of the day. To alleviate the congestion, traffic management measures have been applied with limited success so far.

3.5.4.3.1 Traffic Signal Control

The existing traffic signals are not performing at full capacity as they are operated only in the time-of-day mode. No traffic condition data are collected, and signal control is not responsive to the changing traffic condition. More efficient control of traffic signal is possible if more vehicle detectors and Area Traffic Control (ATC) systems are installed and traffic condition data are collected. To realize more effective signal control system, traffic condition data must be collected in real time, which in turn requires reliable communication system.

3.5.4.3.2 Traffic Information Systems

As the number of automobiles has rapidly increased in Abidjan, traffic congestion has become increasingly serious. In light of this situation, it has become important to identify the bottlenecks responsible for traffic congestion using intelligent transportation systems (ITS), and to disperse traffic through the above-mentioned optimal traffic signal control and the provision of traffic information. Traffic conditions on the road sections between intersections should also be monitored as well. In addition to traffic monitoring, an efficient and inexpensive way of compiling data and disseminating traffic information is also necessary for Abidjan.

3.5.4.3.3 Priority Treatment for Public Transport

In a city like Abidjan where rail-based public transport has limited capacity and the majority of people rely on road-based public transport, buses should deserve more favourable treatment to enhance their attractiveness. However, because of their substandard service level and undisciplined traffic behaviour, public transport is not considered as good public service that provides people with mobility at an affordable price. Dedicated bus lanes in the central Abidjan are shown in Figure 3.4. Though the bus lanes should be given priority, buses are often caught in more severe congestion.



Source: JICA Study Team

Figure 3.4 Dedicated Bus Lanes in Central Abidjan

3.5.4.3.4 Control of Overloaded Vehicles

Increase of the overloaded transport of the international freight is foreseen along with development of the future large-scale port and the arterial road network. While introduction of the axle load measuring device is implemented in part, it is not operated in the current situation. Currently, large ruts are being made by overloaded vehicles on the asphalt pavement of the bridges and the arterial roads connecting to the port. The structure of a proper large-size freight vehicle management has not been established, and development and enforcement of such regulations are required for road operation and maintenance.

3.5.4.3.5 Enforcement of Traffic Regulation

The current truck ban which is applied to certain arterial roads in Abidjan may also need to be reviewed as to whether other roads or other trucks should be included or more hours should be added to ensure a more efficient use of the existing roads. Parking regulations, especially on on-street parking, also need to be reassessed to guarantee a more efficient use of roads in the CBD. However, consideration must be given to ensuring that business and commercial activities along the roads, especially in Plateau, also benefit from any action or decision.

3.5.4.3.6 Traffic Safety

Pedestrian bridges, especially along the busy main arterial roads, are insufficient in number. In order to reduce accidents involving pedestrians, more pedestrian bridges should be provided. In addition, narrow or poorly maintained sidewalks along the arterial roads need to be improved, since sidewalks of good quality will enhance not only pedestrian safety but also the urban amenity and environment. Furthermore, traffic education programs and campaigns, as well as stricter traffic law enforcement, should be promoted to reduce the number of traffic accidents as well as to minimize the disturbance of traffic.

3.5.4.3.7 Traffic Management on Highways

Existing highway traffic surveillance facilities are very limited in coverage and function. Traffic condition monitoring now relies on the manual method of the patrol cars, which cannot cover the entire highways at short intervals. As a result, detection of an accident takes time and the information is limited as it comes only through the reporting from the patrol cars.

It stems from the fact that there is no comprehensive traffic information system or no effective traffic surveillance. In addition, efficient processing of collected data and timely dissemination of the traffic information to the road users are necessary. Traffic information is useful both for drivers who are already on the road and for those who are planning a travel using the highways. Variable Message Signboards are necessary for the former while the internet provides pre-trip information. FM broadcasting serves both.

3.5.5 Public Transport

3.5.5.1 Bus and Informal Sector

The key planning issues for public transport issues at present is that the public transport service is provided largely by the informal sector. Bus services are concentrated on routes originating from suburban areas and ending in several city terminals such as Adjamé or the Plateau terminal. The informal sector accounting for 85% of public transport trips is provided across the following modes namely:

- Gbaka;
- Meter taxis;
- Intra-communal taxis (Woro-Woro); and
- Shared, fixed-route, inter-communal taxis (or illegal Woro-Woro).

3.5.5.1.1 Reconsideration of Bus Route Structure

Bus routes are categorized into four types from a planning point of view, namely, line-haul bus services on high capacity corridors, circulator bus services within major centres such as the CBD, circumferential routes and suburban feeder bus services. The circumferential routes⁸ would provide linkages between major activity hubs without the need for coming into the centre to access an adjacent hub. The viability

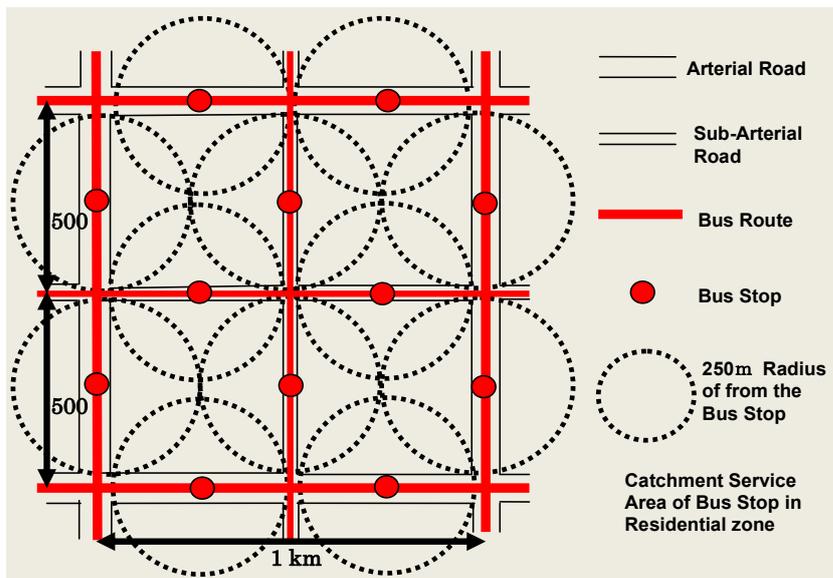
⁸ Alternatively one may consider three levels of public transport namely a primary, secondary and tertiary level. With both the circulator and feeder services set into the latter category.

of bus route re-structuring needs consideration in light of existing and future travel demand. This is a subject for further discussion once there is an estimation of future demand in relation to the proposed future land use planning.

If after a review for example, most line haul routes becomes the prerogative of the formal public transport structure. The role of the informal sector such as Gbaka, Intra Communal Taxi or Woro-Woro then focuses on circulator and feeder routes and possibly the need or otherwise for circumferential routes. Whilst it is common to have a circular route in a CBD, in Abidjan consideration should be given as well for the need of such routes within the individual communes.

In fact, a majority of public transport users residing in suburban areas would desire the improvement of feeder bus services in terms of accessibility, frequency, and punctuality. This is the most vital point to strengthen the intermodal system of the overall public transport network. Ideally, all the residential area should be served and covered by feeder public transport within about 250 meters from the nearest bus stop. Consequently, as shown in Figure 3.5 **Conceptual Structure of Bus Service Network**

, interval of parallel bus routes should be about 500 meters at maximum, and intervals of bus stops should also be 500 meters at maximum. For this, even informal sector such as Gbaka could take this role to develop into “formal” minibus services



Source: JICA Study Team

Figure 3.5 **Conceptual Structure of Bus Service Network**

Such internal communal routes would change the role of the currently dominant informal sector⁹. For example, a circular route feeding the central Plateau could possibly originate from the existing intermodal bus and ferry SOTRA centre at the base of the Plateau.

⁹ Such analysis can only be clear after an appreciation of the existing demand which will be available from a detailed analysis of the SDUGA surveys.

3.5.5.1.2 Provision of More High Capacity Public Transport Services

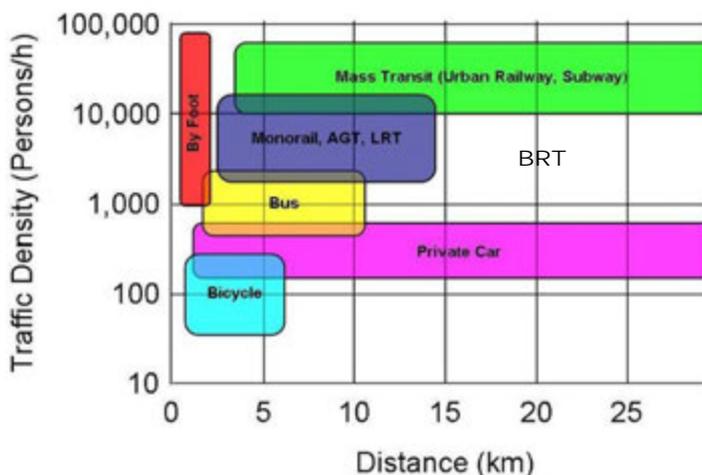
As observed in many metropolitan areas, road traffic demand overwhelmingly exceeds the capacity of the road network, causing chronic traffic congestion especially in and around the Central Business District which is in Abidjan in effect the commune of the Plateau. In the terms of urban transportation, priority must be given to the mobility of people not cars. In that context, public transportation should be given priority over private vehicles to secure smoother travel for those who use public transportation. The capacity of a car is five to six people whereas a capacity of a bus is 50 or more people. The road system is a limited resource which one must use efficiently.

Currently SOTRA have identified 5 line haul routes or high capacity routes namely:

- Western Route (Yopougon to Adjamé);
- Northern Route (Anyama to Adjamé);
- Eastern Route (Bingerville to Southern Plateau Station);
- Southern Route (Grand-Bassam to Southern Plateau Station); and
- Central Route (Adjamé to Southern Plateau Station).

These priority corridors identified by SOTRA are all in essence part of the previously identified as the north-south and east-west high capacity public transport corridors discussed earlier. The possibility of applying bus priority lanes to more arterial roads should be examined to form a continuous network for buses. Furthermore, the introduction of dedicated bus lanes and new transit malls where many bus routes meet on these bus priority lanes should be studied further in conjunction with land use.

After investigating the people's travel demand and its forecast, land use plans, and development directions in the Greater Abidjan, a new rail-based mass transit system may be recommended for the high capacity public transport corridors. Whether to develop the new mass transit system as a rail- or a bus-based transportation, such as BRT, will depend on the demand forecast and the service distances on the corresponding transportation corridors, as illustrated in Figure 3.6. However, it should be noted that the future passenger demand will also vary depending on the attractiveness and convenience of the new mass transit system including its accessibility and intermodality with other transportation modes.



Source : Amano, et al. (1990), Zusetsu Tetsudo Kougaku, Maruzen

Figure 3.6 Urban Public Transportation Systems by Passenger Density

3.5.5.1.3 Integration of the Informal Sector

The informal services are currently an integral part of the transportation system of Abidjan. It is possible for all of these services be re-engineered to support the line haul high capacity corridors as feeders. The locations of high density of feeders linking to line haul systems become opportunity locations for Transit Oriented Development (TOD) Centre.

The development of a feeder service to high capacity public transport corridors could incorporate the use of the existing Gbaka fleet whilst the development of the circular routes especially within commune is also a likely use of the Gbaka fleet. The missing element in this system is the future role of the Woro-Woro which currently provides an important local role. The integration of the Woro-Woro to an efficient public transport system needs further consideration in consultation with direction of the future land use plan.

3.5.5.2 Rail-based Transportation

3.5.5.2.1 Current Situation of African Railway Sector

- For last several decades, the African railways have been operated in state ownership basis with favourable conditions provided by governments. However, while most national economies and national railways have been liberalized considerably, today, almost all railways, excluding that of South Africa and dedicated mineral lines, are not essential to the functioning of the state economy due to the strong inter-modal competition with road transport.
- After many attempts to introduce commercialism into public owned railways were failed, most countries in Central, East and West Africa have moved all or part of the way to a system of concessions. Concessions have improved operation performance and in most cases it increased transport volume and railway operation is performed more efficiently.

3.5.5.2.2 Freight Transport Issues

- After SITARAIL¹⁰, the concessionaire, started railway operation in 1995, freight transport volume was increasing significantly to achieve 1 million ton in 2001. However, due to various causes, including the civil war in 2003, the freight volumes shows declining trend.
- As a background of the situation, there are several internal factors, i.e. transport capacity constraints due to poor track condition and a shortage of rolling stock, especially locomotives. In this regard, it is urgent for SITARAIL to improve its railway facilities significantly.
- As a weak point of railway freight transport, it can only provide transport between stations, but can't serve transport between the railhead and ultimate origin/destination. To overcome this situation, it is necessary for the freight railway to focus on specific freight markets in which railway can provide freight services in a front-end type such as petroleum and containers.

¹⁰ SITARAIL was established in 1995 as a railway operation concessionaire entrusted by the contract agreement with Government of Cote d'Ivoire and Burkina Faso, one of the group companies belonging to Bollere logistics, who is a major shareholder of SITARAIL. As a corporate profile, its human resource consists of 1300 permanent staffs and works in close collaboration with about 250 sub-contractors, its highest transport performance was achieved in 2001, i.e. 1.2 million ton of cargo and 250 thousand of passengers are transported.

3.5.5.2.3 Passenger Transport

- Long distance passenger transport, including international and domestic, is provided by current railway services. It shows; however, a declining trend in the last several years, in particular domestic transport. Current passenger railway service is slower and makes fewer trips, comparing with its counterparts, because of its poor track condition and lack of rolling stock.
- To gain a competitive position in the long distance transport market, railway should upgrade its facilities and equipment to enable high speed and frequent train operation. This direction is desirable, but obviously it requires huge investment cost. In this regard, this issue should be broadly discussed as a long term regional issue, including bus transport service after that it will be converged into a comprehensive solution.

3.5.5.2.4 Urban Railway System Development

- As mentioned in the previous urban master plan in 2000, there are several urban transit proposals and they become medium to long term transport issues. This subject should be discussed from the viewpoints of urban public transport formulation and application of a railway system should be judged through further discussion and study.
- In the rail based mass transit system, there are considerable system types existing from the metro type train to a medium capacity tramway system. The selection of the rail based transit system might affect urban transport performance and economic impact after implementation. This becomes an important issue from the viewpoints of transport demand and economic and financial requirements for system introduction.
- In general, the following items are the issues to develop rail based mass transit in the actual transport scene.
 - Transport demand forecast (future socio-economic condition, modal choice behaviour of people)
 - Route alignment (service corridor location, location of right of way)
 - Location of stations (transit operation, coordination with the road system, surrounding land use, spatial requirements etc.)
 - Location of mode interchange points (with feeder transport and inter-regional transport)
 - Transport system selection (transport capacity, service characteristics)
 - Economic and financial examination

3.5.5.3 Integration of Public Transportation

The integration of public transportation should be discussed in the following two aspects.

3.5.5.3.1 Integration of Rail and Bus Transportation

Even if the existing railway system is improved and the planned rail-based mass transit system is developed, the rail-based transportation network will not be enough to cover all the travel demand in Abidjan. Hence, bus transportation is expected to supplement and complement the rail-based transportation system, especially in areas beyond walking distances from the rail stations. In this case, a reorganization of the bus route structure will be required to provide feeder bus services to provide convenience to potential railway users.

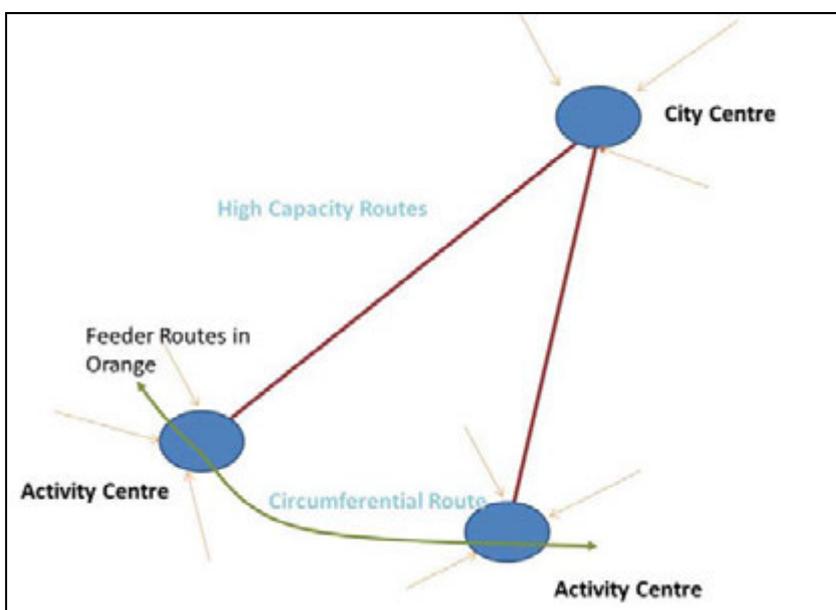
In addition, the introduction of a common fare system would be convenient to public transportation passengers because they can utilize one ticket for several modes. It would also allow free, or at least discounted, transfers between different modes of public transportation. Moreover, it would be another incentive for current private vehicle users to shift to public transportation.

3.5.5.3.2 Integration of Public Transportation and Land Use

For an effective integration of land use and transport, it is necessary that the trunk routes or high capacity public transport routes focus on the principal centres of activity in Abidjan. At these points of integration and transfer, a common ticketing system that is usable on both feeders and the trunk route public transport system would be helpful.

This would likely create a radial route of high capacity public transport corridors. In addition to this, it is likely that there is a need for future circumferential routes that link development centres or hubs. The necessity and time of the implementation of such routes would need to be based on the analysis of future demand.

Figure 3.7 depicts a possible connectivity plan. The high capacity route links suburban activity centres to the city and these activity centres are connected to the surrounding catchment whilst suburban activity centres are linked with circumferential routes. The only routes not shown in the figure are the circular routes. In fact between each blue activity centre, there would also be minor activity centres as well.



Source: JICA Study Team

Figure 3.7 Connectivity of Major Activity Centres

3.5.5.4 Water Based Public Transportation

At present, there is an under-utilization of the water system in Abidjan as a provision of public transport. In fact of the public transport passengers carried daily by SOTRA, less than 5% are carried along the waterways of Abidjan.

With full public transport integration, local services in the communes west of Plateau could feed to the waterways and link to fast efficient water based public transport. The waterfront would see then see improvement of significant renewal. These water terminal stations then have the potential for Urban renewal and transit orientated development. The likely attractiveness of such development needs further investigation. Such water based hubs could prove very successful in Abidjan.

The key to the enhancement and expansion of existing water based transport is future demand.

3.5.6 Provision of Social Infrastructure

The distribution, range of community facilities and their land requirements are planned with reference to the Planning Standards produced by BNETD¹¹. These standards of provision were published in 1998 and have been updated recently only in terms of health provision by the Ministry of Health, and sports by the Ministry of Youth, Sport and Leisure. Appendix F of this report sets out the current up to date planning standards used for community facilities as provided to the JICA Study Team.

Overall the level of provision of facilities has not kept pace with the growth in population. This point is clearly demonstrated in the current work across the city to rehabilitate schools for increased pupil numbers. Another important issue to be considered is the shortage of undeveloped land within the densely developed communes of Abidjan. This raises two key considerations for the future provision of facilities:

- 1) Most of the standards of provision for facilities are land extensive, especially as they were drawn up at a time when the population was less dense and land was really available. The provision of new facilities to these standards is not feasible now within the inner city communes unless there is major urban renewal. The alternative would be to locate the facilities in the suburbs where there is land of sufficient size. However, such a solution would remove the facilities far from the local community demand.
- 2) Land values will be higher within the older parts of the city and the most economic use will be for mixed use development, either entirely privately funded or in partnership with public sector. In such cases the spatial requirements for new community facilities must be revised to ensure efficient use of the restricted land available and enable multi use developments.

Current best practice for community facility provision considers location in relation to transit routes and multimodal hubs, as well as the co-location of facilities. It is propended that the current community facility standards be reviewed with the above points in mind. This would be a separate study beyond the scope of SDUGA.

3.5.7 Quality of the Urban Environment

Abidjan occupies one of the most spectacular natural waterfront settings of any major city: comparable to Sydney, Istanbul and San Francisco. It is also a city with dramatic landforms; valleys, plateaux, islands and an ocean frontage; that afford a variety of extensive and panoramic vistas. Uniquely it contains the largest natural rainforest of any major city in the world. The city's street life is vibrant; a kaleidoscope of colours, movement, activities and noise. Yet visually the overwhelming appearance and aesthetic of the urban areas is poor and dominated by vehicles. The visual quality is a jumble of concrete

¹¹ Guide des Equipments Communaux, November 1998, BNETD.

and neglected open spaces with very little vegetation to soften the built urban facades of buildings, walls, roads, overpasses and slums. Walkways are a mixture of poorly kept paved sidewalks and dirt tracks.

A significant issue is that this is a tropical city with no trees. Lack of funding to carry out street planting programmes and even then wood has long been and in some cases still is the only affordable fuel available to many residents. In addition there is a scarcity of public parks. Some have been built upon, and those that remain appear inadequately maintained and few of these occupy what could be called a civic presence within the urban fabric or at the waterfront. In the affluent areas, such as parts of Cocody the quality of the streetscape landscape is of the highest standard, unfortunately this is not replicated in other areas of the city. It is a small pocket showcasing a quality of the urban environment that the city could attain.

The solution goes beyond just planting more trees, although that is essential to provide nature's benefits of visual relief from hard surfaces; as well as establishing a human scale, shade, colour, fragrance and biodiversity. What is lacking is a comprehensive urban design solution to the city. A 'sense of place' for local residents and a 'sense of identity' in belonging to a city that has a permanence of built form in harmony with nature. There is a need for a clear urban narrative that:

- Integrates the inherent natural aspects of Cote D'Ivoire with its major city, such as 'green and blue spines' connecting the communes.
- Provides civic centre landmarks for its local communities.
- Includes high quality architecture to showcase the economic energy and international aspirations of the city.
- Encourages well designed pedestrian friendly streets with free movement for all that link with urban plazas that encourage open air markets, al fresco eating, cultural performance and urban art.
- Ensures natural ventilation and light in the placement of its buildings.

3.6 Conclusion and Recommendations

3.6.1 Master Plan 2000

In terms of overall spatial growth and development objectives the Master Plan 2000 reflects many of the proposals set out for the earlier 1985 Master Plan for Abidjan. Although expanded to include the outlying settlements of Anyama, Bingerville, Grand Bassam and Songon; and the objectives, fine-tuned towards sustainable growth for the city. There is a definite continuity in the strategic planning direction for Abidjan, for example the proposal for the Voie Triomphale through Plateau district as a major urban renewal intervention was formulated in the 1960's. It can therefore be assumed that Government is consistent in their commitment to the realisation of the goals and main drivers for the future development of Greater Abidjan as set out in the Master Plan 2000.

This is clearly apparent in that the Master Plan 2000, for the past decade, has directed strategic transport and utility planning, the expansion of residential areas in peripheral areas, and the development of the new port through both the reservation of land, and where possible the implementation of key projects.

3.6.2 Implementation

Even partial realisation of the Master Plan 2000 has been severely disrupted by economic, political and social factors both within Cote D'Ivoire and across West Africa. This has resulted in the delay or non-implementation of; projects that were identified for short and medium term implementation, social housing and investment in social infrastructure to keep pace with population growth, and formulation of detailed urban plans to guide development control. In consequence: illegal occupation of land has occurred to meet the demand for residential premises; there is a need to rehabilitate existing community facilities; and road, public transit, sanitation, drainage and waste management infrastructure require urgent upgrading.

3.6.3 The Way Forward

The main strategic proposals of the Master Plan 2000 are still relevant today and will have to be addressed in the future plan for the city. A major thrust of the Master Plan 2000 was the expansion of the urban area by providing serviced land at the peripheral communes. To some extent the Master Plan 2000 sought to balance this spread of the urbanized area with the densification of 10 commune urban centres that form the core of city. Only minimal success has occurred in the latter case. Although densification through the subdivision of private plots across all of the 10 communes has shown that this is where accommodation is demanded. Both spatial growth dynamics will require strong policy guidance to ensure efficient use of infrastructure and curtail urban sprawl.

The underlying strategies for Abidjan's future development, as mentioned earlier, stem from best practice planning concepts current in the 1980's and 1990's. The future Master Plan will be required to take these forward together with current planning concepts attuned to sustainable development, such as; the commitment of Cote D'Ivoire to instigate EIA and SEA approval for new developments, compact city and Transit Oriented Development (TOD), employment clusters, the Government's National Plan 2010 -2015, Government's commitment to poverty alleviation, Ministries policies for future development and growth, and up-to-date planning standards that reflect density and land value constraints on land availability for providing community facilities.

A major stumbling block is the difficulty in implementing the proposals of the Master Plan. A notable absence in the Master Plan 2000 are land use policies to guide desired actions. There is also a need to clearly define the organisations and stakeholders responsible for implementation of the policies and the role of communes in development control to ensure that projects are realised in a timely and coordinated manner.

4.0 Sustainable Development

4.1 Strategy for Sustainable Development

The commitment of Cote d'Ivoire to future sustainable development is set out in the “National Strategy for Sustainable Development and Plan of Action 2012 - 2016” by MINESUDD, 2011. The document is a draft policy document prepared by the Ministry of Environment and Sustainable Development. The document is currently under review by the President’s Office; as the first step towards sustainable development the document recommendation to require Strategic Environmental Assessment (SEA) for new development has been decreed into law.

The vision for sustainable development that has been as set out in the draft policy document is:

"Promoting peace, social cohesion, economic and social development and sustainable management of natural resources for present and future populations"

The main strategic areas of sustainability are:

1. Promotion of sustainable production and consumption
2. Peace, security of people and goods and the promotion of good governance
3. Promotion of cultural heritage and diversity
4. Sustainable management of natural resources, biodiversity and strengthening of the fight against climate change
5. Mastery of population dynamics and development of social sectors
6. Strengthening of cooperation and integration
7. Promotion of education, information and communication

The challenge facing Abidjan is that the city needs to accelerate economic growth in order to meet both the National Goal to become an emerging economy and the rising expectations of a growing population, about a quarter of whom live in informal settlements. This imperative for economic stimulus must be balanced with the fact that the growth in population has resulted in spreading urbanization, especially noticeable in loss of agricultural areas at the edge of the current urban conurbation and in the threat to water catchment areas which feed Lagoon Adjin and Lagoon Potou where potable water is stored.

The impact in terms of environmental degradation apparent across the Greater Abidjan area can be summarized as:

- severe land degradation,
- soil and slope erosion along river valleys,

- pollution of rivers, lagoons and groundwater resources,
- large scale deforestation,
- loss of biological diversity due to urbanization,
- inadequate facilities for wastewater and solid waste disposal in urban areas,
- traffic congestion throughout the urban areas, together with associated noise, poor air quality and safety negative externalities, and
- substandard living conditions throughout informal settlements.

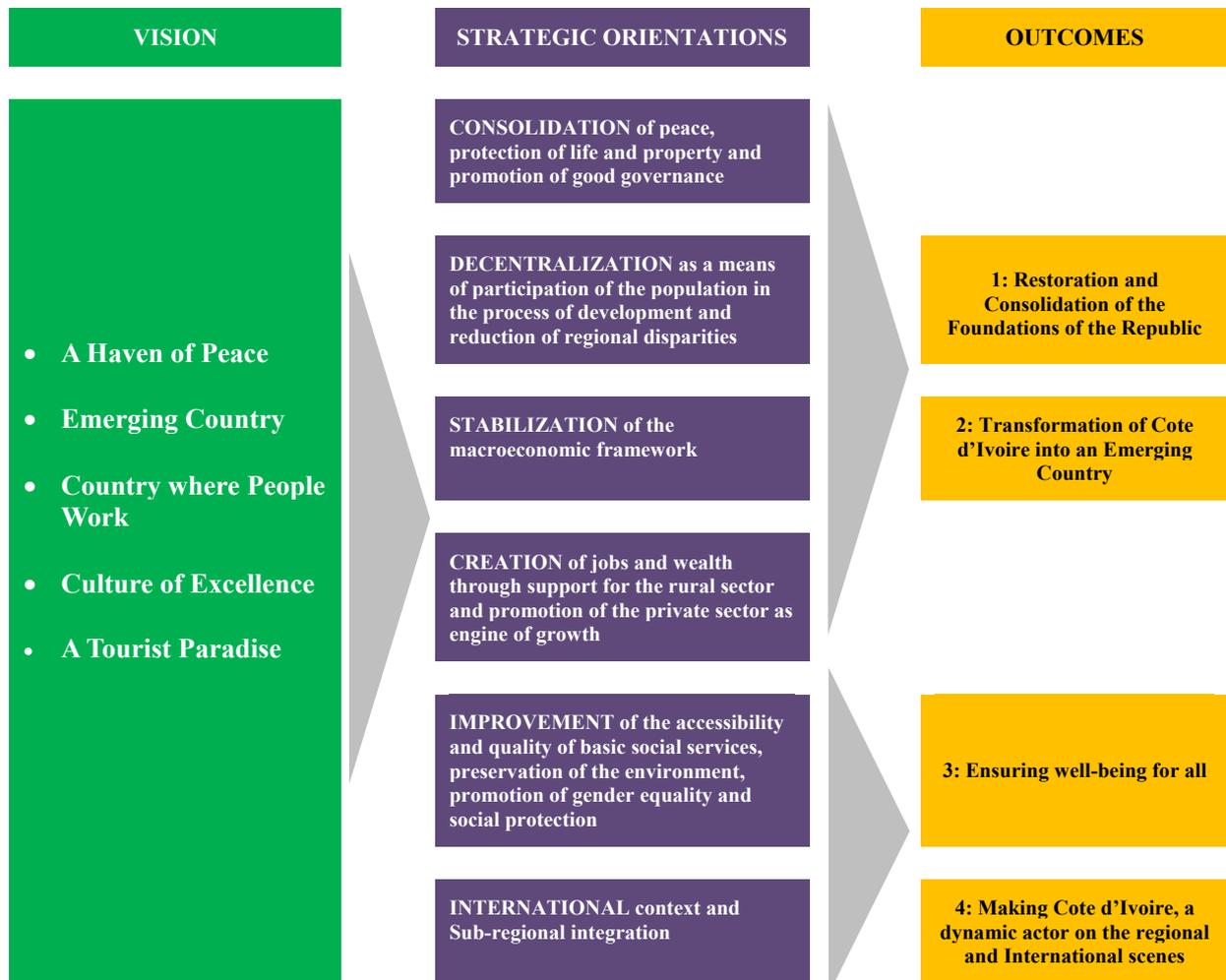
4.2 Planning Context

4.2.1 National Vision - Strategy for Relaunching Development and Reducing Poverty 2012 -2015

The “**Strategy for Relaunching Development and Reducing Poverty**” (RDSP) 2012-2015 set **the development vision** for the future sustainable growth of the nation. The vision is based upon a scenario of “**REBIRTH**” that has 5 main aims for Cote d’Ivoire (see Figure 4.1). To achieve this long term vision 6 Strategic Orientations are grouped to attain 4 major outcomes.

The above visions and outcomes address a wide range of concerns regarding the future development of the country and reducing poverty. The consistent theme guiding the proposal of the RDSP is that of an emerging economy founded on sustainable growth. In terms of this Study, to provide a Framework Plan and Land Use Policies for Greater Abidjan, the following main objectives of the RDSP supporting the Outcomes are important:

- Ensure modern, equitable and inclusive institutional governance: which aims at (i) deepening the decentralization and citizen participation; (ii) establishing a balanced development of the national territory.
- Ensure equitable redistribution of national resources.
- Creation of jobs and wealth through support to the rural sector and promotion of the private sector as an engine of growth, which aims at strengthening the productive sector in order to, notably, diversify the economy and enhance the local processing of agricultural produce and minerals locally.
- Intensification of the promotion of the global competitiveness of the economy through: (i) modernisation of the infrastructure; (ii) development of human capital, know-how and innovation; (iii) establishment of an international business environment; (iv) the active promotion of exports and (iv) improvement of the financing of the economy.
- Improvement of the accessibility and quality of basic services, protection of the environment, promotion of gender equality and social protection.



Source: Strategy for Relaunching Development and Reducing Poverty (RDSP) 2012-2015

Figure 4.1 Vision for Cote d'Ivoire

4.2.2 Master Plan 2000

The Master Plan 2000 is the legal planning document to guide the future spatial development of the metropolitan region of Abidjan. The extent of the plan includes the city of Abidjan as well as its periurban and rural hinterland. The main priority of the plan has been directed toward identifying areas of the natural environment for protection and areas for urban expansion. The plan also identifies key infrastructure and development projects to be undertaken in the short medium and long term over the 20 year period before a new plan is legally required.

4.2.3 Detailed Urban Plans

The purpose of the statutory detailed urban plans (PUD's) is to provide additional and more detailed planning information to specific areas and proposed developments set out in Schema Directeur. These documents would then function as the development guidance and control document for Government and

the private sector. Since 2000 no PUD's for Greater Abidjan area have been gazetted as legal documents. Some four have been prepared and submitted for statutory approval. It is now likely that these plans will be revised in the light of the updated Schema Directeur. Whilst awaiting future Schema Directeur the drafted PUD for Port Bouet is being used as a guidance document for current planning applications.

4.2.4 Abidjan Strategy Plan 2007

The Abidjan Strategy Plan was published in 2007 by Abidjan District under the Ministry of the Interior. The strategy was directed towards setting the basis for future land management and improvement of the lives of the citizens within the Abidjan Autonomous District (AAD). This was not a physical spatial plan identifying changes in future development from the Master Plan 2000. The main strategies listed a number of matters to be addressed. These included; updating the Master Plan 2000, drafting detailed urban plans (PUD's) for the three communes that had subsequently been incorporated into AAD, regularizing the land and institutional frameworks, reservation and protection of land earmarked for housing and public facilities, creating open space, installation of civic monuments, ensuring best practice land subdivision and creating social housing.

A number of investment projects were identified and some are now committed developments within AAD.

4.3 Summary of Main Components in Master Plan 2000

4.3.1 Main Findings

The methodology, findings and recommendation from the evaluation of the existing Master Plan 2000 are set out in Chapter 3 of this Report. The main findings of the evaluation in terms of the achievement of Master Plan 2000 showed that the targets of the Master Plan have not been met:

- Strategic housing, employment, utility and transportation projects delayed.
- Uneven distribution of completed projects.
- Major road network and public land reserves illegally occupied.
- Urban expansion areas only partially developed.
- Inadequate implementation structure in place.
- Lack of Funding.

4.3.2 Main components to be taken forward into 2030 Master Plan

A detailed description of the main components in the 2000 Master Plan to be included in the preparation of the 2030 master plan are set out in Chapter 3, Section 3.4 of this Report. The following is a brief summary of these components.

- Spatial Structure; the future development projects are organized into 6 Urban Units comprising contiguous communes. Additional Urban Units will be identified to incorporate all the communes within the Greater Abidjan area.

- Urban Expansion Areas; these have only been partially developed since the 2000 Master Plan was drawn up. They will be retained to define the limit of Abidjan's urban area. In some cases additional expansion areas will be defined to take account of new growth arising from recent strategic road projects.
- Urban Densification; the high rise development envisaged has been somewhat sporadic. This proposal will be taken forward and linked with densification to civic centres and TOD areas.
- Urban Renewal; the restructuring of the older parts of the city has not occurred, resulting in further deterioration of the urban fabric. Urban renewal will be an essential element in the future master plan.
- Conservation; the loss of natural undeveloped land –forests and water catchment areas – has continued and issues such as loss of biodiversity, quality of the living environment, general health and safety make it imperative that protection of the natural assets of Greater Abidjan are brought to the forefront of the future sustainable development strategy.
- Public Housing; the provision of public housing for the low income sector has fallen well below the demand; for example over 32% of the population in AAD occupy informal housing ¹². There is thus an immediate need to provide low income housing.
- Private Housing; the private sector predominantly serves the middle and higher income sectors by providing economic housing and more upmarket properties. Due to a number of factors that have constrained development spontaneous densification of existing urban area properties has occurred to take up the demand; placing a significant stress on the capacity of the infrastructure. New private sector housing is to be focused into those expansion areas identified in the 2000 Master Plan and through up-zoning and higher rise accommodation.
- Illegal Settlement; since the 2000 Master Plan, the land under occupation, the densities and the population in these areas has increased. Removal will be necessary in some areas to enable strategic road projects and ensure the health and safety of the urban area.
- Transport; the strategic road network and public transit systems have not been completed and will therefore form the basis of the future transport strategy.
- Public Amenities; these have failed to keep pace with the population growth and distribution. The existing planning standards are in some cases 20 years old and should be updated.
- Industry; only one of the proposed industrial areas has been constructed the others will be included in the future planning.
- Infrastructure; the major utilities have been delayed where the relevant provider has master plans for future provision these will be incorporated into the 2030 Master Plan.
- Agriculture; although industrial plantations were identified in the 2000 Master Plan, currently developed urban areas occupy only 18% of the total area of Greater Abidjan. Proposals for

¹² Diagnosis and improvement schedule of informal settlement of 13 communes of Abidjan Autonomous District; October and November 2013; Arc Engineering / Synergie Expertise; Union of Cities and commune in Côte d'Ivoire (UVICOCI) of the Ministry of Interior and Security (Ibid)

agricultural development will be required in the future planning of Greater Abidjan, both to protect the area from urban sprawl and the increase agricultural productivity for food security.

4.4 Current Planning Challenges

Chapter 3, Section 3.5 of this Report set out the main Key Issues and the challenges to be addressed, that have arisen due to the inability to implement the Master Plan 2000 during the last decade in attaining a sustainable urban strategy for the Master Plan 2030. A brief summary of the urban planning challenges for the future land use framework are set out below for convenience. The transport issues are reported elsewhere in this Report.

4.4.1 Spontaneous densification

- Existing properties in older urban areas are being subdivided to provide rental accommodation due to the supply of accommodation falling behind demand from the increased population and the cost of new accommodation being beyond the income levels of a large percentage of the population. In addition properties along main roads are constructing additional stories and including commercial uses at ground floor. Compact city development encourages densification of existing urban areas; however this must be done to take account of the existing infrastructure capacity. Densification will also require additional public facilities for the increased population.
- Informal settlements house some 32% of AAD's population¹³, and in some communes account for over 50% of the total population i.e., Adjame 72%, Attercoube 65%, Port Bouet 85%, Anyama 51%. In ten of the AAD's communes the gross density is in the high range with the individual settlements in Songon and Plateau reaching over 900 persons per hectare. Besides the social, security and health issues that these settlements engender a high percentage are located along thalwegs. This is precarious land subject to landslide and flooding. The other main areas for settlements are alongside major transport routes and near to employment areas. From the Home Interview Survey (HIS) conducted by the JICA Study Team the informal sector is significant contributor to employment in the service sector. Relocation and resettlement, to areas which offer employment opportunities, should be a key consideration before the redevelopment of these areas can be undertaken to enable strategic road construction or upgrading the quality of the living environment. The current system of providing monetary compensation for those who are illegally occupying land may result in the problem being transferred elsewhere.

4.4.2 Urban Expansion

- New development in peripheral areas of Abidjan city, identified for urban expansion under the 2000 Master Plan, has been constrained in part due to delay in providing comprehensive infrastructure to these areas. Current development in these areas is sporadic and in some cases only partially constructed and has been placed on hold or

¹³ Ibid.

abandoned, possibly as a result of personal financing issues. There is a need for urgent road and utility infrastructure to be provided to restore developer confidence to focus new development to these identified expansion areas, which should be capable of accommodating a sustainable amount of future accommodation demand to 2030.

- Urban growth pressure is evident along the main radial arterial roads from Abidjan. Current land subdivision beyond the 2000 Master Plan expansion areas is driven by both developer expectation of and new road and bridge projects opening up access to rural areas and the demand for new housing from all income levels of the growing population. In both cases land speculation is in evidence, a recent case recorded in the Abidjan press is the illegal offer of land for sale to the east of Bingerville. In essence this is a development control issue; the identification of new urban areas under the Master Plan 2030 and planning approval by Government to develop must be coordinated with the realistic roll-out of strategic road and utility infrastructure development.

4.4.3 Housing

- To gain an appreciation the potential scale of the demand for future permanent housing over the time frame of the Master Plan, the following coarse figures present a global total in Greater Abidjan:
 1. Projected population growth by 2030¹⁴ - an additional 2,666,722 persons, which say at an average household size of 4 persons (HIS) may amount to some 670,000 units. Taking the INS 1998 census figure of average household size of 6 persons would amount to over 440,000 units.
 2. Removal and rehousing of all current legal and illegal informal settlements, a total population of 1,555,563¹⁵, at an average occupational rate of 8 persons per dwelling¹⁶, some 190,000 units.
 3. Residents, currently renting subdivided lots who may move into home ownership. Total unknown; however it is likely that such accommodation would and should remain on the rental market.

Both the public and private sector will be required to meet this demand and from previous evidence such a massive house building programme will not be able keep pace with demand. To serve such additional housing at current low rise residential building typologies will consume extensive land areas and require extended and expensive road and utility infrastructure. Increased building heights and densities for residential development both in new and urban renewal areas will be required and will initiate a permanent change to the visual character of the city.

4.4.4 Provision of community facilities

- Equitable distribution of community facilities is a fundamental component of Smart Growth. The provision of facilities has not been able to keep up with the opportunistic

¹⁴ JICA Study Team

¹⁵ Ibid. Diagnosis and improvement schedule of informal settlement of 13 communes of Abidjan Autonomous District

¹⁶ Urban household economy survey of Quatiers précaires of Abidjan, Côte d'Ivoire, February 2012; European Commission, Humanitarian Aid

locational demand from informal sector and in terms of existing area densification and new development areas refurbishment and expansion of existing facilities has been the focus. Shortfall is noticeable across the board in the provision of facilities. The current standards for the provision of public facilities provision are land extensive and suitable for lower density areas. In existing urban areas where densities have already reached a high level (greater than 220 persons per hectare) the standards for provision of community facilities should be reviewed to take into account the increased value of land and the limited land available.

- Public open space for recreation and amenity use is deficient in terms of area, size for sports, location, range of facilities for different age group needs, and providing a quality landscape character throughout the urban areas of Abidjan. Retrofitting existing developed areas with functional public open space within walking distance of residential areas is constrained in terms of land ownership and competing with other facility needs on high value urban land. Discrete pockets of open space may serve a local neighbourhood however; the city will require a more comprehensive open space system to raise the overall quality of the urban environment. Such a system should also support a vehicle free pedestrian and cycle network and link residential areas with commercial centres and the waterfronts of Ebrie lagoon and the Atlantic Ocean.

4.4.5 Strategic Infrastructure

- Rapid Service Routes for major highways were identified under the 2000 Master Plan and the rights-of-way are legally reserved corridors for their implementation. Delay in developing these strategic road and rail routes has resulted in the construction of both legal and illegal housing. In the case of the large individual villas or more extensive housing developments that have been given legal ownership the alternatives to be explored are removal and providing alternative land and funds for the owner to relocate, or seek out an alternative alignment for the road. In the case of the Road Y4, the future outer ring road for Abidjan, the latter option is recommended as extensive development in Cocody Angre 80 Tranche and Marcory Sogefha Sansfil have completely built out the road right-of-way. Le Parkway route right of way, which will link with the new bridge from Attecoube to Plateau, is currently occupied by informal settlements with a population of over 24,000 residents¹⁷. Removal of these people does not require an SEA as they are illegally on Government land. However, the social, economic and security issues arising from removal, relocation and possible social rehousing should be considered or the informal settlement problems may well be passed onto another area.
- Although planning of the utility systems is not within the scope of this study the recent master plans for electricity and solid waste management will be incorporated into the Master Plan 2030. Other utilities storm water drainage, water supply and sewage systems are currently inadequate or the existing provision is under pressure from the current level of urbanization and therefore need extensive upgrading to meet future demand. Implementation of the Master Plan 2030 spatial growth proposals must be coordinated with the timely provision of utilities.

¹⁷ Ibid.

4.4.6 Employment

- Expanding the range of employment opportunities will be a key factor in fulfilling the Governments objective to become an ‘emerging economy’. The JICA Study Team HIS indicates that currently (2013); 8.18% of the working population is in Primary Sector, 32.05% in the Secondary Sector and 59.77% are in the Tertiary Sector. In order for the economy to move up the value chain both industrial and service industries development must be promoted. The location of these developments must be serviced with adequate public transport and should have a substantial local residential catchment. In concert the work force skills base must also be upgraded, through adequate education and training establishments.

4.4.7 Land Capability for Development

- The mainland areas of Greater Abidjan have a significant amount of land that is unsuitable for development. This sensitive terrain when disturbed is subject to; erosion, land slip, flooding and pollution. In addition natural forests and wetlands that support a wide biodiversity, as well as productive agricultural areas that are the economic focus of rural communities are under pressure from urbanization. These sensitive areas are important in the health, safety and economic well-being of city’s population. In addition they provide a natural aesthetic quality to the urban areas, as well as recreation areas, that are seriously deficient throughout the city.

4.4.8 Implementing the Master Plan proposals

- By far the greatest challenge has been the difficulty in implementing past Schema Directeur proposals within the timeframe of the planning period. This is a result of a number of structural problems, putting aside the socio-military crisis period, these are a combination of:
 1. The fact that the Greater Abidjan environs are significantly more extensive and include a far greater population than those at the time when the Planning Law was framed. This has put an added burden on the finances and staffing available to draw up the plan and its supporting Detailed Urban Plan’s, as well as increase the number of stakeholders needed to be involved in the consultative process. This situation is likely to be further exacerbated with the dramatic increase in statutory plan making entities under decentralization.
 2. The emphasis on the Schema Directeur to identify and cost individual projects. Many of the critical projects, that can act as pump primers for economic growth and stimulate private sector development i.e., road, utility and social infrastructure, are the responsibility of Government ministries and agencies who are not responsible for making the plan. Delays in the timing and the funding available at any one time to a lead agency can result in serious consequences to the downstream projects of other agencies.
 3. No integrated policy guidance to ensure that all the sectoral stakeholders are fully coordinated in their buy-in to the vision, goals and objectives to be achieved over the plan period. This has led to uncoordinated short term expedient decisions to solve opportunistic development pressures that undermine the strategic planning proposals and purposes of the Schema Directeur.

4.5 Opportunities for Sustainable Growth

4.5.1 Sustainable Growth

The major items to achieve sustainable growth will be:

- Managed Growth and Avoidance of Uncontrolled Expansion
- Balancing Economic Growth, Social Development and Environmental Management
- Modernization of Lifestyles

4.5.2 Current Development

The implementation of major road and development projects identified under the Master Plan 2000, and committed or programmed for development by relevant Government Ministries over the next fifteen years, will unlock significant opportunities for sustainable growth and development in the Greater Abidjan area, if planned and managed in an integrated manner. The primary opportunities, arising from current developments under construction or commencing in 2014, are set out below.

- Bridge 3 Riviera-Marcory; the 1.5km toll road bridge linked to a new six-lane motorway is well advanced and is due to be opened in late December 2014. It will ease traffic congestion on the existing bridges that link the mainland to the major employment centres on Petit Bassam. The road will accelerate residential and employment development to the eastern part of Abidjan, in Cocody, Bingerville and Port Bouet. Areas that have experienced a rise in property values in anticipation of the bridges completion.
- Port Bouet to Grand Bassam Highway; the highway, currently under construction, is due for completion in 2015 and will accelerate development along this coastal corridor and stimulate the construction of other strategic roads linking to the mainland.
- Attinguié Industrial Zone, PK 24; this 500 ha area is being formed and serviced for operation within 2014. It will open up a new employment area and stimulate urban development to the surrounding village areas – Attinguié, Akoupé and Alokoua between 4 and 12 km to the northwest of the current Abidjan urban edge. In addition a new 100ha logistics centre is proposed in this area.
- Expansion of Abidjan Port in Treichville and Bay Vridi Bitry; the existing port area will be expanded through reclamation works to include new quays, terminal for containers, port operational areas and a marina. The will further reinforce Petit Bassam's role as the major employment centre of Abidjan and stimulate related and complementary port backup and service industries development.
- Songon - N'Djem Bridge; under construction, however completion date unconfirmed. This has been the stimulus for residential land speculation along the cordon littoral to Jacqueville. It will provide unimpeded road access to the former domestic tourism centre and the current off shore oil fields. Development in these areas will accelerate upon completion of the bridge.
- Adjame Intercity Bus Terminal; this project is due for commencement this year and will provide the opportunity for concomitant and adjacent mixed use transit oriented development.

- 4th Bridge Attécoube-Plateau; a priority government project due to commence in 2015, will together with the proposed Le Parkway and upgrading of Reboul Avenue create a new link from the west into Plateau / Adjame and the stimulus for much needed urban renewal.
- Mossikro Lagoon Ferry Station; due for completion in 2014, this together with possible new ferries open up the possibility of mixed use development at a redeveloped multimodal bus and ferry transit hub in Plateau.
- Triple fuel 372MW Combined Cycle Power Plant – Songon Dagbe; besides ensuring adequate power to support urban growth will stimulate increased pressure for residential development in along the Songon to Yopougon corridor.
- Aerocite project; this is an ongoing show piece foreign direct investment development that should attract foreign investment for housing and employment development around the airport and along the Port Bouet to Grand Bassam corridor.
- General Hospital Angré-Bessokoi Cocody; completed but not opened, will accelerate completion of ongoing residential projects in this area at the north east edge of Cocody.
- New Mother and Child Hospital and Hemodialysis centre in Bingerville; major public health facilities under construction that will encourage residential development in an area under pressure for converting agricultural land for urbanization.
- Social and Economic housing projects; under construction in western Abobo, Alepe, Anyama, Songon and Grand-Bassam. This will require the provision of supporting employment and public facilities development.

4.5.3 Major Development Studies

The sustainable development opportunities arising from future major developments at this moment under study by Government are described below.

- North-South Rail Project; besides providing a major public transit development that will link Anyama to the International Airport and open up mixed use TOD centres around stations and the catalyst for urban renewal of older urban centres in Anyama, Abobo, Adjame and Treichville.
- West-East Rail Project; a major public transit system opening up TOD opportunities from Yopougon to Bingerville.
- Abidjan Port Extension including Azito Bridge; this is a major economic and industrial development project on Bouley Island to place Abidjan as the major economic hub of West Africa, road and freight links are under study and is planned to stimulate port back up, petrochemical and complementary industry and longer term residential development on Bouley Island and Braké cordon littoral.
- Plateau and Adjame Urban Renewal; this will promote significant redevelopment to provide high quality living and working environment showcase for Abidjan as a major economic centre in West Africa.

- Extension of International Airport; part of the Aerocite project that will upgrade the capacity of the airport for passenger and freight that will open up opportunities for increased tourist arrivals and cargo handling.
- Abidjan to Lagos International Highway; will provide increased freight road transport along the West African coast and open up industrial and logistic related employment development to the eastern side of Greater Abidjan.
- Ebrie Lagoon Ferry Stations; potential for mixed use development at and around stations as well as fast ferry services from suburban areas to the city centre.
- Anyama proposed developments; currently under study in this commune are the Abidjan Slaughter House, Olympic Village, Regional Agricultural Produce Market, Relocated Rail Depot, together development of these would bring much needed employment to the northern area of AAD and stimulate extensive residential, commercial and public facility development.
- Botanic Garden Bingerville; a much needed major civic park for the city, with the potential to be a major attraction on an open space network that links rehabilitated river valleys (thalwegs) with a lagoon waterfront parkway system.
- Utility infrastructure; various studies are in progress for storm water drainage, sewage, solid waste, water and power supply, that will increase the living standard throughout the city.
- Il Desiree Bridge; this will be a major bridge project to enable the completion of the Y4 ring road system.
- Social Housing projects; studies are on-going for various sites throughout Greater Abidjan; they offer the potential to relocate some of the 1.55 million resident in informal housing and release land in sensitive terrain (unstable slopes, river valleys etc.) that can be utilized for public open space which is in great shortage through the urbanized areas.

4.6 Guiding Principles

4.6.1 Guiding Principles

To address the key planning challenges and capture the opportunities arising from the prerequisite projects for the development of Greater Abidjan a set of Guiding Principles will direct sustainable growth. The Guiding Principles are the established international best practice overarching principles for sustainable development to ensure the future well-being of the planet and society. These Guiding Principles are the foundations upon which the Plans and Policies for the Master Plan 2030 will be formulated. The Guiding Principles are shown on Figure 4.2.

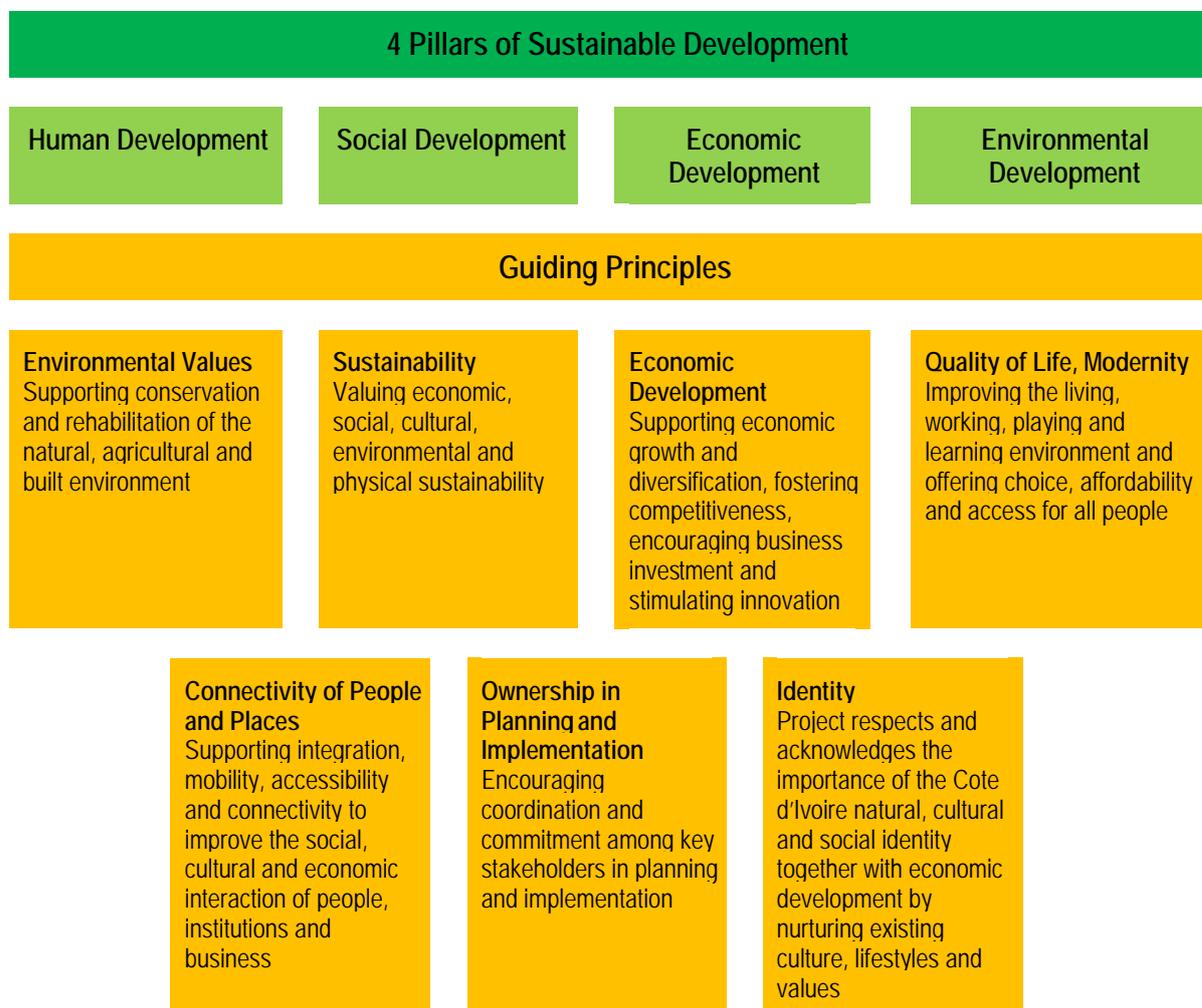


Figure 4.2 Guiding Principles

4.6.2 Smart City Growth

A smart growth agenda has been adopted to guide the future planned development of the Greater Abidjan area. The four goals are:

1. Establish Compact City initiatives to combat expensive and destructive urban sprawl. - Provide a range employment opportunities near to residential areas
2. Promote Transit Oriented Development (TOD). - Give precedence to public and green transport over private vehicle use.
3. Promote public health and quality of life - Create a sense of identity and ownership for residents through community and place building - Distribute public facilities equitably - Provide a choice of housing for all income groups
4. Preserve and enhance natural and cultural resources

4.7 Foundations for Growth

4.7.1 Economic Growth

The National Development Plan (PND) 2012-2015 has targeted an average national economic growth at around 10.2% “Triumph of the Elephant”¹⁸. In absence of published government data on the latest economic growth rates, the most recent IMF estimate indicates a growth rate of 9.6% in 2012. This economic development scenario reflects the vision to bring Cote d'Ivoire growth to emergent country status by 2020. Over the period 2013-2015 the economy will be driven by growth in the primary, secondary and tertiary sectors.

Within Greater Abidjan over the longer term, due to the pressure for urban growth from the increase population, main economic growth will come from the secondary and tertiary sectors. This will be driven by investment in the expansion of manufacturing, construction, trade, real estate, finance and transportation sectors.

The PND also proposes financial support to small and medium-sized enterprises and urban social housing both of which will be critical to addressing the current and future sustainable development of Greater Abidjan. In addition the PND has identified major development projects to be undertaken in Abidjan for social and economic growth. Some of these have been highlighted in 2.5.3 above.

Abidjan has historically held the position of the major economic hub of West Africa, which was affected by the socio-military crisis. The future economic growth of the city is directed to regaining this position and building upon it to achieve a wider regional and global economic position. To move up the economic value chain, conventional wisdom states that a country must enlarge their productive powers by;

- Mobilizing workers
- Absorbing new technologies
- Accumulating capital
- Enabling a conducive business environment

Successful development will entail expanding supply as quickly as possible without allowing demand to grow even faster. In Abidjan demand for land and facilities is already in excess of supply, due to delays in the implementation of strategic infrastructure, slowdown in house building, and lag in community facility provision etc. In terms of sustainable development across Greater Abidjan the land use planning framework will need to ensure that there is adequate and timely serviced land and facilities available to enable the public and private sectors to rapidly meet demand.

The major sectors that are showing improvement in the immediate term, as a result of national and international confidence in the stability of the country are business and to some extent tourism. In the longer term continuing growth in the domestic business and the return of foreign investors will stimulate:

- Manufacturing; in seeking value added industries i.e., food processing and textiles.

¹⁸ Plan National De Developpment 2012-2015, Republique de Côte D'Ivoire, March 2012

- Construction; through continued and planned infrastructure, industrial, commercial, housing and tourism-related building.
- Services; especially return of African Development Bank, hotels and restaurants benefiting from increased tourism, and IT.
- Energy; complementary industries related to the offshore oil and gas fields.
- Transport; committed expansion of Abidjan Port and the proposed Abidjan to Lagos Corridor Highway.

4.7.2 Future Population Growth

The last census was conducted in 2014.

The population projection for Greater Abidjan to 2030 indicates a future population in the planning area of 7,634,000 persons; this is an increase in population from 2014 of over 53% at an Average Annual Growth Rate (AAGR) of 2.72%.

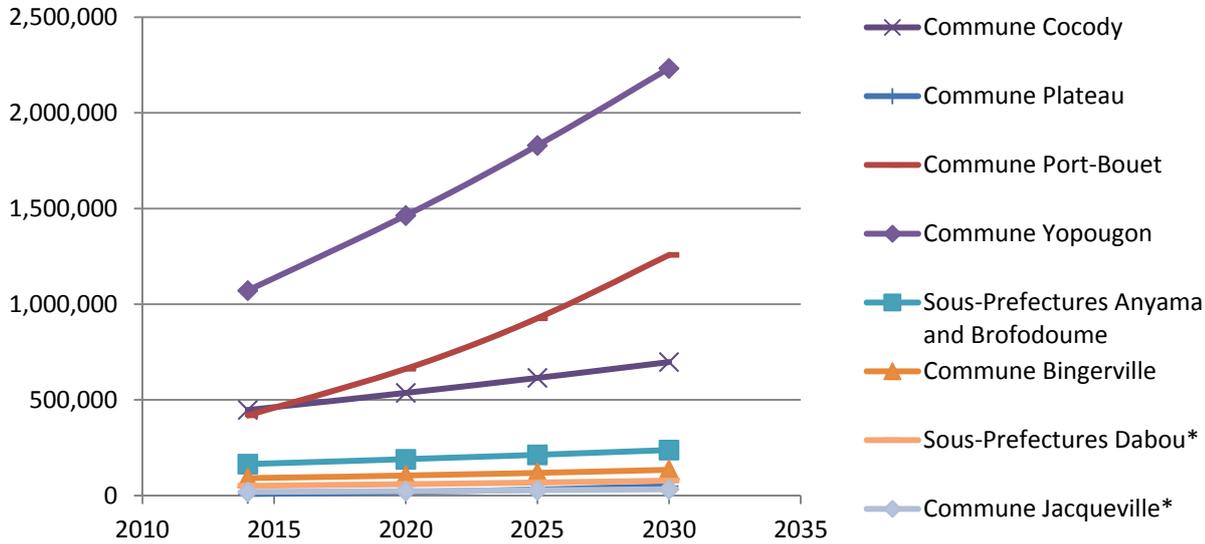
A detailed breakdown of population growth and distribution for each of the communes and sub-prefectures is set out in Volume II, Part 2, Chapter 2 of this Report. For convenience the following summarizes the most significant spatial growth trends across Greater Abidjan.

- Within the Abidjan conurbation of AAD, below-average AAGR is forecast for the communes of Bingerville at 2.46%, and the sub-prefectures of Anyama and Brofodoume (in reality focused within Anyama commune) at 2.33%. These areas are currently subject to development of the former agricultural land earmarked under the Master Plan 2000 for urban expansion.
- Of the older urban areas, the Plateau commune at 12.41% AAGR, Port-Bouet at 7.11% AAGR, Yopougon at 4.70% AAGR and Cocody at 2.82% AAGR are forecast to grow faster than the overall Greater Abidjan AAGR. In the case of Plateau, this assumes that a major urban renewal will occur, and for Port-Bouet that the undeveloped land east of the airport will be taken up.
- Consistent population growth beyond the AAD boundary will be experienced in the commune of Jacquville at 3.33% AAGR and Grand-Bassam at 1.29% AAGR; and the sub-prefectures of Dabou at 2.71% AAGR, and Bonoua at 1.73% AAGR.
- In terms of actual number of persons, significant additional population over the Master Plan 2030 period will be experienced in the communes of: Port-Bouet - 486,330; Yopougon - 675,662; Bingerville - 294,134; Grand-Bassam - 160,772; and the sub-prefectures of Anyama and Brofodoume - 491,479; Bonoua - 155,601; Dabou - 242,852; as shown in Figure 4.3 below.

Table 4.1 Future Population Growth

Year	Population
1998	3,308,553
2014	4,967,544
2020	5,836,000
2025	6,675,000
2030	7,634,000

Source: INS 1998/2014 Census, JICA Study Team



Source: JICA Study Team Note: * Only partial area of sub- prefecture within SDUGA Planning Area is used.

Figure 4.3 Communes with significant population growth

The above population growth projections provide a coarse guide for the spatial distribution of the population in the future. Thus the figures can be used as a broad indication of the future land, housing and community facility provision. Under the scope of this project the determination of land use requirements is not able to define detailed land use or site specific use distribution. However, the prevailing situation of the urban growth dynamic and current land development pressure has been taken into account where feasible. One noticeable exception to this occurs at the boundary of the AAD and the commune of Grand Bassam at the cordon littoral. 85% of the prevailing population in Port Bouet commune is housed in informal settlements, the bulk of this lies immediately to the east of the airport. Relocation and rehousing of this area is likely to extend beyond the plan period. Even the phased relocation of these areas on an incremental basis cannot be accurately estimated as a wide range of social, land availability, infrastructure provision and political issues will need to be addressed.

However, development and new planning applications along the cordon littoral between the informal settlement and the town of Grand Bassam is proceeding and likely to accelerate, to capitalize upon the Abidjan – Grand Bassam Highway due for completion in 2015. The eastern Port Bouet to western Grand Bassam area in effect becomes a self-contained urban conglomeration. The impact on any estimated infrastructure needs are minimal so that at this stage there is no change in the detailed population distribution. An adjustment to the future population projections to the communes of Port Bouet and Grand Bassam will therefore be indicated upon the basis of the proposed Land Use Framework plan for this area set out in the Section 6.5.

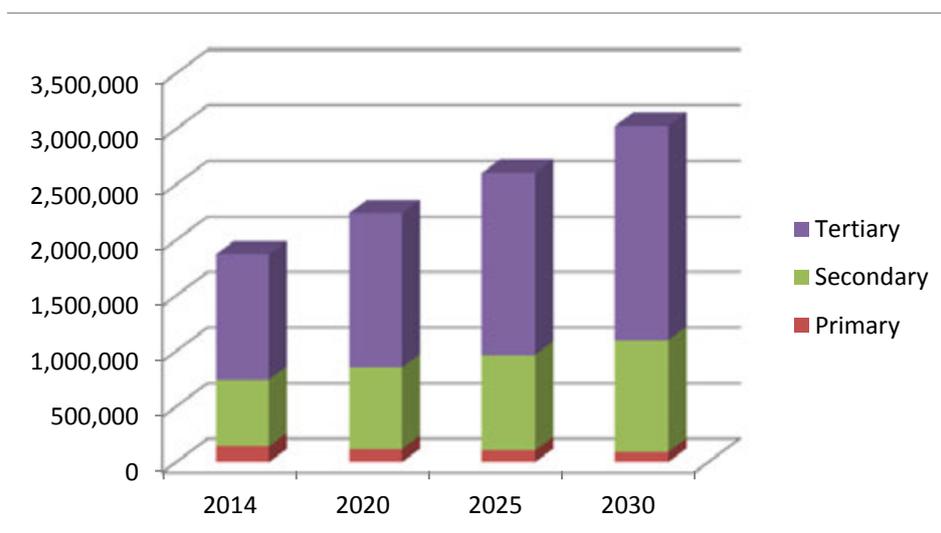
4.7.3 Employment Growth

From the HIS and AGEPE figures the estimated employment population for Greater Abidjan at the 2014 baseline is 1,871,000. Taking AGEPE labour participation rate of the total population at 56.9%. AGEPE

data indicates that the unemployment rate of Abidjan is 19.5%¹⁹, which will need to be reduced to achieve the economic growth expectation of the PND.

Current 2014 employment levels within the industry sectors show; 7.7% are employed in the Primary Sector, 32.2% in the Secondary Sector, and 60.2% in the Tertiary Sector. Future projected employment foresees growth in both labour intensive secondary industries (construction) and high skill level workers in the secondary (manufacturing) and tertiary sector (services, transport, knowledge etc.) In terms of a sustainable land use strategy this will require adequate and suitably located land for industry as well as opportunities for the expansion of service and education premises. Figure 4.4 illustrates the projected work force changes to 2030. The total employment is projected to 3,028,000 and the changes to each sector are forecast as:

- Primary Sector declining by some 4.6% to 3.1% of the total, with 94,000 employed.
- Secondary Sector experiencing a small increase to 33.2% to 1,005,000, and
- Tertiary Sector experiencing 3.5% growth to 63.7% of the total work force some 1,929,000.



Source: JICA Study Team

Figure 4.4 Employment Population in Sectors

¹⁹ Emploi des jeunes : stratégie de reliance, MEMEASFP, 20/12/2013

5.0 Vision and Goals

5.1 Vision

Greater Abidjan Vision

Establish a balanced economic growth area providing quality living environments and clean industry employment areas, with conserved and enhanced agricultural and natural landscapes that also provide the ideal setting for tourists.

The Greater Abidjan area is intended to contribute to strengthening the economy of Cote d'Ivoire through improved economic infrastructure, and enriching the quality of life in Greater Abidjan through the provision of adequate social infrastructure and urban amenities. It is a major development initiative for national economic growth to support the achievement of Cote d'Ivoire as an 'emerging economy' as set out in the National Development Plan.

This Study is primarily directed towards defining the future urban planning development through the provision of adequate land to accommodate future development demands. However, any vision for Greater Abidjan must have as an implicit aim; to function as the main economic driver of Cote d'Ivoire. This will include taking into account:

- the efficient and effective operation of Abidjan Port,
- ensuring a solid base for industrial growth,
- unlocking tourist potential,
- increasing agricultural productivity,
- recapturing the city's position as the preeminent financial and business centre in West Africa,
- providing a modern transport infrastructure that also promotes public transit,
- and improvement of the quality of life for its citizens.

The broad vision for Greater Abidjan promotes these within the framework of sustainable development.

The Greater Abidjan Urban Master Plan proposes an integrated sustainable approach, built upon the opportunities provided by the expansion of the port, recent strategic infrastructure provision and the incorporation of satellite towns within the Greater Abidjan area, to accelerate economic growth and

social development in order to create a high quality environment within the urban areas and agricultural hinterland of Abidjan city for local and foreign businesses and investment.

The achievement of the Greater Abidjan Urban Master Plan will require the concerted efforts of both government and private sector actors in various fields.

5.2 Goals

The supporting development goals for Greater Abidjan Urban Master Plan to direct sustainable balanced population and economic growth are:

Goal	Rationale
<ul style="list-style-type: none"> To establish a unique Greater Abidjan identity as the economic hub of West Africa 	Government direction to become an emerging economy.
<ul style="list-style-type: none"> To enable clean industry expansion so that will become a significant engine for economic growth. 	Government direction for economic growth.
<ul style="list-style-type: none"> To create high quality living and working environments for residents, investors and visitors. 	Provide a better quality of life for residents and attract FDI.
<ul style="list-style-type: none"> To provide a full range of community facilities for the benefit of residents and workers. 	Fundamental requirement for good governance.
<ul style="list-style-type: none"> To attract foreign and local investment through smart land use planning supported by adequate road and utility infrastructure. 	Engender confidence in private sectors investors.
<ul style="list-style-type: none"> To direct urban growth and unlock value through the densification of existing urban centres. 	Requirement of the 2000 Schema Directeur and Smart Growth.
<ul style="list-style-type: none"> To provide a wider choice of housing for all income groups. 	Requirement of the 2000 Schema Directeur and Smart Growth.
<ul style="list-style-type: none"> To raise the aesthetic and green quality of urbanised areas. 	Engender citizen and government responsibility towards the city and attract investors.
<ul style="list-style-type: none"> To promote the coexistence of nature in all its facets - water, greenery and biodiversity, with urban areas. 	Fundamental requirement of sustainable development.
<ul style="list-style-type: none"> To utilise natural landscape areas as a component of a Greater Abidjan wide open space and recreation framework. 	Utilizing natural assets to redress shortfall in open space.
<ul style="list-style-type: none"> To promote the development of an efficient and comprehensive public transport system linking road, rail ferries as the main modes of transport. 	Requirement of the 2000 Schema Directeur and Smart Growth.

5.3 Strategic Planning Objectives

The strategic planning objectives to support the vision and goals reflect the guiding principles. These strategic objectives are shown in the following table:

Strategic Planning Objectives	GP1 EnV	GP2 Sus	GP3 EcD	GP4 QLIM	GP5 CPP	GP6 OPI	GP7 Ide	Rationale
• Provide a sustainable working, living, leisure and business environment throughout the Greater Abidjan area.		•	•	•				Basis for an integrated urban development master plan.
• Develop compact human settlements to combat low density urban sprawl and provide communities where people live are close to employment clusters.		•			•			Underlying requirements for smart growth and compact city development.
• Provide a hierarchy of urban centres that enable integrated land use planning of contiguous Local Authorities areas.		•			•			Organizing spatial distribution of commercial/TOD centres and equitable distribution of community facilities.
• Ensure the functional and equitable distribution of urban centres and social infrastructure.		•		•				Fundamental requirement of good governance.
• Designate and implement areas for Knowledge, High Technology and Healthcare clusters.			•	•				Moving employment and industry up the value chain.
• Encourage and facilitate waterfront development associated with the Ebrie Lagoon and the Atlantic Ocean.	•			•		•	•	Capturing the high value, tourist and recreation potential of waterfront property.
• Initiate and implement the rehabilitation of thalwegs upon removal of illegal settlements.	•			•		•		Eliminating the environmental and health risks of natural and manmade hazards.
• Ensure adequate land is identified for the timely relocation of informal settlement inhabitants to low cost public housing and/or serviced land that are close to centres of employment.		•			•	•		Controlling and mitigating the spread of informal settlements due to redevelopment for essential infrastructure.
• Conserve and enhance agricultural land for sustainable development of agri-business enterprises.	•	•				•		Protecting local food security.
• Protect and enhance wetlands and natural forest areas to enrich biodiversity, and provide recreation and tourism uses.	•	•				•	•	Fundamental requirement of sustainable development.
• Establish a high quality and integrated public transport network throughout the Greater Abidjan with links to wider area.				•	•			Requirement of the 2000 Schema Directeur and smart growth.
• Provide a comprehensive upgraded road and network to link urban centres.				•	•			Requirement of the 2000 Schema Directeur and compact city development.
• Land use and development to be determined by the availability of appropriate services and infrastructure, including transportation infrastructure.		•				•		Key to successful cost efficient and coordinated implementation.
• Develop mixed-use, mixed density centres as Transit Oriented Development (TOD) based on public transit system to achieve balanced growth and patterns of movement.		•		•	•			Basis of compact city development.
• Redevelop existing older industrial areas as clean industry cluster zones.	•	•	•					Requirement of sustainable urban development and growth and to attract FDI.

Legend of Columns for SDUGA Guiding Principles (see Figure 4.2):

- GP1 EnV – Environmental Values
- GP2 Sus – Sustainability
- GP3 EcD – Economic Development
- GP4 QLM – Quality of Life, Modernity
- GP5 CPP – Connectivity of People and Places
- GP6 OPI – Ownership in Planning and Implementation
- GP7 Ide – Identity

6.0 Spatial Strategy

6.1 Spatial Growth Scenarios

6.1.1 Introduction

Six spatial growth scenarios for directing the sustainable growth and development of the Greater Abidjan area were formulated and reviewed to locate major growth centres. The scenarios were assessed and a Preferred Spatial Growth Scenario was formulated to direct the Spatial Strategy for Greater Abidjan.

This section is structured as follows:

- Confirmation of the main spatial constraints to land development
- Prerequisites for future development
- A full description of the six scenarios and their assessment of the pros and cons
- Preferred Spatial Growth Scenario
- Hierarchy of Urban Centres
- Strategic Transportation Network
- Employment Centres

6.1.2 Main Spatial Constraints

Figure 6.1 shows the existing development areas and the main physical constraints to future development that were taken into account for the Master Plan 2000. The constraints were:

- Areas not suitable for development; this is riparian land, along river and water course banks, that are low lying, susceptible to flooding, soil erosion and landslips, and may require deep pile construction for buildings.
- Areas of industrial plantations; extensive private land holdings under cultivation for palm, rubber and coconut.
- Protected Zones; forest areas within the Greater Abidjan boundary i.e., Banco National Park, Anguededou Forest, Tagbadie Declared Forest, Mbrago Declared Forest, Bebasse Declared Park.
- High Tension Power Line; land reserve for national electricity distribution network.
- Hill Ridgelines; the major ridgelines across the city to be preserved.

These major physical constraints are still relevant today. In addition there are also environmental restrictions to development associated with the Ebrie Lagoon. They will be taken into consideration in the assessment of the spatial growth scenarios.

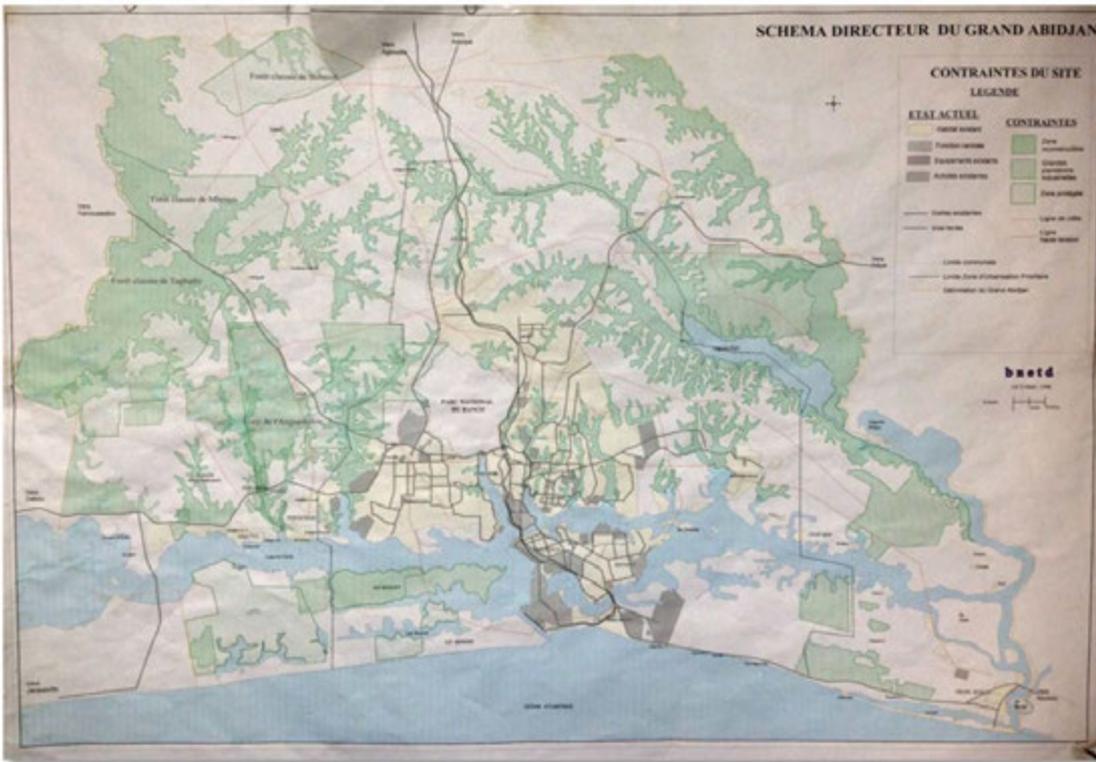


Figure 6.1 Constraints

6.1.3 Future Development Prerequisites

6.1.3.1 The Greater Abidjan Master Plan 2000

The plan identified a number of major projects that would be instrumental in stimulating the future growth of the area to achieve the aims and objectives of the plan. These projects are, either through implementation or in the process of committed works, still directing Governments decisions for Greater Abidjan. The major projects are set out in Table 6.1 and indicate those which if not completed will form prerequisite developments for the Greater Abidjan 2030 Framework Plan. The column UNIT in the table refers to the ‘urban unit’ spatial distribution of projects as set out in the Master Plan 2000.

Table 6.1 Master Plan 2000 Projects

UNIT	PROJECT	STATUS
1. Attécoubé, Adjamé, Plateau		
	Enlarge Reboul Avenue and extend it all the way to the overhead bridge of Attécoubé.	OUTSTANDING: Studies commenced, awaiting finance
	Triumphal route from the Central Plateau (Republic Square to National	OUTSTANDING: On-going study

	Library to Adjamé (Mirador-Williamsville)	
	New Bus station of Adjamé	OUTSTANDING: Partially complete, awaiting finance
	Rehabilitation of the University of Abobo-Adjamé	COMPLETED
	The Casse of Adjamé	PARTIALLY COMPLETED. Land conversion to other activities (commercial food, land plots)
2. Port Bouet		
	Extension International Airport FHB	OUTSTANDING: On-going study
	Extension of the port of Abidjan	OUTSTANDING
	Railway (along way Y4)	OUTSTANDING: On-going study
	Expressway Abidjan to Grand Bassam (60 meter wide)	IN PROGRESS
	Bridge Abouabou-Anan linking the western part of Abouabou and Elokro sector with the commune of Bingerville	OUTSTANDING: Awaiting finance
	Way V2 or Bd Abekan Bernard (80 meter wide) connecting the Expressway to Akwaba Place through Abouabou	OUTSTANDING
	Way V7 (60 meter wide) connecting the V2 way to the town of Grand-Bassam in Vitre I	OUTSTANDING
	Way V5 (40 meter wide) connecting the V2 way to the town of Grand-Bassam and passing south of IAO	OUTSTANDING
	New Bus Station	OUTSTANDING
	General Hospital	OUTSTANDING
	Private University	OUTSTANDING
	Airport City, Social housing of District of Abidjan	OUTSTANDING: On-going study
	Wooded Park	OUTSTANDING: On-going study
	Small, lightweight and non-polluting industrial units	OUTSTANDING
	Abidjan Park exhibitions	OUTSTANDING: On-going study
	Tourist Park	OUTSTANDING: On-going study
3. Abobo		
	Rehabilitation of the University of Abobo-Adjamé (Nangui-Abrogoua)	COMPLETED
	Housing SICOI Concorde PK18	IN PROGRESS
	Small and medium non-polluting industrial units	OUTSTANDING
4. Cocody		
	The Reboul opening: horizontal road (50m straight away) which will link up the central communities of Cocody and Yopougon (Plain of Banco).	OUTSTANDING: On-going study
	Exchanger (Bridge) of the Riviera 2	IN PROGRESS
	General Hospital of Cocody-Angré	COMPLETED: though not opened
	Rehabilitation and depollution bay Cocody	IN PROGRESS
	Water castle of Djibi, Water castle of Abatta	COMPLETED
	High voltage line linking Côte d'Ivoire and Ghana	OUTSTANDING: On-going study
5. Yopougon		
	The communities of Adjamé and Yopougon will directly be linked with	OUTSTANDING: On-going study

	the future bridge of Northern Banco	
	Extension of the central thermal Azito (Phase 3)	OUTSTANDING: On-going study
	Extension Port of Abidjan	IN PROGRESS
	Development of new Industrial area	OUTSTANDING: On-going study
6. Marcory, Koumassi, Treichville		
	The third bridge (HKB) to connect the towns of Marcory and Cocody (from INJS to Thérèse HB)	IN PROGRESS
	Bridge construction from Cocody to Treichville	OUTSTANDING
	Palace of Culture (Phase 1)	COMPLETED

6.1.3.2 Current Urban Growth Dynamic

The formulation of all the scenarios took into account of the current growth dynamic of Abidjan city, both within its urban environs and upon its rural hinterland. The impact of the Master Plan 2000 projects that have been developed, are under construction, or are guiding spatial planning decisions are clearly discernible in the current pattern of urban growth. Figure 6.2 shows in plan the main areas where the pressure for growth is occurring in yellow and the direction of growth denoted by the red arrow.

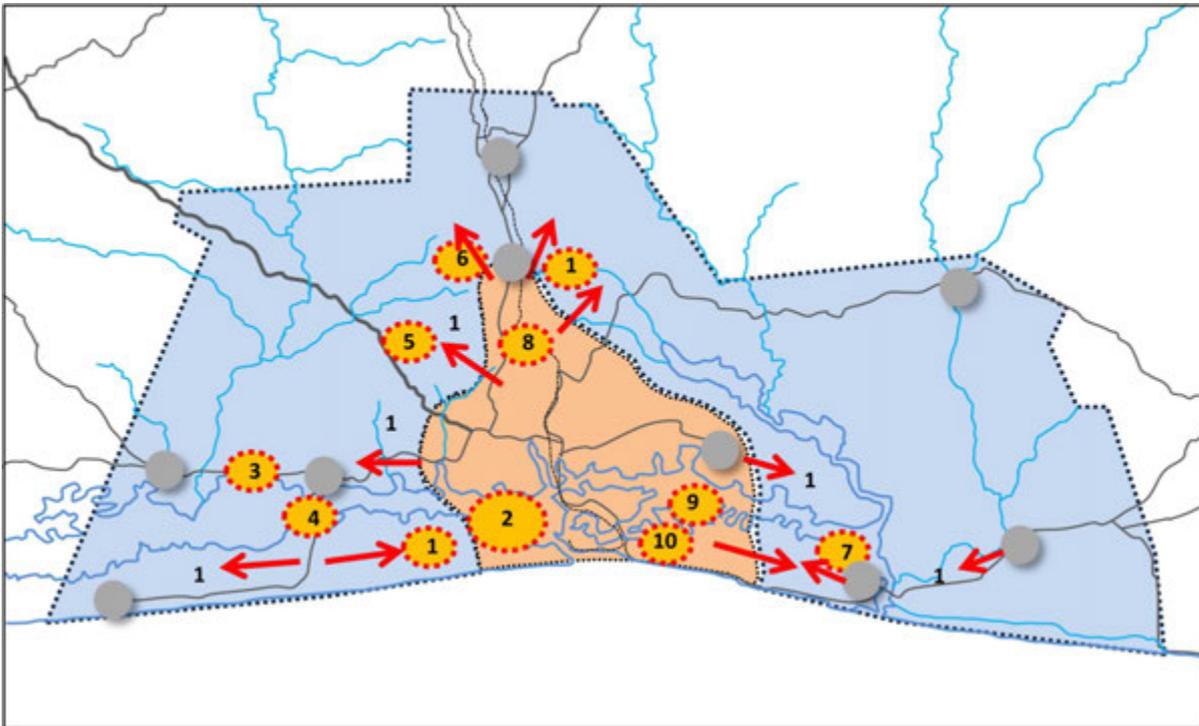


Figure 6.2 Current Growth Areas

The numbers on the plan reference the following:

1. Residential Expansion Areas; this is the development of former agricultural land by tribal owners, either in areas previously identified for such use under the 2000 Master Plan, or a result of opportunistic change to capture higher land value.
2. New Port Area and Boulay Island; as identified in 2000 Master Plan.
3. Highway to Dabou, as identified in 2000 Master Plan.
4. Bridge and Coastal Road in Jacquville; new bridge link has stimulated private land sales for residential and possible tourist development.
5. PK24 Industrial Zone; planned new major industrial zone that will include residential areas.
6. Stadium Anyama; planned revitalization development.
7. High Tech Park Grand-Bassam; major industrial estate
8. Abattoir Abobo; as identified in 2000 Master Plan
9. Koumassi – Bingerville Bridges; planned new road link.
10. Aérocity; major private sector mixed use residential development.

In addition to the above studies are underway for tramway and Mass Transit Rail lines that will stimulate growth in the communes they serve.

Within the main urban area of Abidjan city uncontrolled growth is occurring, driven by the private sector. Informal settlement occupying land reserved for formal development and new projects is ubiquitous across all communes. These settlements are predominantly populated by immigrants from neighbouring West African countries, and also meet some of the housing demand from rural-urban migration by Ivoirians. Legal land owners are initiating both; land use and building height changes to their individual plots, mainly from residential to mixed residential /commercial. Densification of individual single story residential plots, to accommodate larger families or for rental of the extra rooms is prevalent across all communes.

6.1.4 Assessment of Spatial Growth Scenarios

6.1.4.1 Spatial Growth Scenarios for Greater Abidjan

The JICA Study Team formulates six scenarios of the spatial structure to be directed by smart growth agenda in a view of the following;

- To consider the efficiency of different holistic growth scenarios for Greater Abidjan
- To explore potential value added opportunities
- To identify spatial and natural constraints on development
- To define the functions of the expanded communes
- To assess the likely social and economic benefits and costs of decentralized expansion as against compact development

6.1.4.2 Scenario Assessment

The evaluation of the spatial growth scenarios is conducted by reference to; the existing pressures for residential expansion, planned and committed projects defined in the Greater Abidjan Master Plan 2000, and major development projects and policies (that at this stage have been available to the JICA Study Team) more recently set out or being explored for future economic growth by Government. This broad level assessment also measures the scenarios against best international practice in their potential to create added social, cultural, economic and environmental value to the quality of life across Greater Abidjan. The evaluation of each scenario evaluation is summarized in the form of the main Pro's and Con's ("pro et contra") that is, the argument 'for' and 'against'.

The description of each scenario is presented here.

Scenario 1: Self-Contained six communes independent from Abidjan Autonomous District (AAD) (Figure 6.3)

This is a **decentralization** spatial scenario. The objective of Scenario 1 is to promote and focus major residential and employment growth within the communes (yellow) that lie outside the existing urban area (pink colour). These are separate satellite communities whose purpose is to alleviate the current and potential future population and infrastructure pressures on the AAD. Songon, which is within the AAD but effectively functions as a rural community is included as a separate urban centre in this Scenario. An important concept of this scenario is that the seven communities are separated from each other and the main Abidjan urban conurbation by green agricultural or protected natural landscape areas.

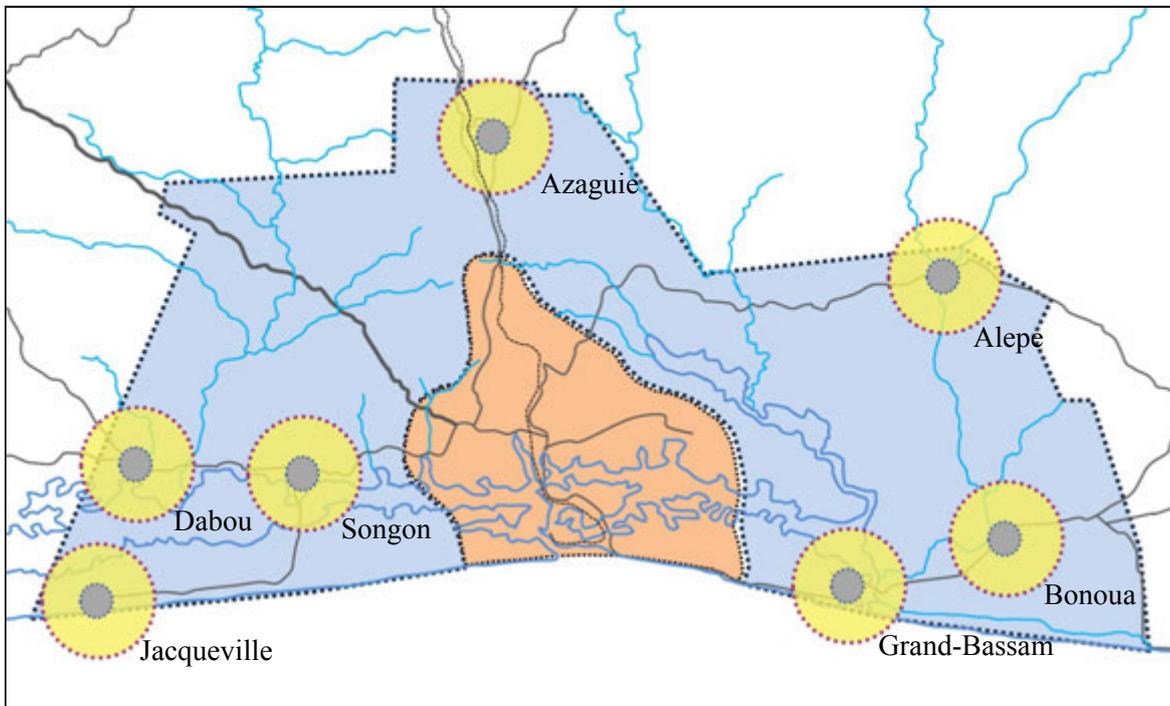


Figure 6.3 Scenario 1

Pros:

- Directs growth away from AAD which is already experiencing significant under capacity problems in transport; illegal land appropriation; water, sanitation and power supply; private land pressure for densification and land use changes in residential areas.
- Will enable the targeting of public investment to individual communes based upon need for either urban revitalisation initiatives in AAD or the new development of satellite towns.
- Provides the opportunity for each satellite community to build upon a specific local economic and cultural base as the sense of identity for residents and workers.
- The notion of compact urban centres implicit in the scenario minimizes disturbance to the environment and agricultural land that provides.

Cons:

- Does not take account of current growth pressures for physical expansion of the AAD urbanized area.
- Underestimates the effect of Master Plan 2000 development drivers.
- Diversifies investment away from the important national economic focus of Abidjan Port.
- Promotes as major satellite towns and thus large scale investment in Alepe, Azaguie and Jacqueville that currently function as local agricultural settlements and are far from the centre of Abidjan.
- Sets up competing demands for public investment that could affect the urgent issues to be addressed within the older urban areas of Abidjan.

Scenario 2: Three growth corridors from AAD (Figure 6.4)

Scenario 2 promotes growth along the three major radial roads serving the AAD immediate hinterland. It also takes into account the likely effect of the proposed coastal highway to Jacqueville. This Scenario to some extent reflects the current urban development expansion momentum of AAD. The growth corridors also present the opportunity for a radial public transit system. In the north this would utilise the existing railway line. To the west and east this could be an extension of the rail network and / or a dedicated BRT.

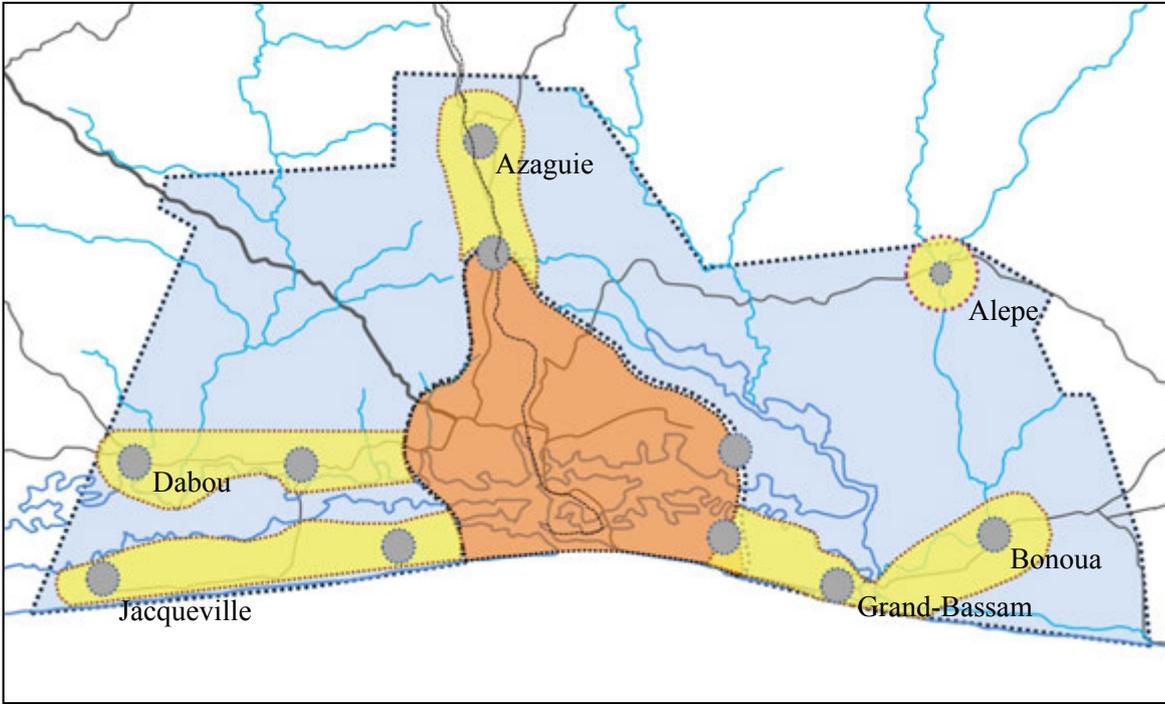


Figure 6.4 Scenario 2

Pros:

- Benefits from the economies of scale by utilizing the existing main infrastructure corridors.
- Follows the some of the key urban growth drivers of the Master Plan 2000.
- Solidifies private investor confidence in the benefits accruing from Government infrastructure development where land speculation has already occurred.
- Higher density development along the growth corridors supports proposals for mass public transport.
- Opens up waterfront areas for high value development.

Cons:

- Promotes urban sprawl and the pressure for densification and commercial development along corridors in the form of strip development.
- Lowers the visual quality of the urban environment and loss of existing separate community identity.
- Places additional road traffic, especially freight on an already under capacity road system.
- Presents the predominate face of the city as that which lines high traffic volumes roads.
- Limits the opportunity to provide green lungs to break up a monotonous urban
- May lead to islands of development surrounded by wide distributor roads that feed the main corridor arterials.
- Risk of substantial deterioration in the quality of the environment due to increasing noise levels and air borne particulates along the corridors.

- Will focus development to corridors and may result in lower attention and investment in urban improvement or public facility development to other areas.

Scenario 3: Growth Nodes with their respective hinterland (Figure 6.5)

Scenario 3 promotes the notion of four sub-regional growth zones;

- the current urban area of Abidjan the centre focused on finance and the port,
- the western area, encompassing the rural agriculture and possible future tourist development of Dabou, Jacquville, and Songon
- the eastern area, including cultural heritage, eco-tourism and agriculture encompassing Grand-Bassam, Bonoua and Alepe
- the northern area Anyama and Azaguie, possibly related to urban restructuring and logistics taking advantage of the existing freight and passenger railway

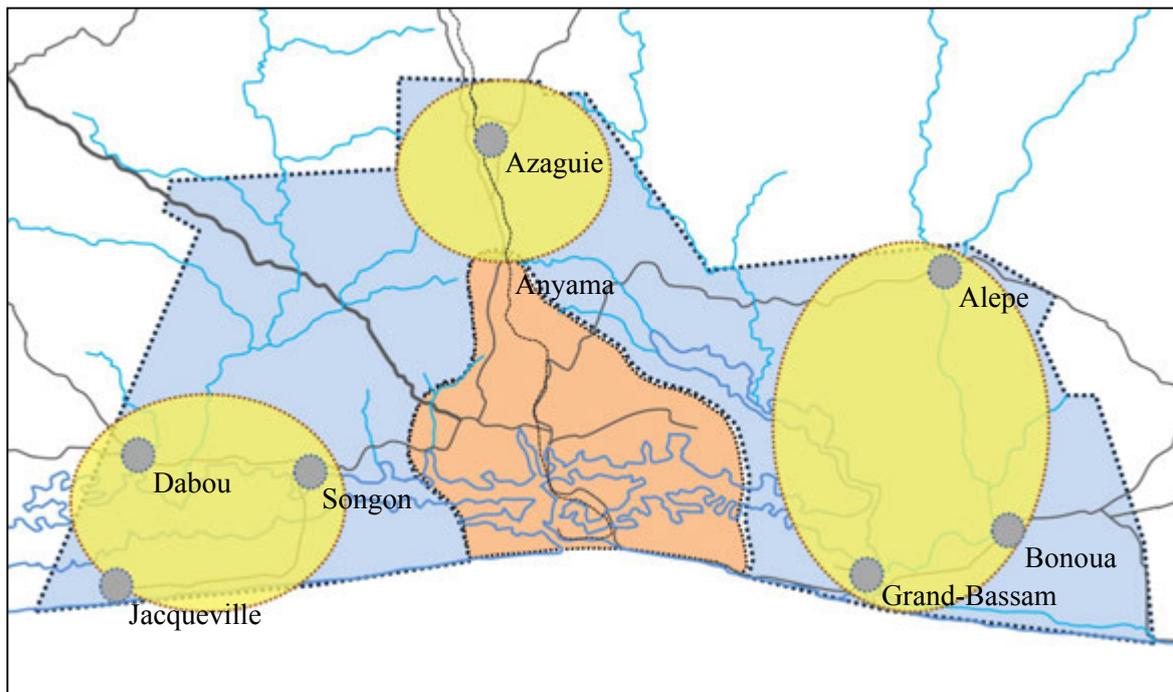


Figure 6.5 Scenario 3

Pros:

- Offers economies of scale and provision of facilities to enable the establishment of self-sufficient urban / agricultural zones.
- Physically constrains urban growth by providing green separators between each growth zone.
- Focuses private and public investment upon the major development activities of the growth zone.
- Provides an intermediate level of governance and implementation to secure its own funding rather than relying on distribution from a centralised Abidjan budget.
- Promotes the notion of a major outer ring highway system linking the growth zones with the wider agricultural hinterland beyond Greater Abidjan.

- Enables consideration of land extensive industrial and logistics development well beyond the high land values of AAD and its immediate semi urbanized areas.
- Strengthens the roles of Alepe, Bonoua, Azaguie and Jacquville in future development.
- Provides a development context for the role of Oghlwapo Sub Prefecture.

Cons:

- Is a complete departure from the current Master Plan 2000 and therefore may take time to implement.
- Does not resolve the immediate urban expansion pressure on Songon, Bingerville and Grand Bassam.
- Difficult provide a separate role and function to an 'Anyama – Azaguie' growth area from the current 'Abobo-Anyama' urbanized area.
- Will disperse investment away from AAD economic role, and distance from that centre may dissuade investors.

Scenario 4: Expansion of AAD (Figure 6.6)

Scenario 4 directs growth and expansion to the immediate west and east of the AAD, in many ways this mirrors the current growth dynamic of Greater Abidjan; the notable exceptions being the pressure to urbanize the coastal area between Port Bouet and Grand Bassam. This scenario will require new outer ring road to disperse traffic from the current over capacity main radial network. The western area urbanizes the agricultural edge of the AAD for new residential and employment development, with major urban centres focus on Songon and Attinguie.

The eastern area envisages full build-out of the Bingerville peninsula. Elokate at the tip of the peninsula would be expanded into a main urban centre and would be linked by bridges and radial road to Bingerville and Bonoua.

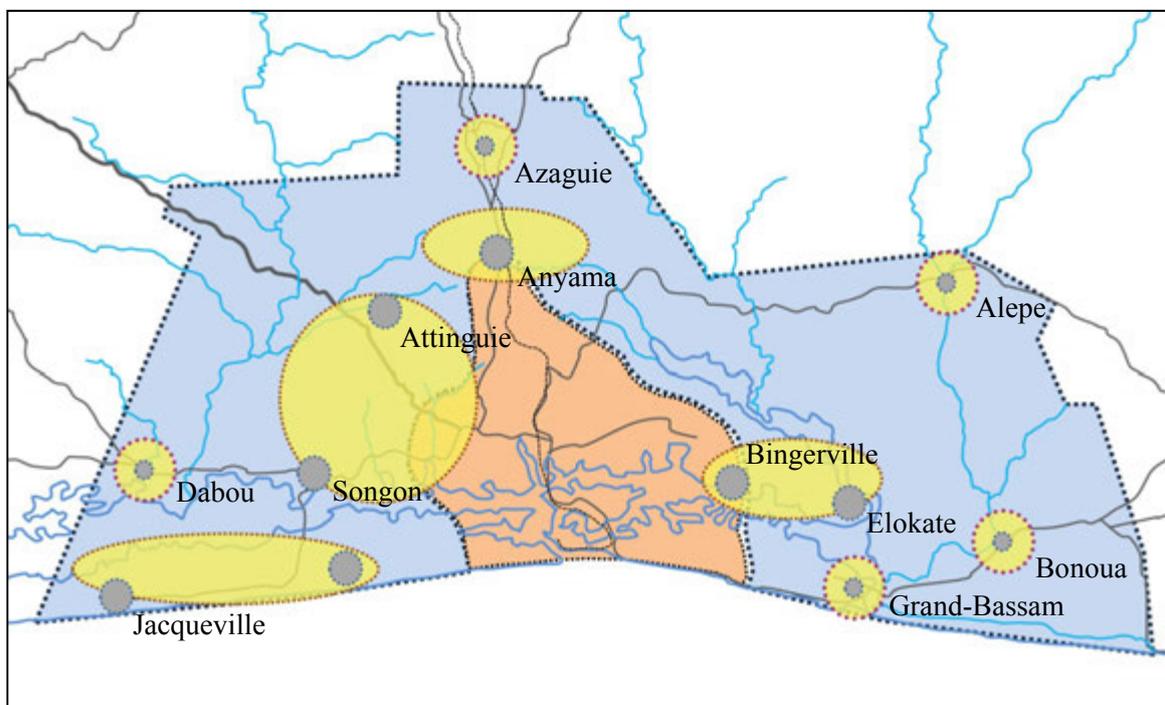


Figure 6.6 Scenario 4

Pros:

- Continues the existing development dynamic on the mainland that allows for more flexible transport network.
- West to east public transit system linking major new development areas.
- Curtails intensive urban development along Port Bouet – Grand Bassam coast to enable opportunities for low density resort based tourist facilities.
- Potential for new main highway through Elokate to reduce pressure on A100 road corridor.
- Opportunity to unlock development potential of Oghlwapo Sub-Prefecture.
- Curtails strip development from Anyama to Azaguie.

Cons:

- Will require constraints on future development along A100 corridor where land values are increasing.
- Commits major growth to expanding the AAD.
- For the expanded communities this scenario envisages a status quo development scenario, related to their current rural town economies, plus the upgrading of public facilities where required.
- Whilst maintaining the environmental quality of expanding communities there may be negative externalities in the expanded areas.
- The potential to establish sustainable agricultural production centres may be compromised through lack of investment in expanded communities.

Scenario 5: AAD to be a Compact City (Figure 6.7)

Scenario 5 is an urban revitalisation led strategy, based upon the premise that solving the current issues of existing urban area should be the priority in the immediate future. This would go hand in hand with ensuring that the city attains the role of a regional and international finance and transshipment centre. Development in the rural towns would be focused on adequate provision of social infrastructure for the existing and projected populations. Within the Abidjan urban area a clear hierarchy of high density urban centres would be defined to ensure equitable distribution of public facilities linked to public transport nodes.

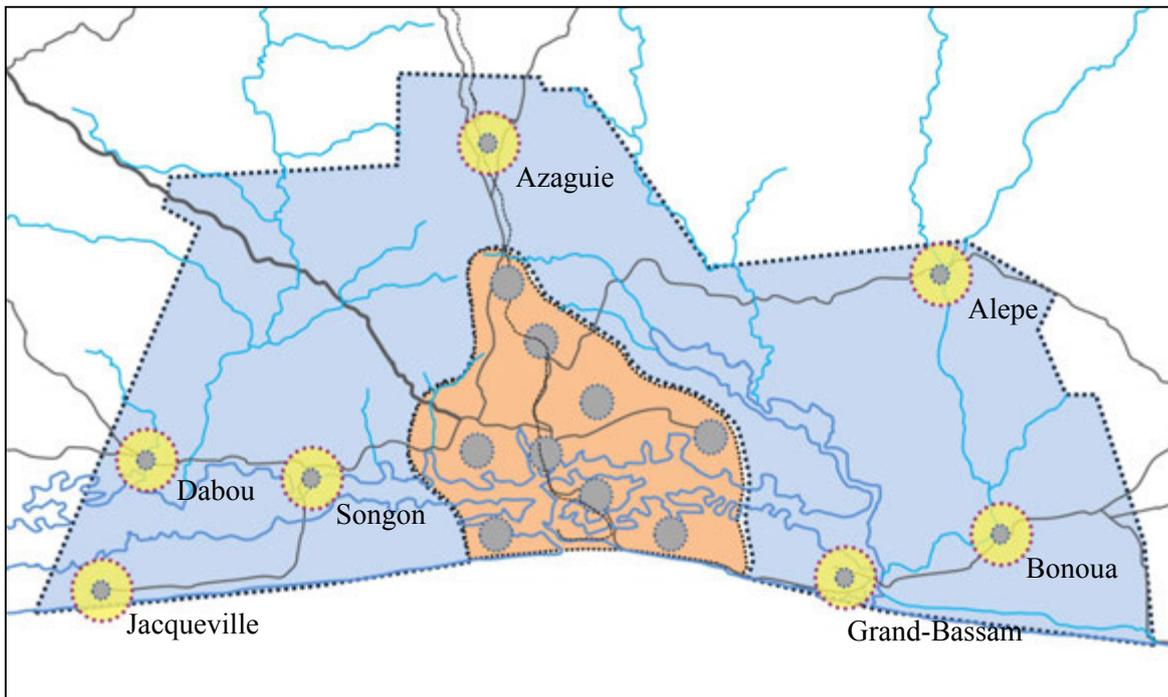


Figure 6.7 Scenario 5

Pros:

- Set as a priority upgrading of the existing urban utility and social infrastructure to enable Abidjan to become a high quality international city.
- Supports the densification of existing urban areas through high rise residential / commercial mixed use zones focused on TOD to accommodate population growth.
- Places public transit as a major focus of spatial growth.
- Encourages private sector led initiatives, such as PPP in infrastructure and land assembly stimulated by up-zoning for residential / commercial mixed use densification.

Cons:

- Delays development opportunities available in expanded communes from current committed infrastructure projects.
- Role of rural hinterland remains in status quo.

- Multi ownership issues in established urban areas likely to delay realisation of local urban centre densification projects.
- Issues arising from Scenario 4 are also inherent in this scenario.

Scenario 6: Fulfilling the Greater Abidjan Master Plan 2000 (Figure 6.8)

Scenario 6 follows the main development proposals and projects of the Structure Plan 2000. Growth will be directed to achieve the following:

- Consolidation of original expansion areas with housing and employment opportunities.
- Protection of natural resources.
- Road, public transit and utility provision and improvements.
- Timely implementation of committed projects.
- Greater Abidjan supporting functions for Alepe, Dabou, Bonoua and Azaguie
- Tourism centres at Grand Bassam and Jacqueville.

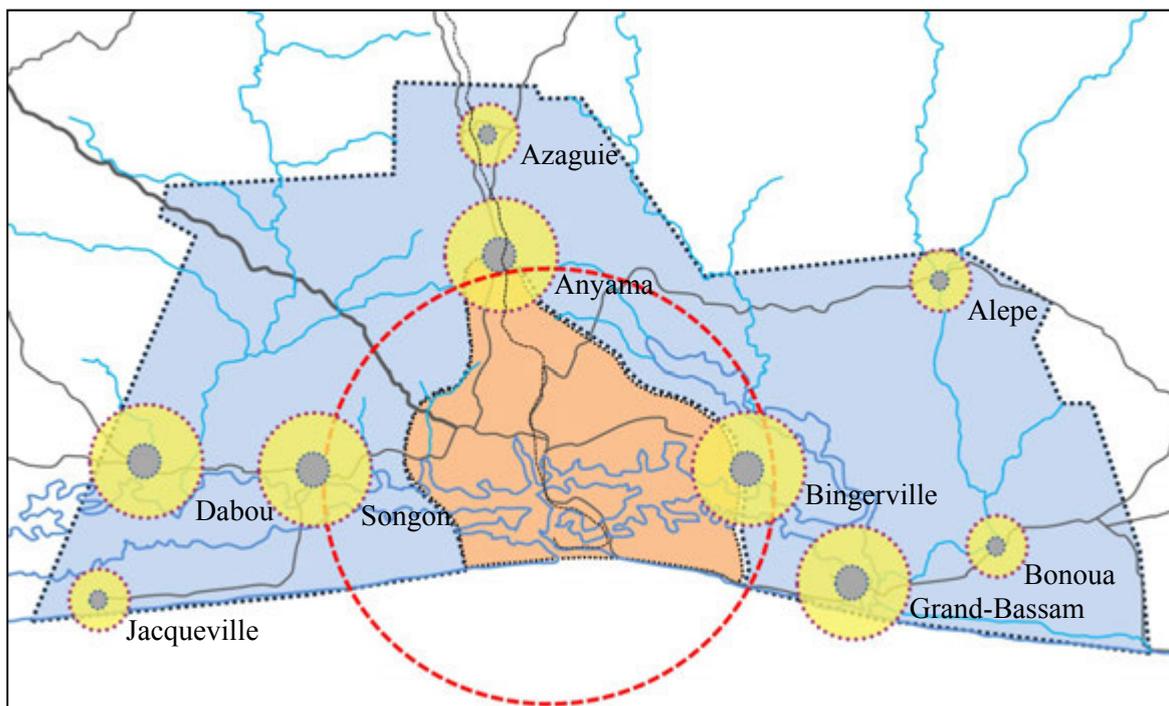


Figure 6.8 Scenario 6

Pros:

- Development is currently directed by this plan and therefore will require little change.
- Areas where new urban expansion is currently occurring can be consolidated and completed.
- Major infrastructure upgrading and social provision projects that have been delayed can be completed.

Cons:

- The Master Plan 2000 is not being followed by some Government Ministries due to lack of coordination.
- Supply of public facilities is not matching demand due to unavailability of land within AAD.
- Illegal informal settlement is delaying implementation of public projects.
- Private sector initiatives are creating directing changes to growth pattern under Master Plan 2000 in certain communes.
- Urban growth area defined as a 20 km radius (red dashed line on Figure 6.8 above) has already expanded to beyond 30 km, which will require substantial public financing for public facilities and infrastructure.
- Agricultural hinterland land is under pressure from increasing land values as urbanization spreads; this will affect domestic food security and agricultural exports.
- Role of the expanded communes is undefined, except as anticipated commuter satellites in Grand Bassam and Dabou resulting from committed major road and proposed passenger rail projects.

6.1.4.3 Summary of Scenario Assessment

Table 6.2 sets out the summary of major benefits (Pro's) arising from the Spatial Growth Scenarios that are to be taken forward for consideration in formulating the Preferred Spatial Growth Scenario. Not all the Pro's are considered relevant outside the context of their specific scenarios and also may have been eliminated by the Con's of that scenario. Some Pro's are also implicit in more than one scenario and therefore not repeated.

Table 6.2 Summary of Scenario Assessment

Sustainable development benefits arising from Initial Spatial Options	Options					
	1	2	3	4	5	6
Provides the opportunity for each satellite community to build upon a specific local economic and cultural base as the sense of identity for residents and workers.	Yellow					
The notion of compact urban centres implicit in the option minimizes disturbance to the environment and agricultural land that provides.	Yellow					
Benefits from the economies of scale by utilizing the existing main infrastructure corridors.		Yellow				
Follows the some of the key urban growth drivers of the Master Plan 2000.		Yellow				
Solidifies private investor confidence in the benefits accruing from Government infrastructure development where land speculation has already occurred.		Yellow				
Opens up waterfront areas for high value development		Yellow				
Physically constrains urban growth by providing green separators between each growth zone			Yellow			
Enables consideration of land extensive industrial and logistics development well beyond the high land values of AAD and its immediate semi urbanized areas.			Yellow			
Potential for new main highway through Elokate to reduce pressure on A100 road corridor				Yellow		
Opportunity to unlock development potential of Oghlwapo Sub-Prefecture				Yellow		
Curtails strip development from Anyama to Azaguie				Yellow		
Set as a priority upgrading of the existing urban utility and social infrastructure to enable Abidjan to become a high quality international city					Yellow	
Supports the densification of existing urban areas through high rise residential / commercial mixed use zones focused on TOD to accommodate population growth					Yellow	
Places public transit as a major focus of spatial growth					Yellow	
Encourages private sector led initiatives, such as PPP in infrastructure and land assembly stimulated by up-zoning for residential / commercial mixed use densification					Yellow	
Development is currently directed by this plan and therefore will require little change						Yellow
Areas where new urban expansion is currently occurring can be consolidated and completed						Yellow
Major infrastructure upgrading and social provision projects that have been delayed can be completed						Yellow

6.1.5 Preferred Spatial Growth Scenario

6.1.5.1 Growth Centres

Six spatial growth scenarios for Greater Abidjan were generated and evaluated to meet the criteria for smart growth agenda. As the consequence of comparative analysis of pros and cons of the respective scenarios, an optimized scenario (Scenario 7: Compact City plus Satellite City concept) was synthesized to suit the development of Greater Abidjan as shown in Figure 6.9.

Six spatial growth scenarios for Greater Abidjan were generated and evaluated to meet the criteria for smart growth agenda described above. As the consequence of comparative analysis of pros and cons of the respective scenarios, an optimized scenario (Scenario 7: Compact City plus Satellite City concept) was synthesized to suit the development of Greater Abidjan as shown in Figure 6.9.

Future growth will be directed to land that has been earmarked for urban expansion under the Master Plan 2000, combined with 'compact city' growth principles for existing urban areas and satellite cities beyond the urbanized Abidjan city environs.

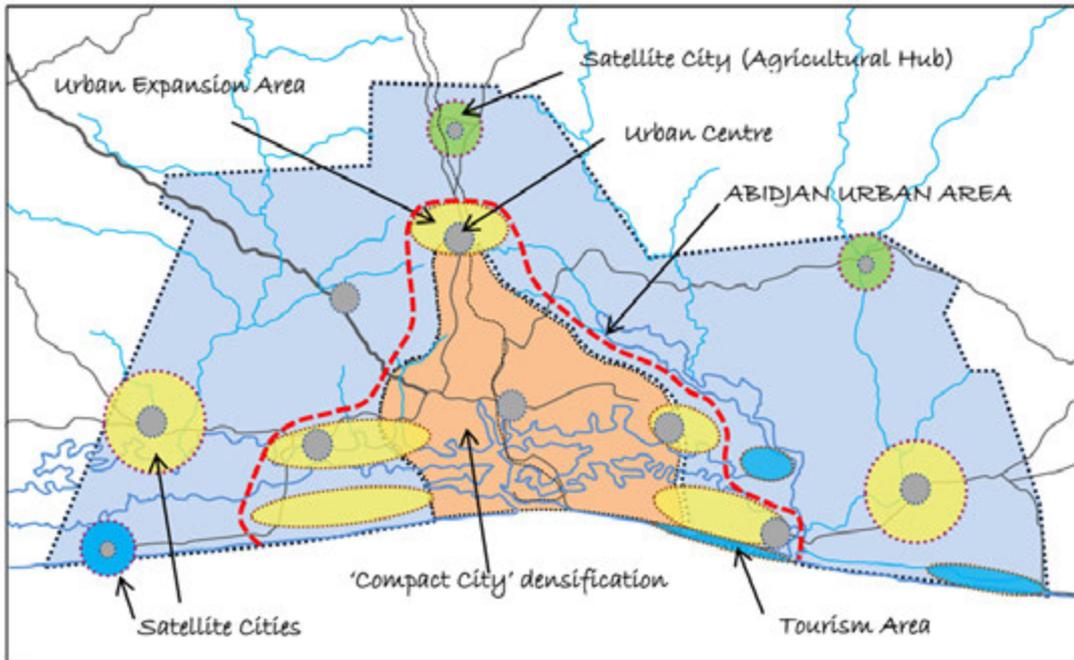


Figure 6.9 Scenario 7 (Preferred Spatial Growth Scenario)

Existing Urban Centre:

Urban revitalization of key areas - New International Finance Centre in Plateau, removal of slums, adequate public facility provision, upgraded utility infrastructure, new cultural and civic venues, street tree planting and provision of green parks.

Urban Centres:

High Rise densification, mixed commercial / residential TOD, major public facilities including colocation, pedestrianized commercial streets, multi-storey car parks landscape beautification. Linked by MRT public transport.

Urban Expansion Areas:

Constrained within Songon, Anyama, Bingerville Peninsula and Port Bouet – Grand Bassam corridor. Low density 'green' development and new clean industry employment centres. Linked by Rail or BRT public transport.

Agricultural Hubs:

Azaguie and Alepe growth stimulated through the development of major food processing plants, new agricultural technologies to increase production, logistics support, food security policies to protect agricultural base of these urban hinterland / rural areas. Population growth related to local agribusiness and tourist employment not commuting to main urban areas. Public transport served by local bus service. Protected forests and river valleys, within rural areas and peri-urban areas, are to be developed to include leisure parks.

Tourist Areas:

The Atlantic Coast and Ebrie Lagoon to be a major tourist zone with resort style hotels and facilities for domestic and international tourists. Jacqueline will be the main tourist destination in the west. Grand Bassam will be the “Tourist Gateway” to the eastern coast.

6.1.5.2 Urban Centres Hierarchy

To ensure the equitable distribution of community facilities, which provide easy public access and reflect the levels of local governance, a four tier hierarchy of urban centres is proposed.

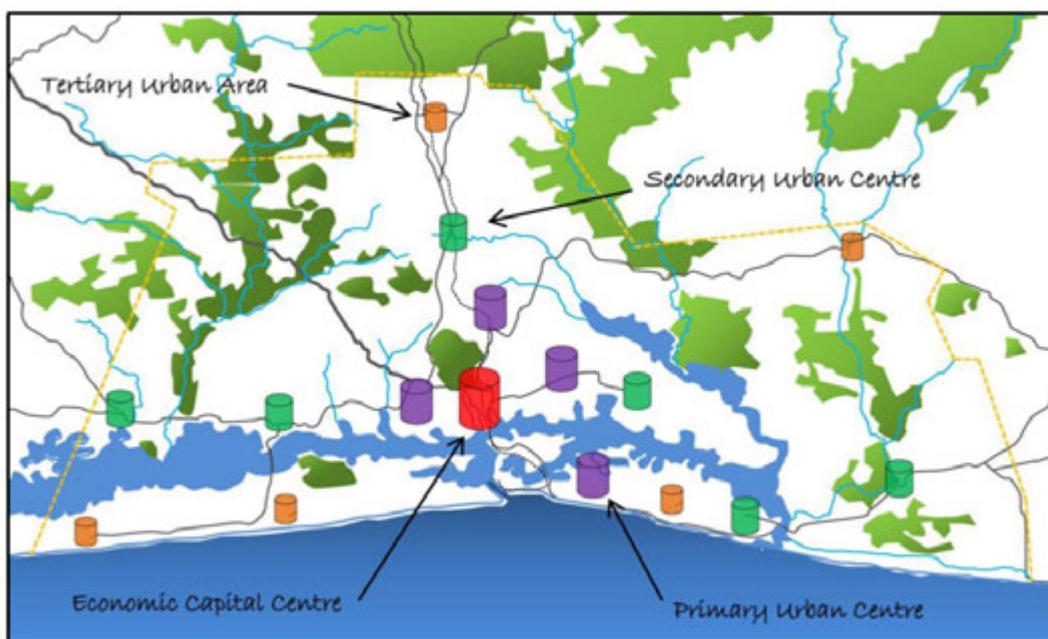


Figure 6.10 Urban Centres Hierarchy

Economic Capital Centre:

New International Finance Centre, Government Ministries and Major Civic, Cultural, Hotel and MICE Facilities – main commercial and entertainment centre

Primary Urban Centre:

Multi Modal Centres, Upper Order Public Facilities, Cultural and Sports Venues serving 500,000 – 1.0 million residents

Secondary Urban Centre:

TOD Centres, Public Facilities serving 70,000 – 100,000 residents

Tertiary Urban Centre:

Commercial Centre / Bus Terminus, Public Facilities serving 30,000+ residents and includes two new towns along the cordon littoral

6.1.5.3 Strategic Transport Network

The strategic transport network mainly follows that set out in the Master Plan 2000. This is augmented by a comprehensive public transport network that includes; the ‘urban train’, expanded passenger ferry service through the Ebrie Lagoon, and a major TOD of stations and bus terminal. The overarching aim is to provide access to major employment centres.

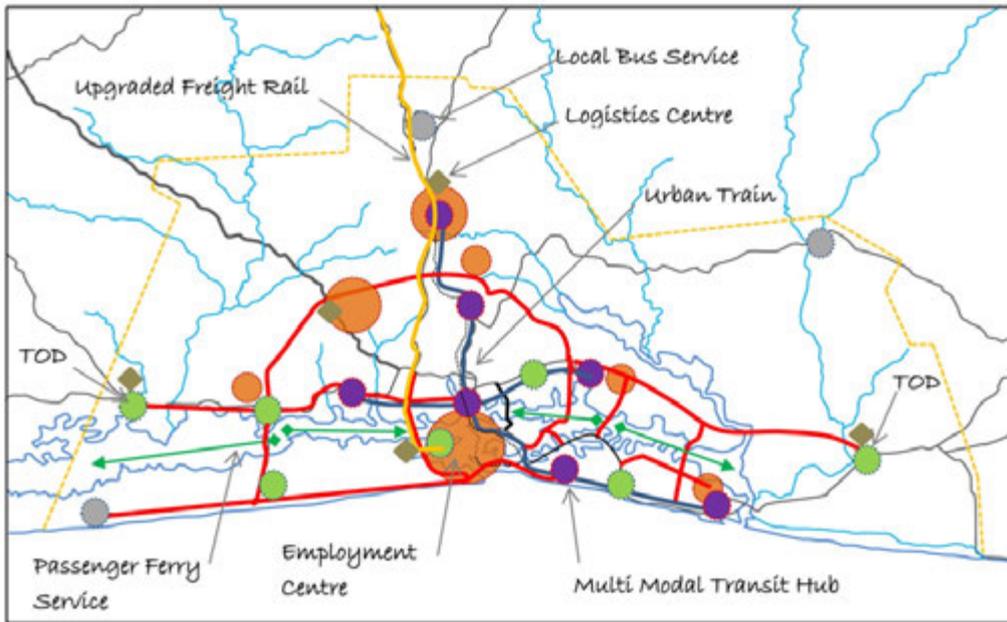


Figure 6.11 Strategic Transport Network

Arterial Road Network: completion of Master Plan 2000 projects and a new highway east to Bonoua

MRT Urban Rail: north-south and west east lines with a major connection station at the new International Finance Centre in Plateau. Future extension to new International Airport at Oghlwapo

New Freight Rail Line: direct line from Anyama via Yopougon to new Port and a link to Attinguie Industrial Zone.

BRT Service: Inter-Urban Centre service, linking to MRT stations and city centre from peripheral urban centres. Dedicated bus routes will travel main radial and ring road arterials.

Local and Inter-City Bus Service: to outlying low population centres of Alepe, Azaguie and Jacqueville.

Passenger Ferry Service: comprehensive 'green transport' ferry service linking civic, employment and tourist centres around Ebrie Lagoon.

New International Airport: longer term proposal for development at Oghlwapo. Increasing land values and environmental concerns due to increased urbanization around existing airport will stimulate redevelopment pressure to higher value.

Logistics Centres: five are proposed for bulk breaking to reduce the volume of heavy goods vehicles traversing the urban areas – Attinguie, Anyama, Bonoua, Port Bouley and Dabou. These should also incorporate lorry parks.

Multi Modal Transit Hub: major public transport hubs (rail /bus) for high density mixed use commercial / residential development.

TOD: high density commercial centre in peripheral urban areas.

6.1.5.4 Employment Centres

The principle governing the location of employment centres is that they should be near to or easily accessible from residential areas. Thus employment and public transit are fully integrated in this strategy. A five layer employment strategy is proposed to stimulate a wider range of employment opportunities and move employment up the value chain though by expanding centres for higher skilled, service and knowledge based jobs.

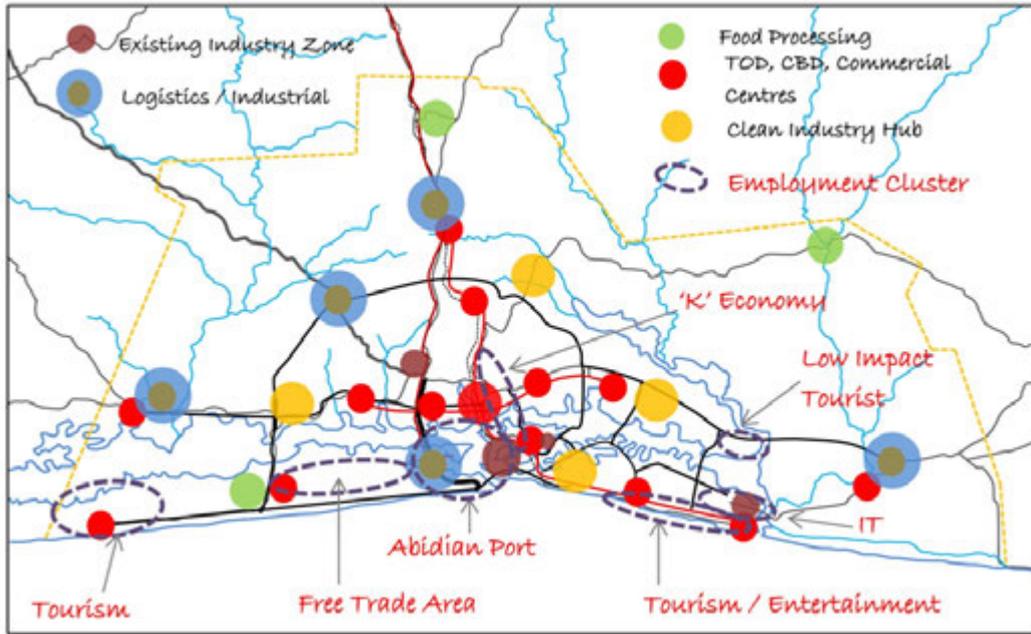


Figure 6.12 Employment Centres

Exiting Industrial Zones: The four major existing industrial zones at: Yopougon Industry Area, Trechville / Port Bouet and Macrory - Port and industrial areas, Koumassi industrial area, and Grand-Bassam IT zone.

New Logistics and Industrial Zones: Dabou, Attinguie (PK24), Anyama, Bonoua and the Abidjan Port expansion area.

Food Processing: Azaguié, Alépé, Dabou, Bonoua and a proposed new town near N'djem.

Transit Oriented Development and Central Business District, Commercial Centres: These are associated with urban renewal around new multimodal public transit transport stations – bus, rail and ferries.

Clean Industry Hubs: Bingerville, Grand-Bassam, Cocody and Songon.

Employment Clusters: Concentrations of similar and complementary service and knowledge industries. They are; Abidjan Port and its extension, Tourism and Entertainment (Grand Bassam area), Low Impact Tourism (Elokate area), K – Economy (associate with the two main universities and urban renewal in Plateau and Adjame), Tourism at Jacqueline.

6.2 SEA for Spatial Growth Scenarios

6.2.1 Definition of SEA

There is a difference by institution and country for positioning and definition of SEA. However in any case, the main points are to assess environmental and social impacts at earlier stages on policy making, planning, and programming, and to reflect the impacts in decision-making.

The definition of SEA in “Applying Strategic Environmental Assessment: good practice guidance for development cooperation” (OECD/DAC, 2006) is as follows:

- “Analytical and participatory approach that aims to integrate environmental considerations into policies, plans and programs and evaluate the inter-linkages with economic and social considerations.”

Definition of SEA by Ministry of Environment, Japan: is as follows:

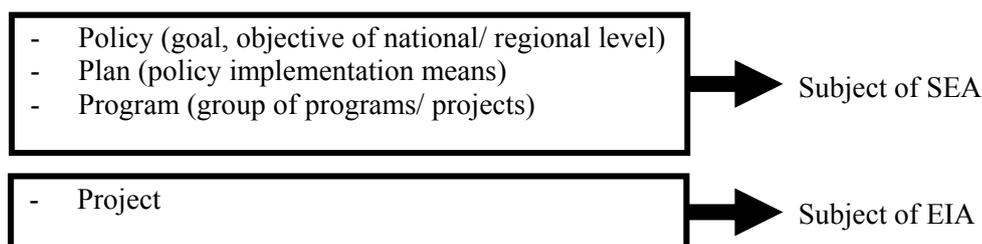
- “Environmental assessment at strategic decision-making stage prior to individual project implementation, that is an environmental assessment for planning (higher planning) and policies to give a framework for planning and implementation of individual projects.

6.2.2 Importance of SEA

6.2.2.1 Limitation of Project-level EIA

SEA is important at the decision-making stage, because project-level EIA has the following limitations.

- Limited choices of alternatives, and limited mitigation measures for environmental impacts, because for the most part the contents of the project are fixed.
- Does not deal with Cumulative impacts caused by multiple projects



Source: JICA Study Team

Figure 6.13 Subject of SEA and EIA

6.2.2.2 Introduction of SEA

The introduction of SEA is required because it is possible to optimize a development plan in a long-standing manner and it provides a broad perspective by examination at policy level and the planning stage.

6.2.2.3 Features of SEA

The features of SEA are as follows;

- Impact assessment including environmental aspects at higher-level planning
- Assessment over a wide-area
- Assessment for impacts of not only environmental aspects but also social and economic aspects
- Assessment of Cumulative impacts caused by multiple projects
- Information disclosure and stakeholder meetings from an earlier stage

6.2.2.4 SEA in JICA Guidelines for Environmental and Social Considerations

The outline of SEA in the JICA Guidelines for Environmental and Social Considerations is as follows:

- Definition: “strategic environmental assessment (SEA)” is an assessment that is implemented at the policy, planning, and program levels, but is not a project-level EIA.
- Basic Principles: Measures for environmental and social considerations must be implemented from an early stage through to the monitoring stage.
JICA applies a Strategic Environmental Assessment (SEA) when conducting Master Plan Studies etc., and encourages project proponents etc. to ensure environmental and social considerations are analysed from an early stage through to the monitoring stage.
- Full-scale Study Stage (Master Plan Study): JICA applies a SEA to such studies.
- If a SEA system is present in the recipient country, it is necessary to check the consistency between the concerned system and the study objectivities.

6.2.2.5 Overall SEA Procedures

The overall outline of standard SEA procedures is as follows:

Table 6.3 Standard SEA Procedures

Stage	No.	Procedure	Item
Planning stage	1	Understanding of various conditions (policy, legal system, geographical features, etc.)	<ul style="list-style-type: none"> • Confirmation of existing policies and plans • Examination of objectives/ goal of policy/ plan for concerned master plan • Confirmation of environmental/ social conditions as baseline (land use, natural environment, living area of ingenious people, economic/ social condition) • Confirmation on system/ institutional settings of environmental/ social considerations in the recipient country <ul style="list-style-type: none"> • Regulations/ standards on environmental/ social considerations (environmental impact assessment, resettlement, public participation, information disclosure, etc.) • Deviation from JICA guideline • Outline of related organizations
	2	Examination of development scenario (alternatives)	<ul style="list-style-type: none"> • Setting of multiple alternatives (incl. zero option) considered with various constraint conditions • Various levels of alternatives (policy/ plan/ program) • Sample of alternatives in sector plan/ regional development plan/ urban plan <ul style="list-style-type: none"> • Examination of sector/ mode (railway or road/ thermal or hydroelectric power generation) • Examination of priority programs/ projects • Examination of project scale (incl. newly established/ extension/ rehabilitation) • Examination of site location/ alignment
	3	Selection of scoping/ evaluation items	<ul style="list-style-type: none"> • To select study items to adjust the development scenario based on opinions at stakeholder meetings <ul style="list-style-type: none"> • Pollution measures (air/ water quality, noise/ vibration, waste, etc.) • Natural environment (protected areas, ecosystem, geographical features, etc.) • Social environment (resettlement, aesthetics, living condition, ingenious peoples, etc.) • Economic impacts (employment, industrial development, resource use, etc.) • Climate change, energy consumption, etc.
	4	Stakeholder meetings	<ul style="list-style-type: none"> • To ask for participation of wide-ranging stakeholders, such as government staffs, academics, researchers, NGOs, community representatives, etc. • Grasp of needs of stakeholders • Promotion of meaningful participation by information disclosure • Definition: "Local stakeholders" means affected individuals or groups (including illegal dwellers) and local NGOs. "Stakeholders" are individuals or groups who have views about cooperation projects, including local stakeholders.
	5	Study/ forecast/ analysis/ evaluation of impacts	<ul style="list-style-type: none"> • Examination by IEE (initial environmental examination, not to carry out detailed survey) • Examination/ selection of analysis/ evaluation framework
	6	Examination of mitigating measures	<ul style="list-style-type: none"> • To propose mitigating measures (avoidance, Minimization, compensation, etc.) for each alternative
	7	Selection of program/ project	<ul style="list-style-type: none"> • Comparison of alternatives based on evaluation framework • Selection of recommended alternative (incl. cost, implementing system)
Implementing stage	8	Monitoring	

Source: JICA Study Team

6.2.3 Implementation of SEA for Spatial Growth Scenarios

The JICA Study Team analysed 7 Spatial Growth Scenarios. In order to assure the most preferred Spatial Growth Scenario, SEAs for these scenarios and the “Zero-Option” were implemented. The results of the SEAs are shown in Table 6.4 and Table 6.5 and an outline of the average points is shown in Table 6.6. Since Scenario 7 (combination with compact city and satellite cities) obtained the highest points, it was selected as the most preferred spatial growth scenario for the Greater Abidjan Urban Master Plan.

Table 6.4 Result of SEA (1/2)

Scenario	ZERO Option	Scenario 1 Self-Contained six communes independent from AAD	Scenario 2 Three growth corridors from AAD	Scenario 3 Growth Nodes with their respective hinterlands
Objective	- Uncontrolled	- Promote & focus major residential & employment growth within the communes	- Promote growth along the 3 major radial roads serving the AAD immediate hinterland	- Promote the notion of 4 sub-regional growth zones
Solution to existing problems				
Disorderly land use	The existing disorderly land use will worsen, when it is uncontrolled. (-3)	The central area will be controlled relatively easily, when an adequate policy is implemented. The six communes will be controlled very well and this is relatively easy to implement. (+1)	The central area will be controlled relatively easily, when an adequate policy is implemented. The area along the three growth corridors will be controlled and this is relatively easy to implement, attention should be paid to illegal developments along the corridors (+/-0)	The central area and three nodes will be controlled relatively easily, when an adequate policy is implemented. Special attention should be paid because the central area and three nodes will be one very large zone. (-1)
Absolute lack of living infrastructure	The existing condition on lack of infrastructure will be more serious (-3)	The central area and six communes will be distributed properly, so the infrastructure will be developed relatively easily but the potential for future expansion will be relatively limited. (+1)	The infrastructures in the central area will be developed properly. Some inefficiencies along the corridors will occur. (+/-0)	The infrastructures in the central area and three nodes will be developed efficiently. The concentrated infrastructure will cause some difficulties to control and maintain. The cost will be high. (+/-0)
Lack of Public investment	The attraction to investors is very low, so that the lack of public investment will be more seriously (-3)	The central area and six communes are orderly arranged, but the expansion potential of the central area and the size of the six communes are limited. So that attraction to investors is not so	The expansion potential of the central area and along the three corridors is limited. So that attraction to investors is not so high. (-1)	The expansion potential of the central area and three nodes are very high. So that attraction to investors will be high, but the land prices also will be high. (+2)

			high. (-1)		
	Sharp increase of population	There is no system to accommodate the increase in population, so trouble due to the increase of population will be more serious. (-3)	A system to accommodate the increase in population in the six communes will be arranged, but total area to accommodate them is not large. (+/-0)	A system to accommodate the increase in population along the three corridors will be arranged, but total area to accommodate them is not large. (+/-0)	A system to accommodate the increase in population in the central area and three nodes will be arranged, and total area to accommodate them is large. (+3)
	Huge number of urban poor	No area for them to live in nor opportunities for work will be arranged, so the conditions for urban poor will be more serious (-3)	The area for them to live in and the opportunities for work in the central area and six communes to be developed will be improved, but the potential is not so high because of lack of expansion of the central area. (+/-0)	The area for them to live in and the opportunities for work in the central area and along the three corridors to be developed will be improved, but the potential is not so high because of lack of expansion of the central area. (+/-0)	The area for them to live in and the opportunities for work in the central area and three nodes to be developed will be improved, so that the potential is high. (+3)
	Disorderly expansion of AAD	The control of disorderly expansion of AAD will not be implemented, so that the acceleration of this condition will be more seriously. (-3)	The control of disorderly expansion of AAD will be implemented by absorption of six communes, but its capacity is limited. (+1).	The control of disorderly expansion of AAD will be implemented by absorption along three growth corridors, but its capacity is limited. (+1).	The control of disorderly expansion of AAD will be implemented by absorption along three growth corridors, and its capacity is adequate. (+3)
	Total points for solution of existing problems (av.)	-18 (-3.00)	2 (0.33)	0 (0)	10 (1.67)
Environmental aspects					
Pollution	Air Quality/ Offensive odors	Air pollution by transport operations and industrial activities and offensive odors from wastewater and solid waste will be accelerated. (-2)	Air pollution by transport operations and industrial activities and offensive odors from wastewater and solid waste will occur. But the control of them is relatively easy. (+1)	Air pollution by transport operations and industrial activities and offensive odors from wastewater and solid waste will occur. But the control of them is relatively easy. (+1)	Air pollution by transport operations and industrial activities and offensive odors from wastewater and solid waste will be concentrated in the central area and three nodes. The cost is relatively high to control them. (-1)
	Water Quality	The water pollution from domestic and industrial wastewater, especially heavy metal water pollution will be more serious. (-3)	The water pollution from domestic and industrial wastewater, especially heavy metal water pollution will occur, but the control is relatively easy and efficient. (+2)	The water pollution from domestic and industrial wastewater, especially heavy metal water pollution will occur, but the control is relatively easy. (+1)	The water pollution from domestic and industrial wastewater, especially heavy metal water pollution will occur and be concentrated in the central area and three nodes. The control is relatively easy and efficiently, but its cost is relatively high. (+/-0)

	Waste	The existing waste problem will be accelerated and serious. (-3)	The waste problems will occur and be concentrated in the central area and six communes. The control is relatively easy. (+2)	The waste problems will occur and be concentrated in the central area and along three corridors. The control is relatively easy. (+2)	The waste problems will occur and be concentrated in the central area and three nodes. The control will be implemented relatively efficiently, but not so easy and the cost to management is high. (-1)	
		Noise/ Vibration	Serious noise/vibration from transport operations and industrial activities will occur. (-2)	The noise/ vibration from transport operations and industrial activities will occur, but the extent and area is relatively limited. (+1)	The noise/ vibration from transport operations and industrial activities will occur. The attention should be paid to the expansion along the three corridors. (+/-0)	The noise/ vibration from transport operations and industrial activities will occur in the central area and three nodes. Noise/vibration levels relatively are high within these areas. (-2)
		Sub-total for pollution (av.)	-10 (-2.50)	6 (1.50)	4 (1.00)	-4 (-1.00)
		Protected Area/ Ecosystem	Uncontrolled development will lead to significant impacts to protected area/ ecosystem. (-3)	The new developed area is limited, therefore the impacts to protected area/ ecosystem is relatively small. (+1)	The new developed area is limited, therefore the impacts to protected area/ ecosystem is relatively small. (+1)	The new developed area is very large; therefore the impacts to protected area/ ecosystem will be significant. (-3)
	Natural Environment	Hydrosphere	Uncontrolled development will lead to more serious impacts on the hydrosphere. (-2)	The new developed area is in six communes. The center parts of these communes are located on the flat area, therefore the impacts on the hydrosphere are relatively small. (+1)	The new developed area is limited, but some corridors will affect some rivers or surface water flow. Therefore impacts on the hydrosphere will occur. (+/-0)	The new developed area is very wide, and three nodes are located in rural areas. The development in the three nodes will lead to relatively high impacts on surface water and water flow/ sediments in the lagoons. Therefore the impacts on the hydrosphere will be very large. (-3)
		Topography/ Geology	Uncontrolled development will lead to impacts on the topography/ geology more seriously. (-2)	The new developed area is in six communes. The center parts of these communes are located on the flat area, therefore the impacts on topography/ geology are relatively small. (+1)	The new developed area is limited, but some corridors will pass along the coastal area or the lagoons. Therefore impacts on topography/ geology will occur. (+/-0)	The new developed area is very wide, and three nodes are located in rural areas and coastal/ lagoon areas. The development in these three nodes will lead to topographical change, which has some potential for hazards. Therefore the impacts on topography/ geology will be large. (-2)

		Sub-total for natural environment (av.)	-7 (-2.33)	3 (1.00)	1 (0.33)	-8 (-2.67)
Social Environment		Resettlement	Uncontrolled development will lead to involuntary resettlements. (-3)	Some residents in the central area will relocate to the six communes. Adequate resettlement action should be implemented. (-1)	Some residents in the central area will relocate to the area along the corridors. (-1)	Large number of residents in the central area will relocate to the three nodes. The impacts will be significant. (-3)
		Living/ Livelihood Condition	The problems on living/ livelihood condition will be more serious. (-3)	The improvement of living/ livelihood conditions will be predominantly in the central area and six communes. (+/-0)	The improvement of living/ livelihood condition will be predominantly in the central area and six communes. Some activities which lead to problem such as illegal/ uncontrolled land use should be managed. (-1)	The improvement on living/ livelihood will be promoted by the development. (+2)
		Sub-total for social environment (av.)	-6 (-3.00)	-1 (-0.50)	-2 (-1.00)	-1 (-0.50)
		Av. for environmental aspects	-1.89	1.28	0.44	-0.17
Economic/ Financial Aspects						
		Development/ Maintenance/ operation cost	Unknown, but probably much waste. (-3)	The development cost is relatively small, because the area is imitated. (+2)	The development cost is relatively small, because the area is limited. (+2)	The development cost is very high, because of its wide area. (-3)
		Economic revitalization	Uncontrolled development will not lead to economic revitalization. (-3)	The capacity of economic revitalization is relatively small. (-1)	The capacity of economic revitalization is relatively small. (-1)	The capacity of economic revitalization is large. (+3)
		Contribution to national economy	Small contribution to national economy. (-3)	Significant impact locally, but small contribution to national economy. (-2)	Significant impact locally, but small contribution to national economy. (-2)	very large (+3)
		Sub-total for economic/financial aspects (av.)	-9 (-3.00)	-1 (-0.33)	-1 (-0.33)	3 (1.00)
		Grand total (av.)	-2.87	0.22	-0.77	0.43

Points: +3: Best, +2: Very good, +1: Good, +/-0: Neutral, -1: Bad, -2: Very bad, -3: Worst (evaluation by comparison among 8 scenarios)

For each item: average points were calculated (in environmental aspects, firstly the average was calculated for each sub-item, such as pollution, natural & social environment, and secondly the average was calculated as points for environment aspects)

Grand total points: average was calculated for 3 items, Solution to existing problems, Environmental aspects, and Economic/ Financial Aspects

Source: JICA Study Team

Table 6.5 Result of SEA (2/2)

Scenario	Scenario 4 Expansion of AAD	Scenario 5 AAD to be a Compact City	Scenario 6 Fulfilling the Greater Abidjan Master Plan 2000	Scenario 7 Combination with compact city and satellite cities
Objective	- Direct growth & expansion to the immediate west & east of the AAD	- Be an urban revitalization	- Follow the main development proposals & projects of the Structure Plan 2000	- Combination with compact city growth principals for existing urban areas and satellite cities beyond the urbanized Abidjan city environs.
Solution to existing problems				
Disorderly land use	The central area and expansion area will be difficult to control, because this scenario will lead to uncontrolled land use. (-2)	The central area and six communes will be controlled very well and will be relatively easy to control. (+2)	The central area will have some difficulties to control, because the area will be large. The six communes will be controlled very well and it will be relatively easy to implement. (-1)	The central area will be controlled relatively easily, if a policy not to expand the central area will be implemented. (+1)
Absolute lack of living infrastructure	There are some inefficiencies and some difficulties to control and maintain. (-2)	The infrastructures in the central area and six communes will be developed efficiently, and the cost is not high, but the potential for future expansion will be limited. (+1)	The infrastructures in the central area and six communes will be developed efficiently, but there are some unknown factors to expand in the central area. (+/-0)	The infrastructures in the central area and six communes will be developed efficiently, but attention should be paid to any uncontrolled expansion in the central area (+1)
Lack of public investment	The central area and other areas will be expanded but have some unknown factors. So that some investors will hesitate to invest. (+1)	The central area and six communes are orderly arranged, but the expansion potential of the central area and the size of the six communes are very limited. So that attraction to investors is low. (-3)	The expansion potential of the central area is very high. So that attraction to investors will be high, but there are some unknown factors to expand. (+1)	The expansion potential of the central area is very high. So that attraction to investors will be high, but the potentials in the six communes are limited. (+2)
Sharp increase of population	A system to accommodate the increase in population in the central area and some expanded areas will be arranged, but the other areas to accommodate the increase are not so large. (+2)	The system to accommodate the increase in population in the central area and six communes will be limited, so the development of high density and multistoried housing should be required. (-2)	A system to accommodate the increase in population in the central area will be arranged, but the areas in the six communes are limited. (+1)	A system to accommodate the increase in population in the central area will be arranged, but the other areas to accommodate the increase are not so large. (+2)

	Huge number of urban poor		The area for them to live in and the opportunities for work in the central area and some expanded areas to be developed will be improved, so that the potential is high. (+2)	The area for them to live in and the opportunities for work in the central area and six communes to be developed will be very limited. (-3)	The area for them to live in and the opportunities for work in the central area and six communes to be developed will be improved, so that the potential is high. (+2)	The area for them to live in and the opportunities for work in the central area and six communes to be developed will be improved, so that the potential is high. (+2)
	Disorderly expansion of AAD		The control of disorderly expansion of AAD will be implemented by absorption in the expansion areas, and its capacity is adequate. (+2)	The control of disorderly expansion of AAD will be implemented by high density and multistoried housing. But its capacity is very limited and the potential of future expansion is not expected. (-2)	The control of disorderly expansion of AAD will be implemented by absorption in the expanded central area, and its capacity is adequate. (+2)	The control of disorderly expansion of AAD will be implemented by absorption in the expanded central area, and its capacity is adequate. (+2)
	Total points for solution of existing problems (av.)		3 (0.50)	-2 (-0.33)	5 (0.83)	10 (1.67)
Environmental aspects						
Pollution	Air Quality/ Offensive odors		Air pollution from transport operations and industrial activities and offensive odors from wastewater and solid waste will occur everywhere. The efficient control is relatively difficult. (-2)	Air pollution from transport operations and industrial activities, and offensive odors from wastewater and solid waste will occur, but their extents are limited. The control is relatively easy. (+2)	Air pollution from transport operations and industrial activities and offensive odors from wastewater and solid waste will occur. That in the central is relatively heavy. (-1)	Air pollution from transport operations and industrial activities and offensive odors from wastewater and solid waste will occur. That in the central is relatively heavy. (-1)
	Water Quality		The water pollution from domestic and industrial wastewater, especially heavy metal water pollution will occur in the central area and expanded areas. The control is not easy or efficient. (-2)	The water pollution from domestic and industrial wastewater, especially heavy metal water pollution will occur, but its extent is not large and the control is easy and efficient. (+3)	The water pollution from domestic and industrial wastewater, especially heavy metal water pollution will occur in the central area and some communes. The cost for control in the central area is relatively high. (-2)	The water pollution from domestic and industrial wastewater, especially heavy metal water pollution will occur in the central area and some communes. The cost for control in the central area is relatively high. (-2)
	Waste		The waste problems will occur everywhere. The control will be not easy and not efficient. (-2)	The waste problems will occur and be concentrated in the central area. The control will be efficient and easy. (+3)	The waste problems will occur in the central area and some communes. The control will not be easy and not efficient. (-2)	The waste problems will occur and be concentrated in the central area. The control will be implemented relatively efficiently, but not so easy and the cost to management is high. (-1)

	Noise/ Vibration	The noise/ vibration from transport operations and industrial activities will occur in the central area and expanded areas. Noise/ vibration levels are relatively high within these areas. (-2)	The noise/ vibration from transport operations and industrial activities will occur in the central area. But the noise/ vibration level will be not high, because of limited traffic volume. (+2)	The noise/ vibration from transport operations and industrial activities will occur in the central area and some communes. The noise/ vibration level in the central area will be relatively high; because of traffic flow concentrating in the area. (-2)	The noise/ vibration from transport operations and industrial activities will occur in the central area. The noise/ vibration level in the central area will be relatively high; because of traffic flow concentrating in the area. (-2)
		Sub-total for pollution (av.)	-8 (-2.00)	10 (2.50)	-7 (1.75)
Natural Environment	Protected Area/ Ecosystem	The new developed area is very large; therefore the impacts to protected area/ ecosystem will be significant. (-3)	The new developed area is very limited therefore the impacts to protected area/ ecosystem will be quite small. (+3)	The new developed area is relatively large in the central area and expanded area, therefore the impacts to protected area/ ecosystem will be large, especially in some communes. (-2)	The new developed area is mainly in the central area. Therefore the impacts to protected area/ ecosystem will be limited, because the area surrounding the expanded area is already developed. (-1)
	Hydrosphere	The new developed area is relatively wide, and the north western part of the expanded area is in a rural area. Therefore the impacts on the hydrosphere will be relatively large. (-2)	The new developed area is very limited; therefore the impacts on the hydrosphere will be quiet small. (+2)	The new developed area is wide in the central area, but the newly developed area in rural areas is limited in some communes. Therefore the impacts on the hydrosphere will not be so large. (-1)	The new developed area is wide in the central area, but the newly developed are in rural areas is limited in some communes. Therefore the impacts on the hydrosphere will not be so large. (-1)
	Topography/ Geology	The new developed area is relatively wide, and the north western part of the expanded area is in a rural area, and three nodes are located in rural areas and the coastal/ lagoon areas. The development in the three nodes will lead to topographical change, which has some potential for hazards. Therefore the impacts on topography/ geology will be large. (-1)	The new developed area is very limited; therefore the impacts on topography/ geology will be quiet small. (+2)	The new developed area is wide in the central area, which has some weaknesses for flooding and soil erosion. Therefore the impacts on topography/ geology will occur. (-1)	The new developed area is wide in the central area, which has some weaknesses for flooding and soil erosion. Therefore the impacts on topography/ geology will occur. (-1)
	Sub-total for natural environment (av.)	-6 (-2.00)	7 (2.33)	-4 (-1.33)	-3 (-1.00)

Social Environment	Resettlement	Relatively large numbers of residents in the central area will relocate to somewhere in the expanded area. The impacts will be relatively large. (-2)	There will be resettlement to newly developed residential areas but the relocation site is near the area they lived in before. (+2)	Relatively large numbers of residents in the central area will relocate to somewhere in the expanded area but the relocation site is near the area they lived in before. The impacts will be relatively large. (-1)	Relatively large numbers of residents in the central area will relocate to somewhere in the expanded area but the relocation site is near the area they lived in before. The impacts will be relatively large. (-1)
	Living/ Livelihood Condition	The existing poor condition of living/ livelihood will be more seriously. (-3)	The efficient development will lead to good living/ livelihood, but the large number of residents in a small area will have some difficulties. (+/-0)	The development in the central area will make good living/ livelihood conditions and job opportunities. (+2)	The development in the central area will make good living/ livelihood conditions and job opportunities. (+2)
	Sub-total for social environment (av.)	-5 (-2.50)	2 (1.00)	1 (0.50)	1 (0.50)
	Av. for environmental aspects	-1.89	1.86	1.28	1.11
Economic/ Financial Aspects					
Development/ Maintenance/ operation cost		The development cost is relatively high, but maintenance cost is not so high. (+1)	Development cost and maintenance/ operation cost for multistory housing and concentrated wastewater treatment and solid waste management facilities is relatively large (-2)	The development cost is relatively high, but maintenance/ operation cost is relatively small. (+/-0)	The development cost is relatively high, but maintenance/ operation cost is relatively small. (+/-0)
Economic revitalization		The capacity of economic revitalization is relatively large. (+2)	The capacity of economic revitalization is small. (-2)	The capacity of economic revitalization is relatively large. (+2)	The capacity of economic revitalization is relatively large. (+2)
Contribution to national economy		relatively large (+1)	small (-3)	relatively large (+2)	very large (+3)
Sub-total for economic/financial aspects (av.)		4 (1.33)	-7 (-2.33)	4 (1.33)	5 (1.67)
Grand total (av.)		-0.11	-0.24	0.44	0.89

Points: +3: Best, +2: Very good, +1: Good, +/-0: Neutral, -1: Bad, -2: Very bad -3: Worst (evaluation by comparison among 8 scenarios)

For each item: average points were calculated (in environmental aspects, firstly the average was calculated for each sub-item, such as pollution, and natural & social environment, and secondly the average was calculated as points for environmental aspects)

Grand total points: average was calculated for 3 items, Solution of existing problems, Environmental aspects, and Economic/ Financial Aspects

Source: JICA Study Team

Table 6.6 Outline of Average points

Point	ZERO Option:	Scenario 1 Self-Contained six communes independent from AAD	Scenario 2 Three growth corridors from AAD	Scenario 3 Growth Nodes with their respective hinterlands	Scenario 4 Expansion of AAD	Scenario 5 AAD to be a Compact City	Scenario 6 Fulfilling the Greater Abidjan Master Plan 2000	Scenario 7 Combination with compact city and satellite cities
Solution of Existing Problems	-3.00	0.33	0.00	1.67	0.50	-0.33	0.83	1.67
Environmental Aspects	-2.61	0.67	0.11	-1.39	-2.17	1.94	-0.86	-0.67
Economic/ Financial Aspects	-3.00	-0.33	-0.33	1.00	1.33	-2.33	1.33	1.67
Grand total	-2.87	0.22	-0.07	0.43	-0.11	-0.24	0.44	0.89

Source: JICA Study Team

6.3 Greater Abidjan Urban Development Spatial Strategy (GAUDSS) 2030

6.3.1 Planning Context

The Greater Abidjan Urban Development Spatial Strategy 2030 (GAUDSS 2030) sets out the development framework for the Greater Abidjan area. It is an advisory and guidance document that sets the integrated physical plan for sustainable development to the areas that will subject to accelerated growth arising from the increase population and stimulated by infrastructure, industrial and land development. The main components of the strategy are explained below.

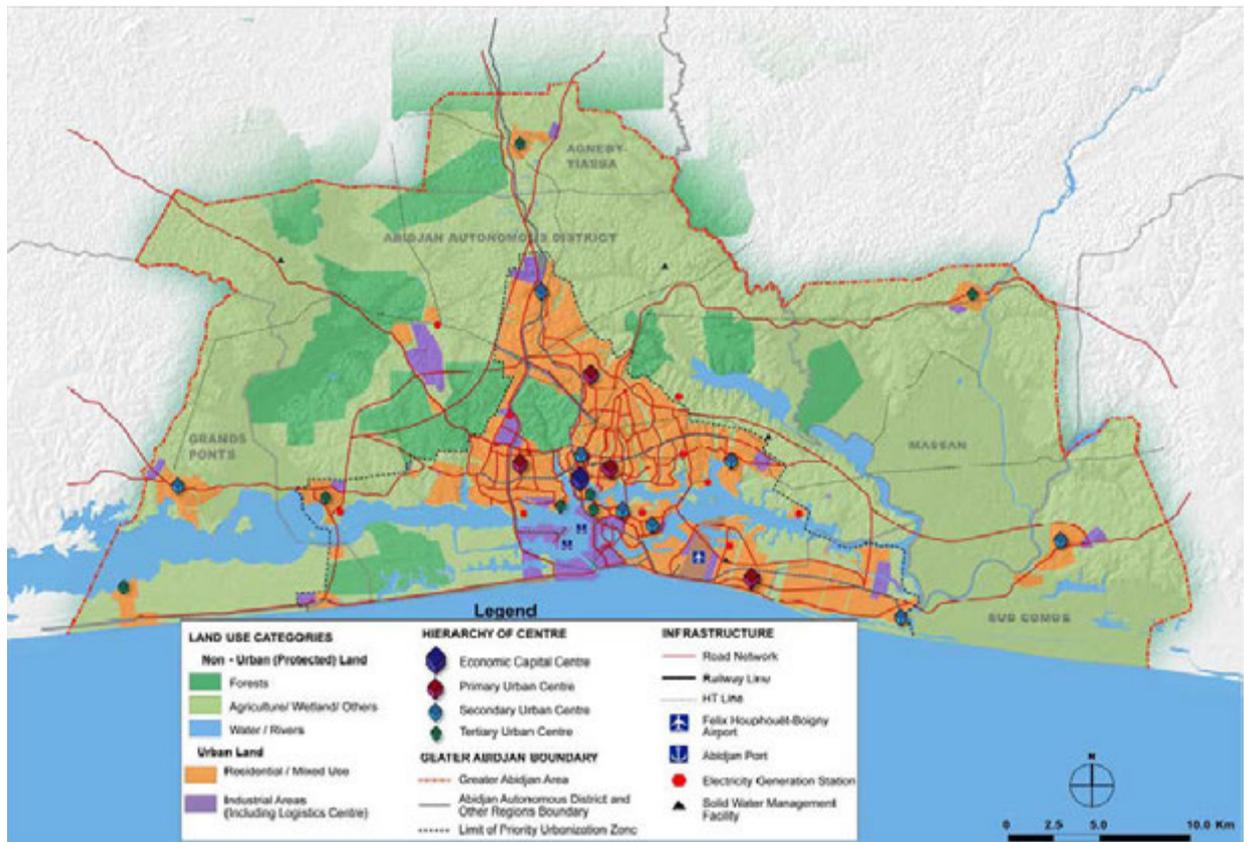
GAUDSS 2030 also provides a roadmap for future investment in the area helping guide Government stakeholders and service providers in carrying out their sectorial plans and programmes, and providing more consistency for developers and investors.

Two key recommendations to help implement the GAUDSS 2030 are:

- Implement and enforce the protection of the natural river valley (thalweg) drainage system that flows to the major rivers and Ebrie Lagoon, which will act as a green buffer / separator for open space and conserved landscapes between the urbanized areas of towns and settlements.
- Establish a 'SDUGA 2030 Implementation Coordinating Committee' with technical coordinators from key implementation stakeholders to direct and guide the plan to fruition.

Two plans illustrate the GAUDSS 2030. Figure 6.14 shows the overall Spatial Strategy 2030 and demarcates the entire extent of urban development by 2030, to accommodate future population growth with supporting employment and the equitable distribution of community facilities. Figure 6.16 shows the Implementation Strategy 2015-2030 by illustrating the new development areas and the major transportation infrastructure to be completed over the plan period, it is described under Section below. The GAUDSS 2030 has formulated in full coordination with the Urban Transportation Plan which is included in Volume III, Part 6 of this Report. The GAUDSS should also be read in conjunction with the

Land Use Framework Plan, see Section 6.4, Urban Unit Development, Section 6.5 and Chapter 7 Land Use Policies for Greater Abidjan.



Source: JICA Study Team

Figure 6.14 Greater Abidjan Urban Development Spatial Strategy 2030

6.3.2 Compact Urban Centres

In accordance with the strategic planning objectives, the existing and proposed development areas will be consolidated into a hierarchy of contiguous and clearly structured urban forms. This hierarchical structure promotes mixed uses, mixed density centres and enables more efficient and equitable use of the investments in transportation and utility infrastructure.

A hierarchy of mixed use centres through the redevelopment of existing town and settlement centres will optimize accessibility by promoting transit-oriented and mixed density development in locations that are currently served by a variety of public transport and utility networks. The hierarchy of centres was identified based on 7 key criteria:

1. Existing urban centres.
2. Level of population and employment density;
3. Level of Government / Municipality office and community facility provision;

4. Accessibility to strategic transportation network;
5. Proximity of committed employment projects or Government Developments,
6. Potential for regeneration and urban infill; and
7. Proximity of new development in terms of timing to the strategic road network proposed under the Master Plan 2000.

The key benefits of this mixed-use, mixed density approach are as follows:

- It promotes liveability, opportunity and choice;
- It helps foster urban renewal and value creation within existing built-up areas;
- It promotes more efficient use of transport and utility infrastructure;
- It reduces the need to create major new settlements outside existing urban centres; and
- It reduces the urban footprint and impact on the natural environment.

6.3.3 Urban and Rural Development

The total area included within the boundary of Greater Abidjan is 3,846 km². Of this almost 77% is rural in character, supporting agriculture and gazetted natural forest areas. This percentage also includes the inland waters and lagoons; the majority of which lie in rural areas and support local and commercial fishing. The spatial strategy is based upon consolidating population growth predominantly within existing urban communities, defined urban expansion areas, and existing or future employment clusters.

The majority of this future growth will be located within the urban conurbation of Abidjan. That includes the 10 heavily urbanized communes and parts of Anyama, Bingerville, Songon and Grand-Bassam. In general the extent of the conurbation extends between 20 and 35 kilometres from centre of Abidjan. These urban areas will be supported by a highly accessible network of secondary and tertiary urban centres and employment clusters (including traditional industries, advanced technology, education and mixed use projects).

Over the short term, growth outside the Abidjan conurbation will develop at a more modest level focused on the future satellite towns in rural areas. Over the medium to longer term land extensive development will be attracted to these rural settlements, as they are not constrained by the smaller plot sizes of potential development areas within the Abidjan conurbation. Expansion of settlements in the rural areas will initially be based on their traditional roles and local economic activities, which include farming and scattered industrial premises that are predominately agricultural based. The GAUDSS 2030 promotes tourist development in these areas to capitalize upon the natural landscape setting and provide the setting for small scale tourism-related activities.

These satellite urban centres will also provide an alternative choice of housing and life-style locations for people who do not wish to live in the larger urban centres. The protection of wetlands, agricultural land and the biodiversity of the natural water catchment system will contribute towards a high quality of environment to these satellite urban centres. It is important to ensure that the social and economic life of these satellite urban centres, and the needs of their residents, is supported by employment opportunities, community facilities and complementary services.

To help balance growth and development across the Greater Abidjan area and produce a more sustainable development pattern future industrial, commercial and residential development will be encouraged throughout the area. Supporting transport and utility infrastructure, and community facility provision must be programmed to enable a sustainable development pattern.

The strategy promotes high quality transport systems to serve Greater Abidjan; to reduce private car use by upgrading bus and rail public transit; and investing in an efficient freight rail network supplemented by 'edge city' road and rail logistics centres, and to reduce the amount of heavy goods vehicles (HGV) passing through urban areas. The GAUDSS 2030 supports and is formulated around the implementation of a second bridge crossing to the east of the city to bypass the Grand-Bassam urban area and link with the future Lagos to Abidjan Highway.

6.3.4 Managing Development

The GAUDSS 2030 forms the foundation for addressing the drivers of change in the area arising from the future strategic road network, Abidjan Port expansion, new industrial zones and the urban renewal of older commune centres. It also establishes the spatial framework to achieve the strategic planning objectives. The Spatial Strategy allocates all land into either Development Land or Protected Land.

- Developed Land includes land suitable for urban purposes, industrial land and port related works.
- Protected Land includes wetlands, agricultural areas, plantations, and protection and conservation zones.

These categories provide the strategic land use context for the GAUDSS 2030.

6.3.4.1 Developed Land Use Categories

Developed land use categories are land considered potentially suitable for urban development. This includes existing urban areas, rural settlements and sites that can accommodate a variety of urban uses such as housing, industry, business, community facilities, tourism activities, sport, recreation and open space.

Developed land categories include:

- Developed land: land that is currently being used for, or is potentially suitable for, urban purposes.
- Industrial land: land that is strategically important for economic stability and growth both at national and local level.
- Rural land: land where development supporting rural activities or low density uses, for example education and advanced technology campuses, is suitable.

6.3.4.2 Protected Land Use Categories

Protected land use categories are land considered not suitable for urban development in the GAUDSS 2030 period. Protected land use includes land that forms part of the natural storm water drainage system, rural production or other non-urban values and include agricultural areas, natural resources, flood water management, ecologically significant areas and inter-urban breaks.

Protected land use categories include:

- Protected Land: land that is outside existing urban areas and rural settlement centres or that is surplus to forecasted requirements of GAUDSS 2030, and includes low lying agricultural land i.e., wet land crops.
- Preserved Land: wetlands, designated flood water retention areas, designated protection (including coastal protection) and conservation zones.
- Land Under Investigation: land that is currently not considered necessary, but potentially may be suitable for development dependent on appropriate timing, the timely provision of infrastructure and the resolution of constraints such as environmental, ecological, cultural, etc. For example; plantations and land of a strategic national nature which will require SEA approval for development.

The GAUDSS 2030 restricts the following in protected land use categories:

- Further fragmentation or sub-division of land which may lead to developments exceeding six hundred square meters,
- Urban development, and
- Residential development associated with tourist accommodation.

The GAUDSS 2030 supports the economic diversification of communities by allowing a range of developments in protected land use categories including:

- Small scale tourist facilities
- Sports and recreation facilities, and
- Projects declared of national significance by the Minister of Construction, Housing, Sanitation and Urbanism.

6.3.5 Hierarchy of Urban Centres

The urban centre hierarchy adopted under the GAUDSS 2030 is formulated to capture and direct the opportunities from accelerated growth through:

- Concentrated Growth Areas; areas targeted for future large scale high (or medium) density development to promote economic growth at a sub-regional scale. They are the focus of urban renewal within the older urban areas of Abidjan city.
- Specific Development Clusters; land uses to be located in a designated area and thus benefit from the synergy of packaging together similar and complementary development i.e., port development, industry, tourism, Advanced Technology and IT.
- Service Centres; town centres that provide the basic civic administration, retail and social infrastructure for the surrounding residential population catchment.

6.3.5.1 Urban Centres Hierarchy

The urban centre hierarchy is set out in Table 6.7 and illustrated in Figure 6.14. The hierarchy takes account of:

- the current projected population of Greater Abidjan by 2030 of 8,413,871; and

- the spatial relationship of the existing major urban centres within Abidjan conurbation and its rural hinterland; and
- the planned strategic transport network in the Urban Transport Master Plan 2030.

Table 6.7, shows the categorization of urban centres by the JICA Study Team, derived from overseas best practice. The population catchment range of Levels I and II reflects the projected growth in population over the years from 2013 (base year) to 2030. The catchment reflects the importance of the centre in terms of Urban Unit, see section 4.5 below, rather than individual communes, due to the dense character of the urban conurbation and general ease of accessibility to commercial and civic centres. Individual commune centres, where they do not fall into Levels I and II are described in Level III. Below Level IV the urban hierarchy should include Neighbourhood Centres serving a local (quartier) population catchment of 30,000+ residents. It is proposed that this urban centre hierarchy be referenced in the updating of the community facilities planning provision and guidelines as recommended under Section 7.6 below.

Table 6.7 Urban Centres Hierarchy

Town	Population Catchment	Function
ECONOMIC CAPITAL URBAN CENTRE – LEVEL I		
Greater Abidjan Area	8,000,000	The international business and financial face of Cote d'Ivoire and predominantly located in the Plateau and Petit Bassam areas of Abidjan. To include new International Finance Centre, Government Ministries and Major Civic, Cultural, Hotel and MICE facilities main commercial and entertainment centres. In view of the extensive mixed use development in this urban centre it will also serve as the main centre for the communes of Adjame, Attecoube and Plateau, though each will have a tertiary urban centre.
PRIMARY URBAN CENTRE – LEVEL II (800,000 – 2,000,000)		
Abobo	2,000,000	These will be the premier centres with Abidjan, with high density populations. They will be subject to significant urban renewal or in the case of Port Bouet development of a new urban centre. Major commercial centres serving a wide urban area, generally two or more contiguous communes. Multi modal public transit centres, upper order public facilities, cultural and sports venues.
Cocody	800,000 – 1,000,000	
Port Bouet (New Centre)*	800,000 – 1,000,000	
Yopougon	2,000,000	
SECONDARY URBAN CENTRE – LEVEL III (300,000 – 700,000)		
Anyama	700,000	These are major urban centres with significant commercial development, associated with public transport nodes, and have a range of housing densities. They will provide higher order public facilities for residential catchment at a commune level.
Bingerville	300,000	
Bonoua	300,000	
Dabou	400,000	
Grand Bassam	300,000	
Koumassi	500,000	
Marcory	300,000	
TERTIARY URBAN CENTRE – LEVEL IV (50,000 – 200,000)		
Adjame	200,000+	Commune level mid-sized commercial centres including a public transit terminus. With a full range of higher order and mid-range public facilities for residential catchment of their communes and sub prefecture populations. In rural areas the higher order community facility provision will serve the populations in villages beyond the satellite town environs.
Attecoube	200,000+	
Plateau	50,000	
Alepe	200,000	
Azaguie	50,000	
Jacquerville	180,000	
Songon	180,000	
Treichville	150,000	

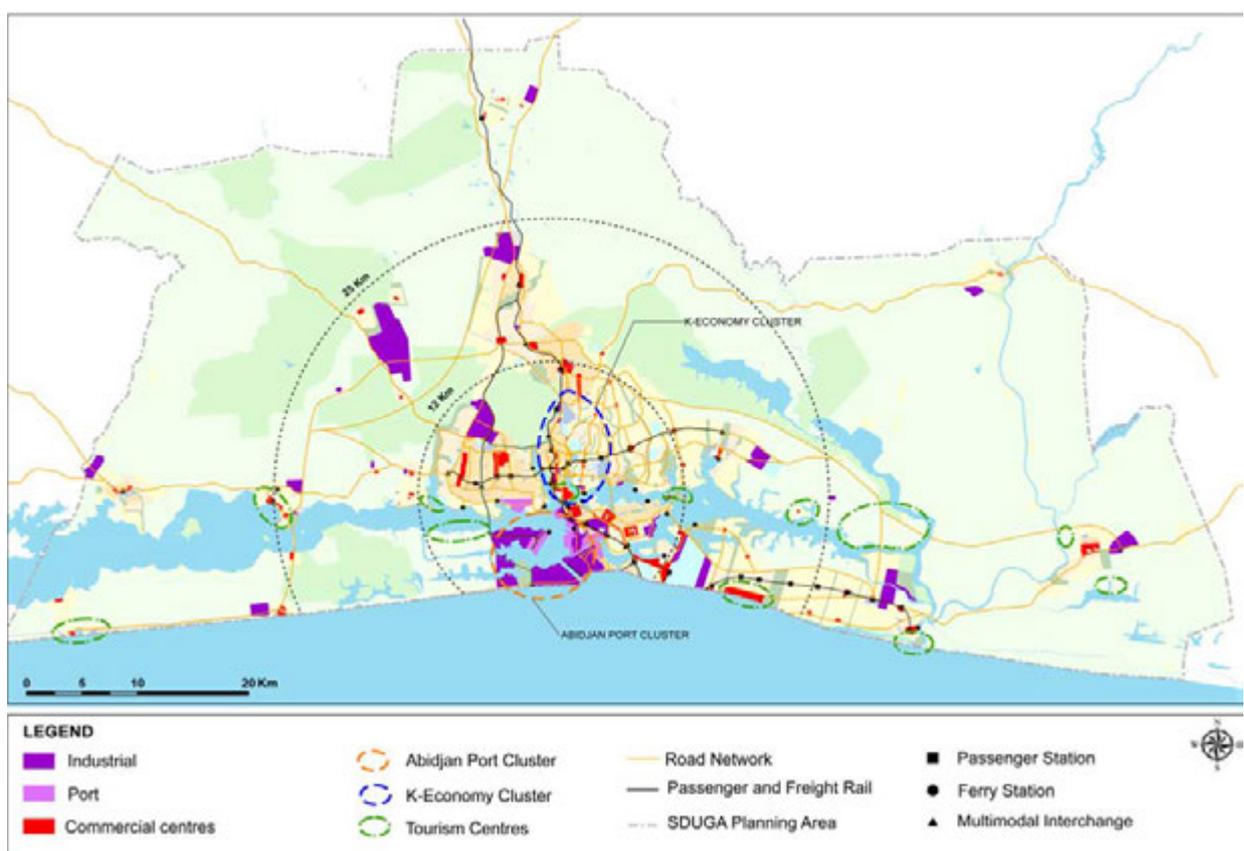
Source: JICA Study Team

6.3.6 Employment Clusters

In line with the compact development principles for sustainable growth new employment is focused into clusters that are located where possible in proximity to existing or future residential development. These take four forms; future green industry clusters complementing and upgrading existing industries and complexes, knowledge and health services clusters, tourist zones, and commercial / business mixed use

urban centre renewal. Figure 6.15 shows the main employment clusters within the three zones that take account of; the local resident population centres, links to strategic road, rail and public transit networks, existing or committed industries, and proposed urban renewal and TOD.

- The Inner City zone; extends to a distance of 12km from the city centre at Plateau, and includes the major existing employment clusters.
- The Outer City zone; extends some 25km from the city centre and includes new industrial logistics clusters that are located to take advantage of the Y4 ring road and other radial routes to the city.
- The Suburban zone; includes the employment clusters proposed for the satellite towns.



Source: JICA Study Team

Figure 6.15 Future Employment Clusters

Industrial Clusters; will be the primary manufacturing based target to capture the economic development potential that will arise with the completion of the strategic road and rail networks, port expansion and new industrial zones. Traditional industrial areas, zones and estates will be adequately serviced with infrastructure to enable growth. Land use zoning will enable the expansion of these areas including the opportunity to provide worker housing. Future industries to be located in these areas are to be 'green' non-polluting (including light industrial) and complement any existing industries, which themselves are to be upgraded to green status over the Strategy period.

Knowledge Economy Clusters (K Economy Clusters): are the employment focus for the Government's vision of an economy based on providing value added and advanced technologies and services such as:

- Petrochemicals
- Electronics
- Biotechnology
- Nanotechnology
- IT and Business Processing Outsourcing Sectors
- Business Parks
- Higher Education Campuses including Foreign Universities and International Schools
- Health Services by Private Sector

Urban Centre Mixed Development Clusters: hand-in-hand with urban renewal and TOD employment clusters will be provided in mixed use development for:

- Retail and commercial including; Big Box retail, shops in Town Centres
- Service industries
- Public offices and community facilities
- Logistics
- Regional Offices of Private Companies
- Hotels, Leisure and Entertainment

6.3.7 Tourism

In 2012 it was estimated that some 280,000 tourists visited Cote d'Ivoire²⁰ almost all arrived in the country at the Felix Houphouet – Boigny International Airport. Although tourism was seriously affected by the socio-military crisis, and thus tourist arrivals are currently lower than those of the late 1990's, in recent years the trend has been a continuous annual increase. This reflects the tourist industry's perception of the country's stability and its varied opportunities for international and domestic tourism. The launching of the Sofitel Abidjan Hôtel Ivoire in Cocody as the West African flagship for the International Sofitel brand is indicative of foreign investor confidence. Tourism will be major development driver over the forthcoming decades and by 2020 Government project tourist arrivals to reach 1.0 million²¹ a year; by 2030 to attain 5 million visitors a year and contribute 7% of GDP²².

The Greater Abidjan area includes a wide range of tourist facilities and attractions that include:

- the natural landscape; coast, lagoons, rivers and forests
- urban areas; hotels, restaurants, local markets, venues for entertainment, business, conventions, and large event arenas for regional and international sports and arts festivals

²⁰ Cadre D'Orientation Strategique du Tourisme Ivoirienne et Plan d'Actions 2014-2030, Rapport Provisoire, Mai 2013, BNETD.

²¹ Record of meeting with Tourism Ministry, 3rd May 2012.

²² Cadre D'Orientation Strategique du Tourisme Ivoirienne et Plan d'Actions 2014-2030, Rapport Provisoire, Mai 2013, BNETD.

- waterfront resorts; that offer beaches and water sports - Jacqueville, Bouley Island, Grand-Bassam
- internationally renowned religious sites; two cathedrals visited by Pope John Paul II, diverse architectural design of mosques, and the unique 'Liberian' churches at Brégo, Ogoouédouméé and Oglhwapo
- cultural heritage; archeological sites, sacred forest at Moossou, UNESCO World Heritage Site at Grand-Bassam, local festivals such as Abissa, and many examples of colonial plantation villages.

Almost all of the above require new investment to upgrade the existing facilities and attractions. In addition service standards, marketing and supporting tourism infrastructure has to catch up on the two decades of development in these areas across the globe. This will require training establishments for catering, service, safety, business development etc. New development will also be required, in the form of; hotels across all star ranges, theme and amusement parks, adventure and getaway destinations, and iconic architecture to announce the international image of a vibrant city.

Whilst international tourism will bring in foreign currency and investment the domestic tourist product is equally important. It will ensure that there are patrons in the overseas visitors off seasons. The proposed development of the Urban Rail, high speed lagoon ferries and other public transit initiatives, as well as the construction of a strategic road network will allow for greater accessibility across the city and to the rural and forests of Greater Abidjan. In the case of the latter areas, this would enable festivals related to the harvesting of agricultural produce, rural homestays and the natural trips to forest areas.

GAUDSS 2030 promotes the development of tourist facilities and attractions for domestic and international tourists, and highlights the main clusters of tourism development. In this respect the entire Greater Abidjan area is seen as a major resource upon and around which a new and significant international destination can be built. Chapter 7.12 of this report sets out the land use policies for tourism development in Greater Abidjan. Figure 6.17 below, shows the Tourist Zones for both domestic and international tourism, these will include;

- lagoon and the Atlantic Ocean waterfront areas
- and more active theme parks and water sports areas
- rural homestay, ecotourism and cultural sites
- the Grand- Bassam UNESCO World Heritage site and rehabilitated heritage areas
- inner city hotels, MICE and exhibition centres
- festival and cultural event venues – urban and rural

6.3.8 Recreation Open Space

The Study has not been able to define from information available the exact amount of public open space dedicated for recreational use by the residents of Greater Abidjan. From the land use survey, which took account of both private and public spaces greater than 2.0ha, some 81,304 ha were recorded. The majority were sports grounds and private facilities, such as the golf course in Cocody which are not readily available for public use. This did not include smaller local spaces, parks, playgrounds and general amenity areas. From observation the provision of open spaces for recreation use is limited and it is likely that some areas have been occupied by informal settlements and commercial uses. It does

appear that the current standard of provision of 5% of the total urban area²³ is not being met. Retrofitting existing developed areas with sufficient public open space faces many difficulties such as land ownership and relative economic values. A broad scale open space strategy is proposed for further detailed study that should define a clear hierarchy of open spaces that capitalizes on the development of waterfront and valleys as linear open spaces and links. This would enable the distribution and the types of recreation demanded by different age and activity groups to be provided for and included within updated current planning standards and guidelines. Land use policies for the future planning of open space, amenity areas and landscape are set out in Section 5.3, 5.8 and 5.9 of this report.

The spatial strategy for open space promotes the preparation of 'Green-Blue Plan'. The major components of which should be:

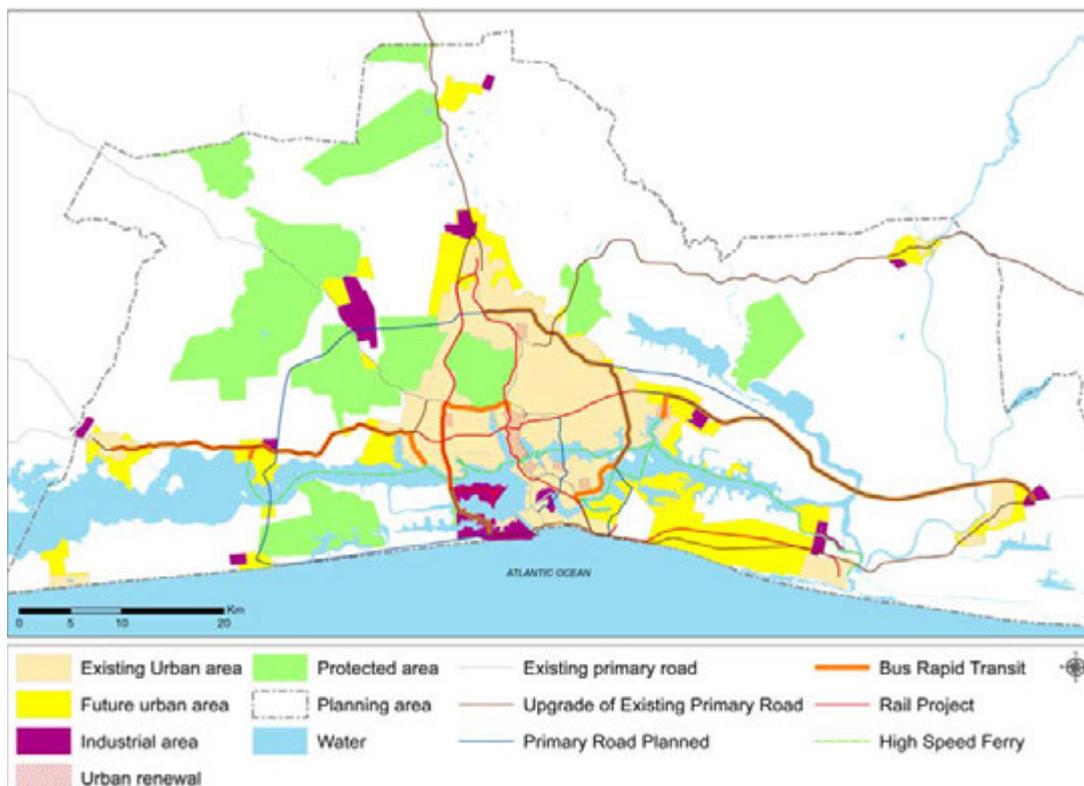
- Water areas – lagoons, ocean frontage, rivers and lakes; these are recreation zones for water sports activities. They also serve as amenity areas for passive recreation and the visual setting for the urban areas.
- Greenways – river valley (thalweg) parks, parkways alongside strategic roads and parkland between major residential neighbourhoods; will provide vehicle free pedestrian and bicycle routes that link residential areas, commercial centres and public transit nodes. In addition they will function as natural landscape separators between urban areas: to create a sense of identity and place for neighbourhood communities, promote flora and fauna biodiversity, protect sensitive terrain, and locate a range of recreational facilities in close proximity to residents.
- City Parks – the upgrading of existing city parks to meet modern day lifestyle recreation requirement for families, the disabled, aged and active recreation users. In addition urban renewal of existing city centres should provide new civic centre major parks as well as a range of local open spaces.
- Pedestrian routes – the major mode of movement throughout Greater Abidjan is walking²⁴. Safe and attractive pedestrian walkways should be provided within existing and future urban areas, both alongside roads and as purely pedestrian only ways. They should be well designed, shaded by trees, be adequately lit and provide direct links from residential areas to open spaces, commercial and employment centres, and public transit. The routes should be utilized as venues for the display of civic art and include flowering and fragrant plant species.
- Neighbourhood Parks - a full range of landscaped active and passive open spaces should be provided in new residential areas within both public housing and by the developers, at their own cost, of private sector housing.
- Forest Parks – existing gazetted forest areas and the Banco National Park should have dedicated areas for passive recreation, which depending on security and safety could be extended to include camping, hostel accommodation, outdoor BBQ, education centres, walking and cycling trails etc., to enjoy nature and provide a natural haven to escape from hectic city life.

²³ BNETD, November 1998

²⁴ JICA Study Team, Home Interview Survey.

6.3.9 Implementation Strategy

The proposed implementation strategy for the Greater Abidjan Urban Master Plan 2030 is discussed in detail in Chapter 8 below. This section illustrates the main future urban expansion areas and the major transport infrastructure projects to be implemented over the 2015 to 2030 plan period, see Figure 6.16.



Source: JICA Study Team

Figure 6.16 Greater Abidjan Urban Development Implementation Strategy 2030

The plan shows the existing urban area (built or land already provided with basic utility infrastructure), future expansion areas, existing and proposed industrial areas, urban renewal areas, protected land and future strategic road and public transport projects.

The Spatial Strategy has been formulated with the assumption that informal settlement areas will progressively be removed and redeveloped for formal land uses. This will be time consuming exercise; involving finding sites for relocation of the population, negotiation with possible land and property owners, construction of new housing for relocated residents, clearance of the sites and redevelopment. It is therefore, understood that these procedures may extend beyond the 2030 plan period. The implementation strategy assumes the following sequence, which is coordinated with future growth and infrastructure provision, for redevelopment of the informal settlement areas:

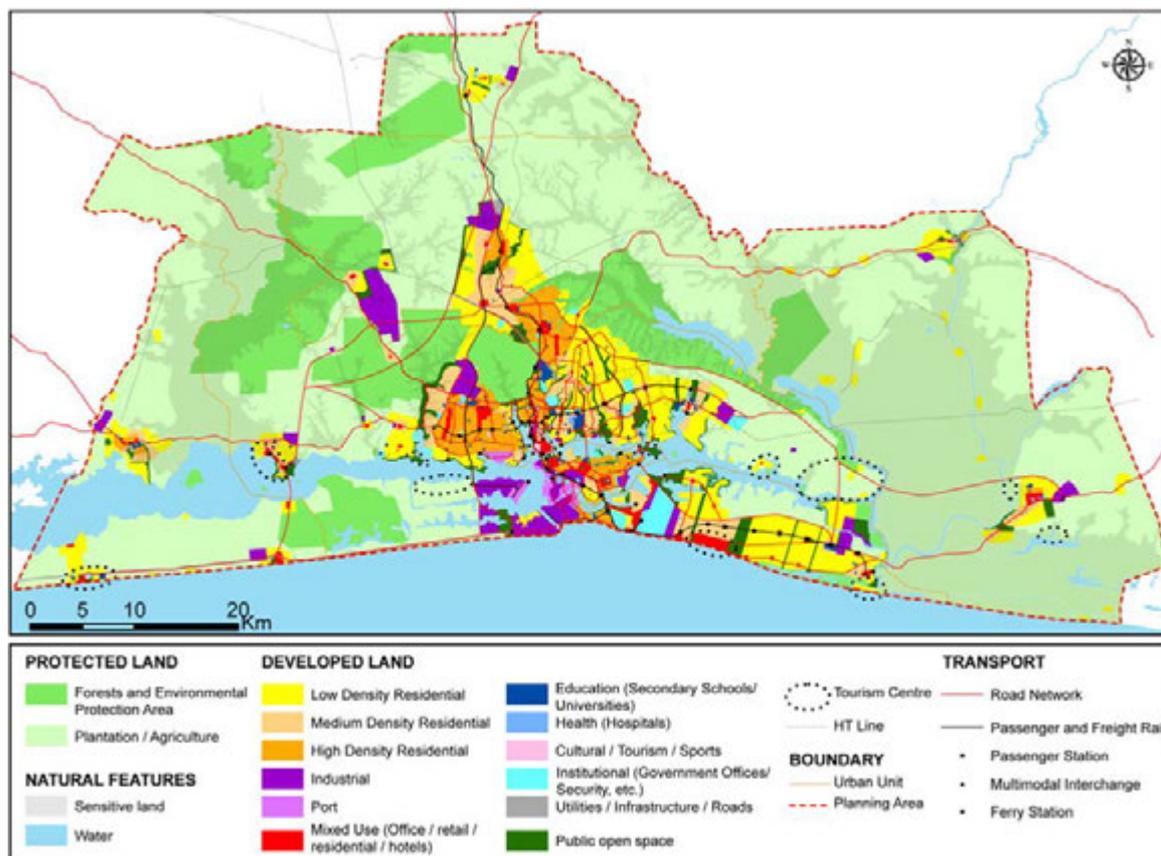
1. Priority Relocation: Strategic Roads i.e., Le Parkway and Y4. The strategy road and infrastructure network is a fundamental building block to stimulate economic growth.

2. Short to mid-term: Areas subject to landslip, flooding and pollution that constitute a health hazard to the citizens of Abidjan i.e., thalwegs. These should be rehabilitated as public open space for improving the living and environmental quality of Abidjan.
3. Long Term: Street frontage areas, local markets and those near employment centres, as these are the main income sources for informal settlement residents.

Urban expansion directed by compact city principles to meet the population growth is calculated to result in an increase of the existing urban, currently some 44,000ha by 29,420ha. The urban area will total some 73,420 ha approximately 21% of the entire Greater Abidjan area, an increase from the current 12.7%.

6.4 Land Use Framework Plan

The Greater Abidjan Land Use Framework Plan for 2030 is illustrated on the Figure 6.17.



Source: JICA Study Team

Figure 6.17 Greater Abidjan Urban Development Land Use Framework 2030

The plan shows the major land uses and densities of compact development that directs the Spatial Growth Strategy, to support population growth. The plan is not a detailed site by site of all the land uses within Greater Abidjan, as site selection of future land uses should be elaborated after approval of the SDUGA. Major and strategic existing and proposed land extensive uses are shown in the Land Use Framework for Urban Units. These include, amongst others, the existing major public secondary and tertiary education establishment, hospitals cultural and sports facilities, Government offices, security and public facilities. In addition major committed public facilities are included where details of the sites have been given to the JICA Study Team. The plan will act as a broad guide for the more detailed urban planning and development control documents (PUD's, public works budgets, zoning regulations etc.) to be completed by Government to fulfill statutory Master Plan requirements. Details of the Land Use Framework Plan are described on an Urban Unit basis in the following individual Urban Unit Development sections of this report.

Table 6.8 sets out the overall land use budget for 2030, with reference to Protected Land and Developed Land. The land use budget for developed land sets out totals for residential areas and activity areas (industry, port and mixed use development). The total for community facilities and infrastructure is a combination of large community sites, and utility sites as indicated on the plan, smaller current sites and all future sites. As such there will be double counting as these smaller current sites are included in the residential and mixed development areas budgets. Therefore an accurate overall total is not shown as the JICA Study Team was unable to acquire a comprehensive audit of all existing facilities.

Table 6.8 Broad Land Use Budget 2030

LAND USE	Ha
Forests and Environmental Protection Areas	56,832
Plantations / Agriculture	223,316
Habitats	
Residential – High Density (> 221 p/p/h)	8,433
Residential – Medium Density (> 71;< 220 p/p/h)	9,287
Residential – Low Density (< 70p/p/h)	27,181
Activities	
Industrial	7,830
Port	990
Mixed Use (Office, Retail, Residential, Hotels)	2,984
Equipments	
Community Facilities and Infrastructure	49,328*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats

6.5 Urban Unit Development

6.5.1 Planning Context

The Master Plan 2000 organized the spatial development within a series of Urban Units. The logic of this spatial grouping, which takes into account, historical urbanization, the interconnected provision of road, utility and social infrastructure, is adopted for the Greater Abidjan Urban Development Spatial Strategy 2030. The six original urban units are expanded and modified to the following ten units, Table 6.9. These include all of the communes of Abidjan Autonomous District, the five communes that now lie within the expanded Greater Abidjan area, and a Special Function Area that is the Port of Abidjan. The proposed development strategies and land use framework for each Urban Unit are described below.

Table 6.9 Urban Units

Urban Units Spatial Structure	
Abidjan Autonomous District	
Unit 1 - Central Urban Area	Attecoube, Adjame, Plateau
Unit 2 - South East Coast Urban Area	Port Bouet, Grand-Bassam
Unit 3 - Northern Urban Area	Abobo, Anyama
Unit 4 - Eastern Urban Area	Cocody, Bingerville
Unit 5 - Western Urban Area	Songon, Yopougon
Unit 6 - Petit Bassam Urban Area	Marcory, Koumassi, Treichville
Unit 7 - Special Function Area	Abidjan Port (part of Port Bouet, Treichville, Yopougon)
Satellite Cities	
Unit 8 - Northern Greater Abidjan	Azaguie
Unit 9 - Eastern Greater Abidjan	Alepe, Bonoua
Unit 10 - Western Greater Abidjan	Dabou, Jacquville

Source: JICA Study Team

Main planning themes described in the following sections are the physical and spatial development opportunities within a land use framework to realize the guiding principles and vision for sustainable growth and development across Greater Abidjan.

6.6 UNIT 1 - Central Urban Area (Adjame, Attecoube, Plateau)

6.6.1 Planning Context

The Central Urban Area of Abidjan includes the communes of Adjame, Attecoube, and Plateau; the original settlements of Abidjan. In total they have a land area of 5,928ha, of which 3,442ha is occupied by the protected Banco National Park. The total population of the Unit at 2014 is 641,377 residents, which is projected to be 698,606 by 2030 an additional population of 57,229 residents by 2030 an increase of 9%. This low population growth rate can be attributed to:

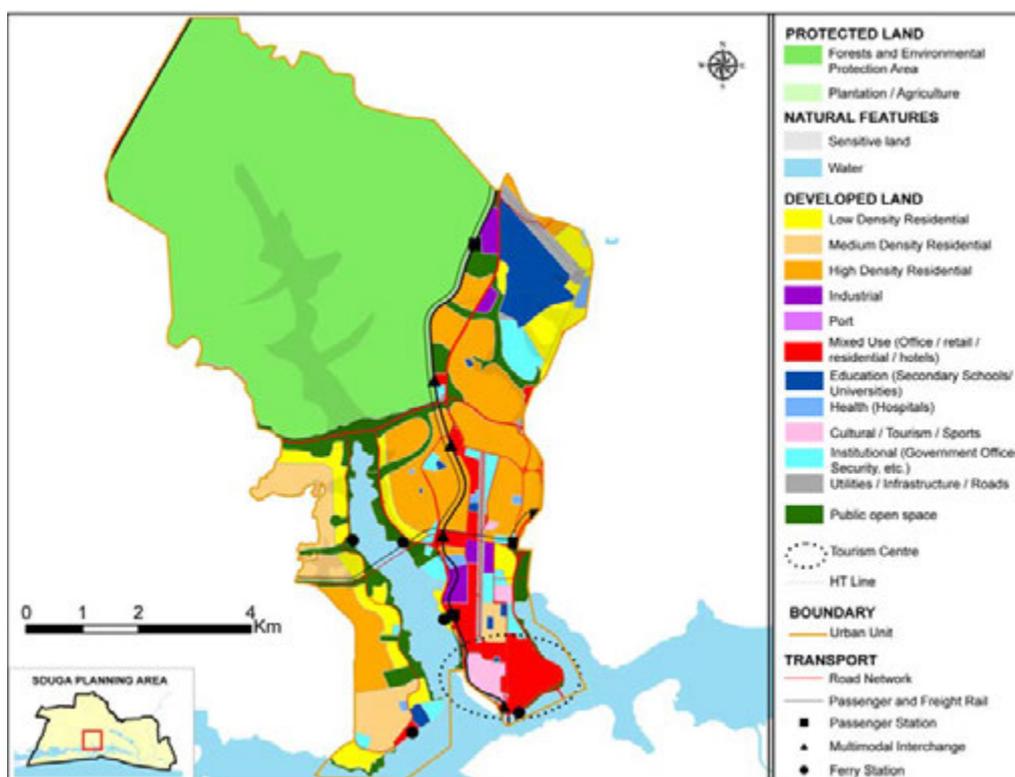
- The absence of undeveloped land.
- High densities in existing residential areas.
- The very large proportion of the population 72% (459,531²⁵ people) living in informal settlements, which may have to be resettled within the locality where they live and traditionally find employment.

The total number of households projected for the Urban Unit, taking an occupation rate of 4.0 persons per unit (p/p/u) for formal housing and an occupation rate of 6.0 p/p/u for the existing rehoused informal sector population, is 181,844.

Employment is forecast to grow from 386,901 to 618,418, an increase of 60%, with major growth in the tertiary sector.

6.6.2 Land Use Framework

The Land Use Framework for Urban Unit 1 is illustrated on Figure 6.18.



Source: JICA Study Team

Figure 6.18 Urban Unit 1: Land Use Framework 2030

²⁵ Diagnosis and improvement planning of informal settlement of 13 communes of Abidjan Autonomous District, UVICOCI of the Ministry of Interior and Security, October and November 2013

The proposed broad land use budget for the Central Urban Area Land Use Framework in 2030 is set out in Table 6.10, which indicates an urban utilization rate of around 45%. This budget includes only the major land uses to indicate the future Land Use Framework; as previously noted the total for Equipment includes double counted land requirement. Table 6.11 set out the detailed community facility and utility land requirement for the 2030 projected population. A complete list of the community facilities required for this Urban Unit, under the current Côte d'Ivoire planning standards, is set out in the Appendix F.

Table 6.10 Urban Unit 1 : Broad Land Use Budget 2030

LAND USE	Ha
Forests and Environmental Protection Areas	3,281
Plantations / Agriculture	0
Habitats	
Residential – High Density (> 220 p/p/h)	771
Residential – Medium Density (> 70;< 221 p/p/h)	251
Residential – Low Density (< 71p/p/h)	337
Activities	
Industrial	78
Mixed Use (Office, Retail, Residential, Hotels)	221
Equipments	
Community Facilities and Infrastructure	3,903*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats

Table 6.11 Urban Unit 1 : Community Facilities Land Requirement

FACILITIES	No	TYPE	Ha
Security (02)	52	Gendarmerie, Police station	74.43
Town Hall (02)	22	Mayor, technical Services	9.15
Public gardens and Green spaces	-	Relaxation and recreation spaces	5% de la superficie urbaine totale
Infrastructures (03)	1,652	Communication, Potable water, Electricity	1,885.76
Health (04)	152	CSU, FSU, CSUS, CSDR	451.37
Education (04)	1,314	Infant school, Primary, Secondary Canteen	1,098.89
Economic activities (02)	311	Market, Bus station,	101.53
Sociocultural (03)	517	Multipurpose Centre, Social centre, Training, Youth club and female centres	101.69
Sport (04)	219	Sport entertainment, Sport centre, Sport complex, Stadium	179.59
Total	-		3,902.45

Source: JICA Study Team

6.6.3 Main Planning Themes

1. *'A flagship international city image'*

With the return of major international agency offices and headquarters to Abidjan, as well as the growth of the port, it is essential that this Urban Unit displays a high quality urban environment. In essence an urban image that projects the nation's aspirations for its place in West Africa and internationally; a modern city skyline and waterfront with a vibrant downtown and Central Business District. This will require a significant urban renewal programme across the Unit, with increased densities and mid to high-rise buildings, as has been envisaged in earlier Abidjan Master Plans, but as yet not implemented.

2. *'Transport as the catalyst for urban renewal'*

The new and proposed public transit systems (rail, bus and ferry) and their terminals provide the opportunity for major PPP mixed use development centres. These can capture the increased footfall at stations and become the economic catalyst development for urban renewal. La voie Triomphale has been a major boulevard insertion to create a formal urban design link between Plateau and Adjame, for some 50 years. The design should be reviewed taking into account the current status and aspirations of the city as well as the potential to relocate the railway depot, and security encampments outside the city centre. Vehicle traffic restriction in the city centre, though the promotion of public transit, should be supported through the provision of multi-storey car parks and the removal of on-street parking.

3. *'A quality living, working and leisure environment'*

- New city and local parks, urban plazas, extensive street tree planting, urban centre traffic calming and pedestrianized areas. These not only encourage street frontage and water front commercial

activities – ‘al fresco’ restaurants, public art, cultural displays, formalized and safe street ‘day and night’ markets, music and dance performance – they also widen the range of international and domestic tourist venues, and encourage a healthier outdoor lifestyle.

- This will require the removal of illegal settlements, to new nearby locations that are focused on community support. This reclaimed public land should be seen as a public resource for the entire Abidjan population and not exploited for exclusionary private gain.
- Upgrading the social infrastructure to ensure that adequate community facilities are available to the residents. Catchment areas for schools should be within walking distance or serviced by public transit. TOD development, around bus rail and ferry stations, should include health centres, kindergartens, government offices etc., that can be accessed by public transit and with mixed uses include workplaces, shopping, entertainment and leisure facilities.
- Installation and upgrading of sewage, water and surface water drainage systems throughout the Unit to service the whole community. This environmental improvement must be complemented by efficient solid and hazardous waste collection and disposal.

4. ‘Protecting the natural and cultural heritage’

- Ebrie Lagoon, Banco Bay, the river valleys and Banco Park are the visual and aesthetic relief from the busy concrete urban areas. These natural assets define the character of central Abidjan and are being degraded. It is time to turn the city’s face towards them and value their contribution to city life and image. They must be assigned active functions as part of a natural open space “Green – Blue Framework” within the city, and enhanced as sustainable ecosystems and habitats.
- Within the older parts of the city there are many enclaves of colonial or early independence architecture. These are physical manifestations of the ‘memory’ of the nation. Unique buildings should be preserved and rehabilitated, and more effectively form heritage neighbourhood that offers both commercial and tourist economic value. In this respect the importance of religious facilities should also be taken into account as cultural landmarks. Proposals for urban renewal within Plateau and Adjame must recognise and give priority to the retention of cultural heritage with at least equal weight to unlocking new commercial and residential development opportunities.

5. ‘An efficient movement hub’

The historical organic growth of the city has resulted in all traffic (except ferries) from the mainland to Petit-Bassam and the coastal ‘cordon littoral’ having to feed through Plateau, Attencoube and Adjame. Of prime importance is to ensure the early implementation of rail based urban transit, provision of high quality and fast ferry service, new traffic management measures in combination with the new bridge crossings both into this Unit as well as other links across Ebrie Lagoon. The aim is to enable safe and efficient movement through the Unit as well in its links with other areas of immediate urban areas and beyond. Such transport solutions will need to be supported with the complementary provision of new employment and commercial centres in other Units, to reduce through traffic journeys.

6.7 UNIT 2 - South East Coast Urban Area (Port Bouet, Grand Bassam)

6.7.1 Planning Context

Unit 2 extends along the eastern 'cordon littoral' coast of Abidjan, between the Vridi Canal and the River Comoé. The communes of Port Bouet and Grand Bassam; in land area they total 17, 934ha.

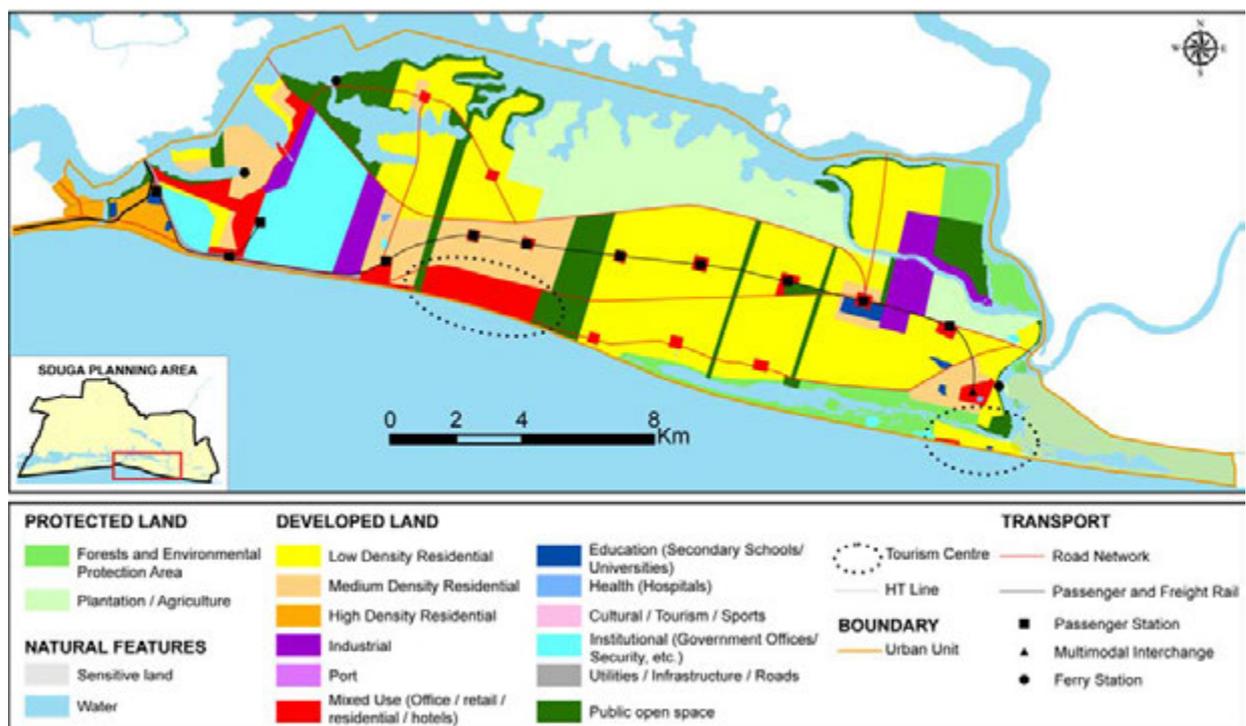
The estimated total population of the Unit at 2014 is 497,899 residents. The forecast population for 2030 is 1,354,395, an additional 856,496 residents, an increase of 172%. This population growth will fuel the development pressure already being experienced through the change from agricultural and plantation land to residential sites between the International Airport and Grand-Bassam. This population includes the rehousing of some 239,466 residents of informal settlements in Port Bouet.

The total number of households projected for the Urban Unit, taking an occupation rate of 4.0 persons per unit (p/p/u) for formal housing and an occupation rate of 6.0 p/p/u for the existing rehoused informal sector population, is 282,578.

Employment is forecast to grow from 105,520 to 236,464, an increase of 124%, with major growth in both the secondary and tertiary sectors.

6.7.2 Land Use Framework

The Land Use Framework for Urban Unit 1 is illustrated on Figure 6.19.



Source: JICA Study Team

Figure 6.19 Urban Unit 2: Land Use Framework 2030

The proposed broad land use budget for the South East Coast Urban Area Land Use Framework in 2030 is set out in Table 6.12, which indicates an urban utilization rate of around 76%. This budget includes only the major land uses to indicate the future Land Use Framework; as previously noted the total for Equipment includes double counted land requirement. Table 6.13 set out the detailed community facility and utility land requirement for the 2030 projected population. A complete list of the community facilities required for this Urban Unit, under the current Côte d'Ivoire planning standards, is set out in the Appendix F.

Table 6.12 Urban Unit 2 : Broad Land Use Budget 2030

LAND USE	Ha
Forests and Environmental Protection Areas	962
Plantations / Agriculture	3,387
Habitats	
Residential – High Density (> 220 p/p/h)	394
Residential – Medium Density (> 70;< 221 p/p/h)	1,680
Residential – Low Density (< 71p/p/h)	6,421
Activities	
Industrial	772
Mixed Use (Office, Retail, Residential, Hotels)	969
Equipments	
Community Facilities and Infrastructure	7,495*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats

Table 6.13 Urban Unit 2 : Community Facilities Land Requirement

FACILITIES	No	TYPE	Ha
Security (02)	79	Gendarmerie, Police station	112.39
Town Hall (02)	42	Mayor, technical Services	16.48
Public gardens and Green spaces	-	Relaxation and recreation spaces	<i>5% de la superficie urbaine totale</i>
Infrastructures (03)	2,496	Communication, Potable water, Electricity	2,847.26
Health (04)	415	CSU, FSU, CSUS, CSDR	681.52
Education (04)	1,559	Infant school, Primary, Secondary Canteen	3,371.83
Economic activities (02)	459	Market, Bus station,	153.31
Sociocultural (03)	139	Multipurpose Centre, Social centre, Training, Youth club and female centres	41.15
Sport (04)	328	Sport entertainment, Sport centre, Sport complex, Stadium	271.16
Total	-		7,495.13

Source: JICA Study Team

6.7.3 Main Planning Themes

1. International Gateway to Abidjan

Félix Houphouët-Boigny International Airport will require expansion and together with the ‘Aerocity’ development should project a high quality arrival and ‘bon voyage’ image for travellers. This quality ‘Akwaba’ image, a combination of – modern and efficient functioning transport, safety, ‘Ivorian cultural aesthetic – should be carried as a sequential experience along the main roads through high quality street landscaping and sculptural gateway elements. A similar design philosophy should be applied to the proposed urban train and its stations.

2. Abidjan’s playground

The beaches along this coast are a popular leisure and recreation destination for the city’s residents. The flat terrain makes this location ideal for both new residential and the creation significant sports and leisure venues; to which the new urban train line will provide direct mass public transport. Resort hotel development should be promoted through new land use zoning to broaden the international and domestic tourist product and complement historic Grand Bassam. The concept of a leisure, sports and entertainment hub would also add a premium to new residential development and encourage the redevelopment and upgrading of older areas. Sports centres, theme / water parks and other major attractions should also contribute to a clustering of associated facilities that makes the whole more financially viable than the individual parts.

3. Adding value to existing industries

VITIB Free Trade zone should be viewed as the catalyst for expansion of Abidjan's entrance into the wider IT industry. Not only increasing the Free Trade Zone but also providing complementary opportunities for establishing SME's, service support and Business Parks for local and international corporations. This would expand the area north of Grand Bassam into a significant IT cluster. The Master Plan 2000 has identified this area for setting up Craft industries. Small handcraft workshops and sales outlets are dotted along the main A1 road. This initiative should be encouraged to support the leisure industries – not only through tourist crafts but including the manufacture of hotel furniture, specialist plumbing and electrical equipment, laundry and other housekeeping services, conservation building specialist contractors, landscape nurseries etc. This Unit may also be the ideal place to locate tourist staff training facility financed and operated by the hotels and other tourism agencies.

4. Relocating informal settlements

The three previous planning themes direct new growth towards the establishment of this Unit as an important - C21st face of Abidjan. Hand in hand with this notion is providing a new beginning for those who occupy informal settlements along the coastal fringes of Port Bouet urban area and France Grand Bassam. Land must be made available for the development of low cost social housing communities. The location should enable efficient and low cost access to public transport, and be close to new employment centre in the Unit requiring unskilled and semiskilled employees.

5. Waterfront communities

Waterfront and water view properties command the highest price and resale value of residential development. This is the model that has enabled Dubai to become, over the space of a decade, one of the premier property investment and tourist venues in the world. The Port Bouet – Grand Bassam Unit has the unique benefit of both charming bays facing Ebrie Lagoon and the spectacular sea views clear to the horizon across the Gulf of Guinea. Low rise residential communities that have marinas, moorings and individual property access for private boats should be encouraged to Ebrie Lagoon. With medium and higher residential and hotel development set further back and along the ocean coast to maximize the views.

6. Traffic management to separate long distance goods vehicles from local traffic

With the current single bridge crossing at Grand Bassam the main traffic on the proposed Abidjan to Lagos International Highway will be funnelled through this Unit. To avoid conflicts between through traffic and local traffic the goods vehicles should be confined to the new highway under construction and other roads upgraded to serve local traffic. The broader development proposals for the Greater Abidjan area recommends a second bridge crossing to allow heavy goods vehicles to by-pass Bonoua and Grand Bassam, so as that will relieve the traffic within both towns and the existing bridge.

7. Establish a new major urban centre

The distance between the proposed Aerocity and the centre of Grand Bassam is over 20 kilometres. This area will be the focus of new development pressure in the immediate future. To direct growth away from suburban sprawl a new urban centre will be required to create a sense of place and identity for the future community. The new centre should adopted TOD high density mixed uses principles to provide a public transit node on the extension of the Urban Train. Such a new urban centre will enable a structured range of community facilities to serve a large proportion of the projected new 200,000 population projected for the Unit. It is important that there is a clear separation through the use of undeveloped land – agriculture,

open space etc., to define the extent of the community served by the new urban centre; thus avoiding urban sprawl and provide clear identity to this future township.

8. *Town centre densification*

The existing town centres of Port Bouet and Grand Bassam should be rejuvenated through up zoning of density with mixed use centres that will provide:

- a higher quality and people friendly urban environment;
- town park and urban plazas;
- efficient traffic management and off street parking;
- increase commercial and office space;
- high rise residential apartments;
- hotels and service apartments;
- multi modal public transit nodes; and
- community facilities

In the longer term, extension of the Urban Train to Grand Bassam should include a high density mixed use TOD at one of the stations within Grand Bassam. It should incorporate the facilities listed above.

6.8 UNIT 3 - Northern Urban Area (Abobo, Anyama)

6.8.1 Planning Context

Unit 3 includes the communes to the north of Abidjan, Abobo and Anyama; in land area they total 75,720ha.

The estimated total population of the Unit at 2014 is 1,195,462 residents. The projected total population for 2030 is 1,394,061, an additional 198,599 residents, an increase of 17%.

- The density of Abobo indicates the lower range of medium density, due to the low rise nature of housing and large areas of undeveloped land scheduled for urban expansion. The existing urban areas, which include subdivision of existing properties for rental and extensive informal housing areas, are likely to be at the higher range of medium density and in some places reaching high density levels.
- The population density of Anyama, although very low as it includes the rural sub prefecture of Brofodoume, indicates the same properties of urban settlement density as described above for Abobo. This growth is concentrated alongside the A1 road leading north from the city.
- The Urban Unit contains some 105,559 residents in informal settlements that will have to be considered for rehousing.

The total number of households projected for the Urban Unit, taking an occupation rate of 4.0 persons per unit (p/p/u) for formal housing and an occupation rate of 6.0 p/p/u for the existing rehoused informal sector population, is 441,602.

Table 6.14 Urban Unit 3 : Broad Land Use Budget 2030

LAND USE	Ha
Forests and Environmental Protection Areas	13,622
Plantations / Agriculture	48,930
Habitats	
Residential – High Density (> 220 p/p/h)	2,847
Residential – Medium Density (> 70;< 221 p/p/h)	2,253
Residential – Low Density (< 71p/p/h)	3,966
Activities	
Industrial	2,093
Mixed Use (Office, Retail, Residential, Hotels)	425
Equipments	
Community Facilities and Infrastructure	11,246*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats

Table 6.15 Urban Unit 3 : Community Facilities Land Requirement

FACILITIES	No	TYPE	Ha
Security (02)	133	Gendarmerie, Police station	190.65
Town Hall (02)	56	Mayor, technical Services	140.08
Public gardens and Green spaces	-	Relaxation and recreation spaces	<i>5% de la superficie urbaine totale</i>
Infrastructures (03)	4,317	Communication, Potable water, Electricity	5,021.17
Health (04)	722	CSU, FSU, CSUS, CSDR	1,171.69
Education (04)	3,377	Infant school, Primary, Secondary Canteen	3,911.54
Economic activities (02)	781	Market, Bus station,	260.57
Sociocultural (03)	302	Multipurpose Centre, Social centre, Training, Youth club and female centres	93.99
Sport (04)	563	Sport entertainment, Sport centre, Sport complex, Stadium	456.33
Total	-		11,246

Source: JICA Study Team

6.8.3 Development Themes

The attainment of balanced spatial and socio-economic growth in this Unit is of prime importance to the whole notion of sustainable development throughout Abidjan city. Uncontrolled development in this area threatens the quality of the city's drinking water. Adequate housing, social infrastructure and employment are essential to avoid further illegal settlement problems.

1. *Protect water catchment areas*

Implement planned sanitation and storm water drainage projects, and the removal of illegal settlements. Set up a mechanism for monitoring valleys and their slopes to ensure areas under pressure from environmental degradation are identified for new mitigation projects. This is to prevent slope erosion of valley sides and eliminate the health hazard from uncontrolled discharge of garbage and pollutants into the water courses. Industrial areas should not be located next to valleys to avoid spillage of hazardous material entering the natural water system. The integrity of slopes must be maintained by geotechnical protection measures and surface water drainage control to avoid landslips and reduce downstream sedimentation. Development of steep sloping land with a gradient steeper than 1 in 6 along valley sides, including the use of terracing to create platforms for building purposes, must be prohibited. Any development (buildings, roads, utilities etc.), within the Lagoon Adjin protection zone identified on the Schema Directeur d'Urbanisme du Grand Abidjan 2000 must be subject to EIA and Geotechnical Impact Assessment and approved mitigation measures.

2. *Implement strategic transport infrastructure*

In the short term time frame of the Master Plan 2030 the Road Y4, local road improvements, and the Urban Train must be implemented to kick start the urban rejuvenation of this Unit. The recently completed Inter City Bus Station in Avocatier Abobo, a commune driven initiative, should be seen as a focus for adjacent TOD development, linked with an Urban Rail station, as well as an important part of the local public transport network.

Land must be set aside and right of way reserved in this Unit for the medium term implementation of the proposed freight rail route to the next Abidjan Port on Boule Island.

3. *Northern logistics centre*

It is proposed to locate a major logistics centre within this Unit. This would capitalise upon the potential colocation opportunities arising from the proximity of:

- the Y4 junctions with the main northern radial routes to the city,
- the existing Abidjan- Ouagadougou-Kaya railway, and
- the future freight rail spur to the Abidjan Port expansion area.

The logistics centre would be focused on bulk breaking and distribution of goods for local Abidjan manufactures and markets. This development is seen as an important employment generator for low and semi-skilled works of which there are anticipated to be a high proportion in the Anyama informal settlement areas.

4. Implementation of major public projects within an Urban Centres hierarchy framework

A number of 'Main Medium Term Development Plans' were identified in the Schema Directeur d'Urbanisme du Grand Abidjan 2000; potable water and sanitation project, 5 public amenity projects, public housing initiative, and commercial development initiative. The rapid increase in population over the last 15 years will have outstripped the provision of adequate public facilities. To ensure an equitable distribution of community facilities urban civic centres must be established, and reinforced with opportunities for private sector up zoning in terms of commercial development and increased residential density. These centres must be serviced by public transit and should contain a range of community facilities that are not land or space extensive.

5. Housing

Ensuring adequate housing for the rapidly growing in population in this Unit, especially those in the informal sector should be a prime focus of Government over the immediate period of the 2030 Plan.

- Utility infrastructure must be in place for the areas already subdivided and identified for urban expansion under the Schema Directeur d'Urbanisme du Grand Abidjan 2000 to encourage rapid take up by the private sector. To aid this Government should set up an organization that will support and direct funding agencies to accelerate private house construction.
- Housing densities should be reviewed, and up zoning considered to encourage the development of medium rise apartments, and possibly high rise within walking distance of the future Urban Rail stations.
- Land must be made available for public low cost social housing at an affordable price, preferably near to main employment centres.
- Relocation of illegal settlements must be undertaken upon the basis of creating communities.

6. A major industrial cluster

A major industrial cluster, which can benefit from proximity of the logistics hub, the freight and passenger rail lines and Y4 ring road system, is proposed for this Unit. The existing residential sprawl across the Unit limits opportunities for establishing such as cluster within the immediate town environs of Abobo and Anyama due to high land cost, bad neighbour impact, and the complex river valley terrain. It is proposed to establish the industrial area, together with a supporting residential township that should include social housing, within an area described by the triangle of villages Ebimpé – Azaguié Blida – Brou Assé.

7. Town centre densification

The existing town centre at Abobo Centre should be rejuvenated through up zoning of density with mixed use centres that will provide:

- a higher quality and people friendly urban environment;
- town park and urban plazas;
- efficient traffic management and off street parking;
- increased space for commercial, entertainment and office use;
- high rise residential apartments;
- hotels and service apartments;

- multi modal public transit nodes; and
- community facilities

In the case of Anyama a new high density mixed use TOD urban centre should be provided at one of the new Urban Train stations. It should incorporate the facilities listed above.

6.9 UNIT 4 – Eastern Urban Area (Cocody, Bingerville)

6.9.1 Planning Context

Unit 4 includes the communes to the east of Abidjan, Cocody and Bingerville; in land area they total 28,264 ha.

The estimated total population of the Unit at 2014 is 538,374 residents. The projected total population for 2030 is 832,248, an additional 293,874 residents, an increase of 55%.

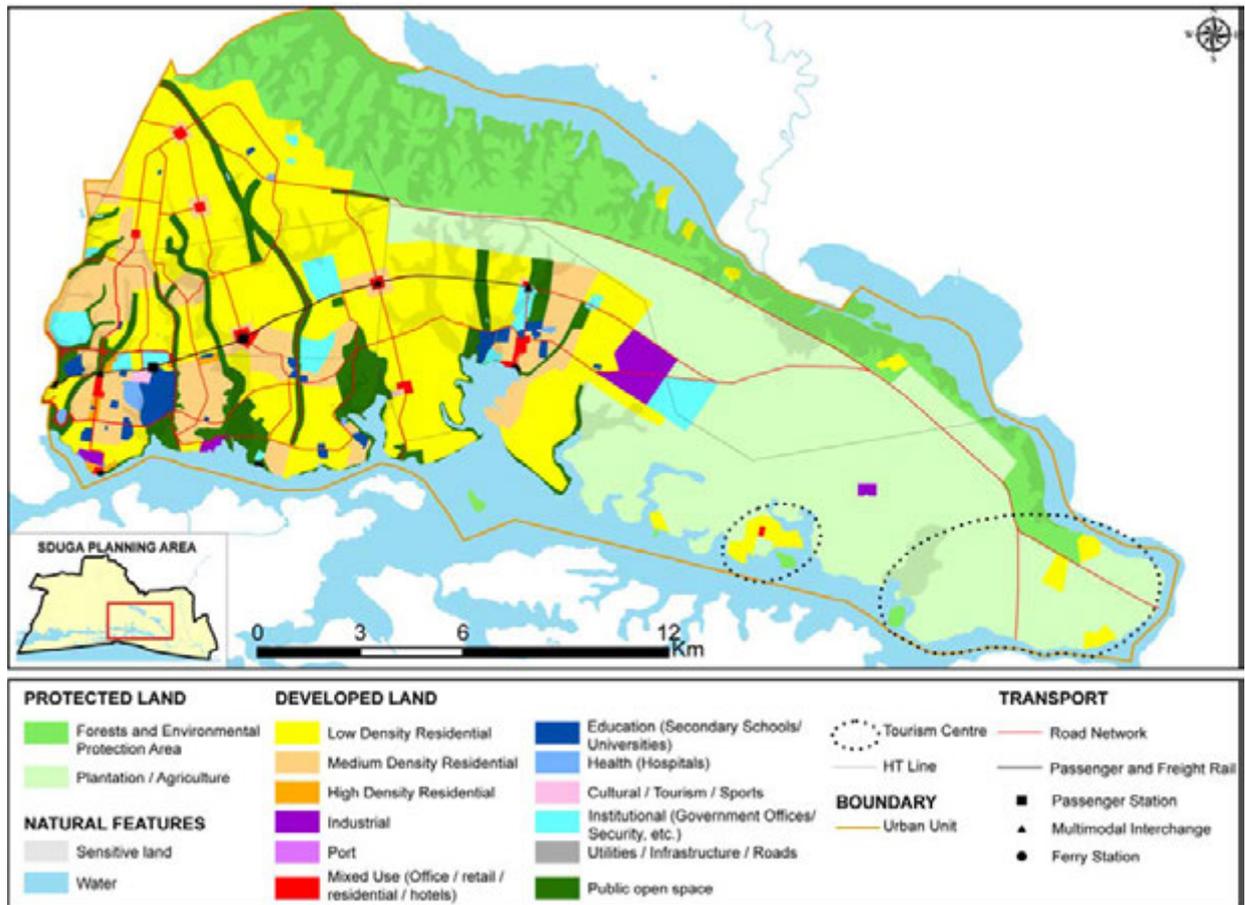
- The density of Cocody indicates the lower range of medium density, reflecting the nature of low rise and more expensive housing.
- The very low population density of Bingerville is a reflection of the mainly undeveloped nature of the commune.
- This Unit contains some 115,134 residents in informal settlements.

The total number of households projected for the Urban Unit, taking an occupation rate of 4.0 persons per unit (p/p/u) for formal housing and an occupation rate of 6.0 p/p/u for the existing rehoused informal sector population, is 252,961.

Employment is forecast to grow from 251,698 to 434,403, an increase of 73%, with significant growth in both the secondary and tertiary sectors.

6.9.2 Land Use Framework

The Land Use Framework for Urban Unit 4 is illustrated on Figure 6.21.



Source: JICA Study Team

Figure 6.21 Urban Unit 4: Land Use Framework 2030

The proposed broad land use budget for the Northern Urban Area Land Use Framework in 2030 is set out in Table 6.16, which indicates an urban utilization rate of around 48%. This budget includes only the major land uses to indicate the future Land Use Framework; as previously noted the total for Equipment includes double counted land requirement. Table 6.17 set out the detailed community facility and utility land requirement for the 2030 projected population. A complete list of the community facilities required for this Urban Unit, under the current Côte d'Ivoire planning standards, is set out in the Appendix F.

Table 6.16 Urban Unit 4 : Broad Land Use Budget 2030

LAND USE	Ha
Forests and Environmental Protection Areas	5,385
Plantations / Agriculture	9,310
Habitats	
Residential – High Density (> 220 p/p/h)	55
Residential – Medium Density (> 70;< 221 p/p/h)	2,265
Residential – Low Density (< 71p/p/h)	7,876
Activities	
Industrial	318
Mixed Use (Office, Retail, Residential, Hotels)	140
Equipments	
Community Facilities and Infrastructure	5,083*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats

Table 6.17 Urban Unit 4 : Community Facilities Land Requirement

FACILITIES	No	TYPE	Ha
Security (02)	70	Gendarmerie, Police station	98.79
Town Hall (02)	36	Mayor, technical Services	14.49
Public gardens and Green spaces	-	Relaxation and recreation spaces	<i>5% de la superficie urbaine totale</i>
Infrastructures (03)	2,193	Communication, Potable water, Electricity	2,502.82
Health (04)	197	CSU, FSU, CSUS, CSDR	599.07
Education (04)	1,746	Infant school, Primary, Secondary Canteen	1,458.47
Economic activities (02)	334	Market, Bus station,	134.76
Sociocultural (03)	122	Multipurpose Centre, Social centre, Training, Youth club and female centres	36.18
Sport (04)	291	Sport entertainment, Sport centre, Sport complex, Stadium	238.36
Total	-		5,082.97

Source: JICA Study Team

6.9.3 Development Theme

Of all the Units in Greater Abidjan this, more so than others, has seen the completion and current construction of significant public projects identified in the Master Plan 2000. Thus the direction of development over the last thirteen years has followed that Master Plan. With this taken into account there are four important factors that must be considered in planning the future development of the Unit, they are;

- the northern coast line is part of the surface water catchment for Adjin and Potou Lagoons that store water for the potable supply to Abidjan,
- Djorogobite Cocody contains a significant amount of unoccupied residential land,
- there is only a single bridge crossing for traffic travelling to the east of Abidjan at Grand Bassam,
- continued urban sprawl along the peninsula will place a significant economic burden on public finances to provide adequate and timely road, utility and social infrastructure.

1. Encourage the full occupation of subdivided lands in the short term

Extensive areas of unoccupied land or partially completed development lie within Djorogobite Cocody. The undeveloped areas should be reviewed to restructure the urban pattern in enable the creation of commercial centres, employment opportunities and unlock opportunities, including provision of adequate utility and social infrastructure for early completion of projects.

2. Implementation of planned strategic roads

Cocody is the major private vehicle generator for traffic journeys into the central core of Abidjan and Petit Bassam. The completion of the third bridge scheduled for late 2014 will redirect the traffic flows and at the same time increase the desirability for residence in this Unit. The remainder of the identified strategic road projects, where feasible must also be put in place to ensure efficient traffic management throughout the Unit.

It is proposed that in the longer term a new highway is constructed along the length of the peninsula to cross the waterway, at a bridge north of Elokate, and link with a bypass to Bonoua. This will relieve the traffic pressure on the bridge at Grand Bassam when the Abidjan to Lagos Highway becomes operational. The route should also be considered as the Heavy Goods Vehicle route to direct such traffic away from the urban centres at Bonoua, Grand Bassam. A new bridge link east of Bingerville town should direct traffic across the Ebrie Lagoon towards the old port area. The new highway would connect to Road Y4 to direct traffic around the north of Abidjan towards the new port area on Bouley Island. The other purpose of this road is to act as a protective barrier to development in the north coast water catchment valleys.

3. Ensure protection of water catchment, agricultural land and rural environments

Avoidance of pollution to the water catchment valleys requires restriction of development at the upland edges, banning of excavation and terracing along valley sides, implementation of an effective storm water drainage system, removal of illegal structures along valley floors, and no polluting related industries in the near vicinity.

The existing agricultural lands to the north and east of Bingerville should be retained with the aim of increasing their productivity, halting urban sprawl and providing a contained and efficiently functioning green edge to the urban area of Abidjan.

4. “Get Away” tourist destination

The native plant and wildlife species forested areas along the coast of Adjin and Potou Lagoons are ideal places for low impact forest and water recreation centres to serve as open space and countryside leisure destinations for city dwellers. Where such areas are not within the remit of the OIPR they must be purchased for public purpose, forest management and both passive and active recreation development. This is to ensure protection and enhancement of this critical biodiversity, water security and recreational resource.

The tip of the peninsula provides the ‘hidden gem’ of Abidjan, a delicate and peaceful rural waterfront retreat close to the city, which also contains modest pre-independence heritage architecture within the setting of expansive areas of unspoilt natural landscape scenery. Currently the area is only accessed by a single dirt road through plantations or an infrequent six vehicle ferry service to Vitre across the Ebrie Lagoon. It is proposed that this low key rural character is protected and upgraded access is similarly sensitive to maintain the prevailing rural character. Low impact tourism should be promoted in this area. Such attractions and facilities could include; homestay accommodation, health and wellness spa’s that promote traditional African remedies, lagoon frontage boutique hotels, water based leisure activities, and the development of a cultural-historic themed attraction.

This area is seen as the converse ‘peaceful’ tourist attraction to that of the active “Abidjan Playground” development theme proposed for Unit 2. An important consideration in attracting international tourists is the packaging of a variety of attractions to encourage ‘stay-an-extra day’. The proposed attractions at the tip of the mainland peninsula are only a lagoon boat ride away from the future planned resort hotels and Historic French Quartier in and near Grand Bassam. Supporting evidence for promoting tourist development in this rural location is that the idiosyncratic Church and religious shrine in Bregbo, 5 km to the west, already attracts visitors from within the country and overseas. The Government is currently exploring the opportunities arising from the promotion of religious tourism within Cote d’Ivoire; this initiative should also be considered as an important feature of whole tourist experience for Greater Abidjan.

5. Develop civic/commercial and TOD urban centres

Cocody is under pressure from residential owners along the main roads, such as Boulevard Latrille, to change the zoning of their property to include increase building height and commercial use. Such action will inevitably lead to uncontrollable strip development, traffic congestion, unsafe pedestrian environment and a despoiled urban and architectural streetscape aesthetic. The expansive suburban sprawl of Cocody already suffers from a limited urban design expression of ‘sense of place’ for local communities, a limitation reinforced by high walled enclosed residential compounds. This is the urban rhetoric of exclusion.

To meet the demand for commercial space and provide ‘civic’ community centres the following are proposed:

- Through the mechanisms of up-zoning and private sector property consolidation urban rejuvenation of existing local centres is to be encouraged and include public transit multi modal provision.
- Stations along the proposed ‘Urban Train’ Boulevard Mitterrand route are to be focus of mixed use and high density TOD and include facilities for multi modal public transit. This would include a proposed north – south BRT route linking the southern areas of Cocody with the centre of Abobo.

- Ferry stations should be allowed to incorporate commercial development, and in locations where sufficient land is available encouraged to provide comprehensive mixed use commercial, residential and hotel development at the waterfront.

6. *Open Space Corridors*

Parks, amenity open spaces and public sports grounds are lacking at quartier, community and neighbourhood levels throughout Cocody and Bingerville urban areas. Retrofitting urban areas for recreational open space may require resumption of private land for public purpose. Although this should not be discounted in especially deficient open space residential areas, this is a time consuming and expensive solution. It is proposed that valley floor provide the major open space network throughout the Unit, upon removal of illegal housing and ad hoc opportunistic agriculture. This solution also ensures that the main storm water outfalls can be easily accessed for maintenance and emergency operations; and in addition provides the creation of storm water retention ponds to mitigate any possibility of downstream flooding. The open space should be provided with a range of passive and active recreation facilities serving all age groups and the disabled.

7. *Town centre densification*

The existing town centre at Bingerville should be rejuvenated through up zoning of density with mixed use centres that will provide:

- a higher quality and people friendly urban environment;
- town park and urban plazas;
- efficient traffic management and off street parking;
- increased space for commercial, entertainment and office use;
- high rise residential apartments;
- hotels and service apartments;
- multi modal public transit nodes; and
- community facilities

8. *Unlock the value of the Ebrie Lagoon urban waterfront*

This coastline includes secluded and large bays it should be developed with the objectives of enabling high quality property development and public open space access. A continuous public open space promenade should stretch along the waterfront linking Plateau with Bingerville and link with the proposed Botanic Gardens. Commercial development would be encouraged along the promenade. Building heights should step back fronting the water from two stories to mid-rise buildings farther away to maximize views from properties. It is considered that this waterfront may be more suitable for some marina development rather than individual property direct boat access (proposed for Unit 2), which will disrupt the public promenade.

9. *New employment zones*

In addition to the opportunities for employment provided by the new commercial and community facilities centres, two strategic employment zones are proposed for this Urban Unit to support the economic growth of Cote d'Ivoire:

- One is the moving of the nation's exports up the value chain. It is proposed that new industrial zone be located at Bingerville town for food processing and Organic Textile production.
- The second is, through the zoning, tax benefits and other land development mechanisms, to encourage the development of a clean industry 'K -Economy' theme throughout this Urban Unit. This will include the promotion of a higher education 'knowledge cluster' focused on the universities in Cocody, Adjame, and the urban renewal of Plateau, as well as the encouragement of other and complementary knowledge based institutions to locate into this Urban Unit.

6.10 UNIT 5 – Western Urban Area (Songon, Yopougon)

6.10.1 Planning Context

Unit 5 includes the communes to the west of Abidjan, Songon and Yopougon. The commune of Yopougon area also includes the committed and proposed extension to Abidjan Port, which are described further in Urban Unit 7 below. Land area totals 65,972ha.

The estimated total population of the Unit at 2014 is 1,127,581 residents. The projected total population for 2030 is 2,300,777, an additional 1,173,196 residents, an increase of 104%.

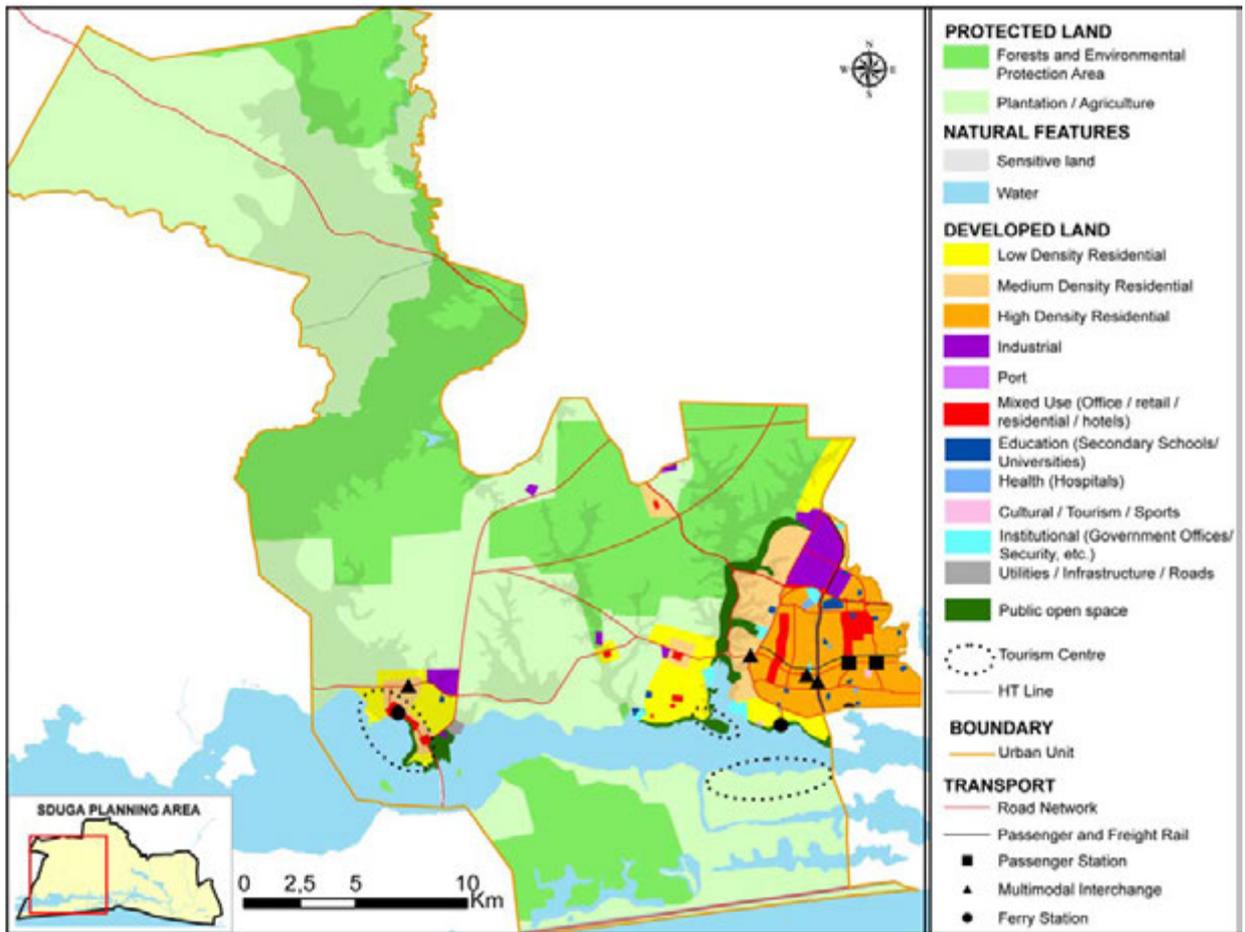
- Yopougon is indicated as medium density. However, the older parts developed areas of this commune record high density levels due to subdivision of properties and extensive informal settlements.
- The very low population density of Songon is a reflection of the extensive rural nature of the commune and the concentration of urban development in the south along the Dabou Road.
- This Unit contains some 247,540 residents in informal settlements.

The total number of households projected for the Urban Unit, taking an occupation rate of 4.0 persons per unit (p/p/u) for formal housing and an occupation rate of 6.0 p/p/u for the existing rehoused informal sector population, is 527,379.

Employment is forecast to grow from 329,420 to 475,419, an increase of 44%, with significant growth in both the secondary and tertiary sectors.

6.10.2 Land Use Framework

The Land Use Framework for Urban Unit 5 is illustrated on Figure 6.22.



Source: JICA Study Team

Figure 6.22 Urban Unit 5: Land Use Framework 2030

The proposed broad land use budget for the Western Urban Area Land Use Framework in 2030 is set out in Table 6.18, which indicates an urban utilization rate of around 15%. This budget includes only the major land uses to indicate the future Land Use Framework; as previously noted the total for Equipment includes double counted land requirement. Table 6.19 set out the detailed community facility and utility land requirement for the 2030 projected population. A complete list of the community facilities required for this Urban Unit, under the current Côte d'Ivoire planning standards, is set out in the Appendix F.

Table 6.18 Urban Unit 5 : Broad Land Use Budget 2030

LAND USE	Ha
Forests and Environmental Protection Areas	23,989
Plantations / Agriculture	32,134
Habitats	
Residential – High Density (> 220 p/p/h)	2,965
Residential – Medium Density (> 70;< 221 p/p/h)	1,674
Residential – Low Density (< 71p/p/h)	2,214
Activities	
Industrial	891
Mixed Use (Office, Retail, Residential, Hotels)	475
Equipments	
Community Facilities and Infrastructure	10,875*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats

Table 6.19 Urban Unit 5 : Community Facilities Land Requirement

FACILITIES	No	TYPE	Ha
Security (02)	146	Gendarmerie, Police station	207.53
Town Hall (02)	58	Mayor, technical Services	24.95
Public gardens and Green spaces	-	Relaxation and recreation spaces	<i>5% de la superficie urbaine totale</i>
Infrastructures (03)	4,699	Communication, Potable water, Electricity	5,465.72
Health (04)	398	CSU, FSU, CSUS, CSDR	1,230.22
Education (04)	3,662	Infant school, Primary, Secondary Canteen	3,058.65
Economic activities (02)	844	Market, Bus station,	283.64
Sociocultural (03)	329	Multipurpose Centre, Social centre, Training, Youth club and female centres	102.31
Sport (04)	616	Sport entertainment, Sport centre, Sport complex, Stadium	501.68
Total	-		10,874.73

Source: JICA Study Team

6.10.3 Development Themes

1. *Town centre densification*

The existing town centre at Yopougon should be rejuvenated through up zoning of density with mixed use centres that will provide:

- a higher quality and people friendly urban environment;
- town park and urban plazas;
- efficient traffic management and off street parking;
- increased space for commercial, entertainment and office use;
- high rise residential apartments;
- hotels and service apartments;
- multi modal public transit nodes; and
- community facilities

2. *Develop civic/commercial and TOD urban centres*

To meet the demand for commercial space and provide local ‘civic’ community centres the following are proposed:

- Through the mechanisms of up-zoning and private sector property consolidation urban rejuvenation of existing local centres is to be encouraged and include public transit multi modal provision.
- Stations along the proposed ‘Urban Train’ route are to be focus of mixed use and high density TOD and include facilities for multi modal public transit.
- Ferry stations should be allowed to incorporate commercial development, and in locations where sufficient land is available encouraged to provide comprehensive mixed use commercial, residential and hotel development at the waterfront.

3. *Implementation of planned strategic roads*

The planned strategic roads highlighted in 7.2 above should be implemented as a matter of priority. The completion of the Azito Bridge (fourth bridge) link to Abidjan port extension; and the fifth bridge link to Plateau will be implemented in the Short Term of the 2030 Plan.

It is proposed that in the longer term the Y4 highway section linking Abobo with the Songon/Jacqueville bridge be implemented to complete the ring road to Abidjan.

4. *Expand the range of industrial centres to the west of Abidjan*

Within this Unit there is the existing Industrial zone in Yopougon and a new one under construction at Attinguie. The latter will also include a substantial residential component. Land has also been reserved for Abidjan Port extension uses along the foreshore of Yopougon Beago and Yopougon Camp Militaire quartiers.

An important component of ‘Smart City’ land use is to provide employment near to residential areas. This Urban Unit has experienced a large increase in population over the last decade in combination with

a general rise in income levels. In addition there are extensive informal settlements. New employment demand from unskilled through to management level are likely to mainly met by the existing and proposed industrial developments highlighted above. In addition it is important to widen the range of employment opportunities and move employment further up the value chain. It is therefore proposed to develop a clean 'Green' employment zone for Business Park, SME's, Technology and Craft based industries at Songon. This will benefit from the proximity of the future Y4 – Dabou Road interchange and the higher income residential areas along the Ebrie lagoon foreshore.

5. Logistics centres

The JICA Study Team traffic survey data indicates that a significant proportion of heavy goods vehicle traffic entering Abidjan, travel along the Dabou Road and the highway to Yamoussoukro. To complement the new industrial centre at Attinguié and capitalize upon the future Y4 ring road a logistics centre, for warehousing and bulk breakdown should be provided in this area. The OIC (Office Ivoirienne des Chargeurs /Ivorian shippers Office) have proposals for a new logistics centre in this area. The logistics centre should also incorporate facilities for lorry parking and further detailed study should be undertaken to ensure complimentary with the OIC facility.

6. Ensure protection of water catchment, agricultural land and rural environments

Avoidance of pollution to the water catchment valleys requires restriction of development at the upland edges, banning of excavation and terracing along valley sides, implementation of an effective storm water drainage system, removal of illegal structures along valley floors, and no polluting related industries in the near vicinity.

The existing agricultural lands in the west of this Urban Unit are to be retained with the aim of increasing their productivity, halting urban sprawl and providing a contained and efficiently functioning green edge to the urban area of Abidjan.

6.11 UNIT 6 – Petit-Bassam Urban Area (Marcory, Koumassi, Treichville)

6.11.1 Planning Context

Unit 6 covers the island that forms part of the urban core of Abidjan, commonly referred to as Petit-Bassam, includes Marcory, Koumassi, and Treichville; in land area they total 2,990 ha. This total area also includes Abidjan Port, which is described further in Unit 7 below. Il Desirée also lies within this Urban Unit.

The estimated total population of the Unit at 2014 is 785,577 residents. The projected total population for 2030 is 807,048, an additional 21,471 residents, an increase of 3%.

- The density of Koumassi is very high, which not only indicates the intensity of development but also includes for a substantial informal sector population.
- Marcory is indicated as medium density.

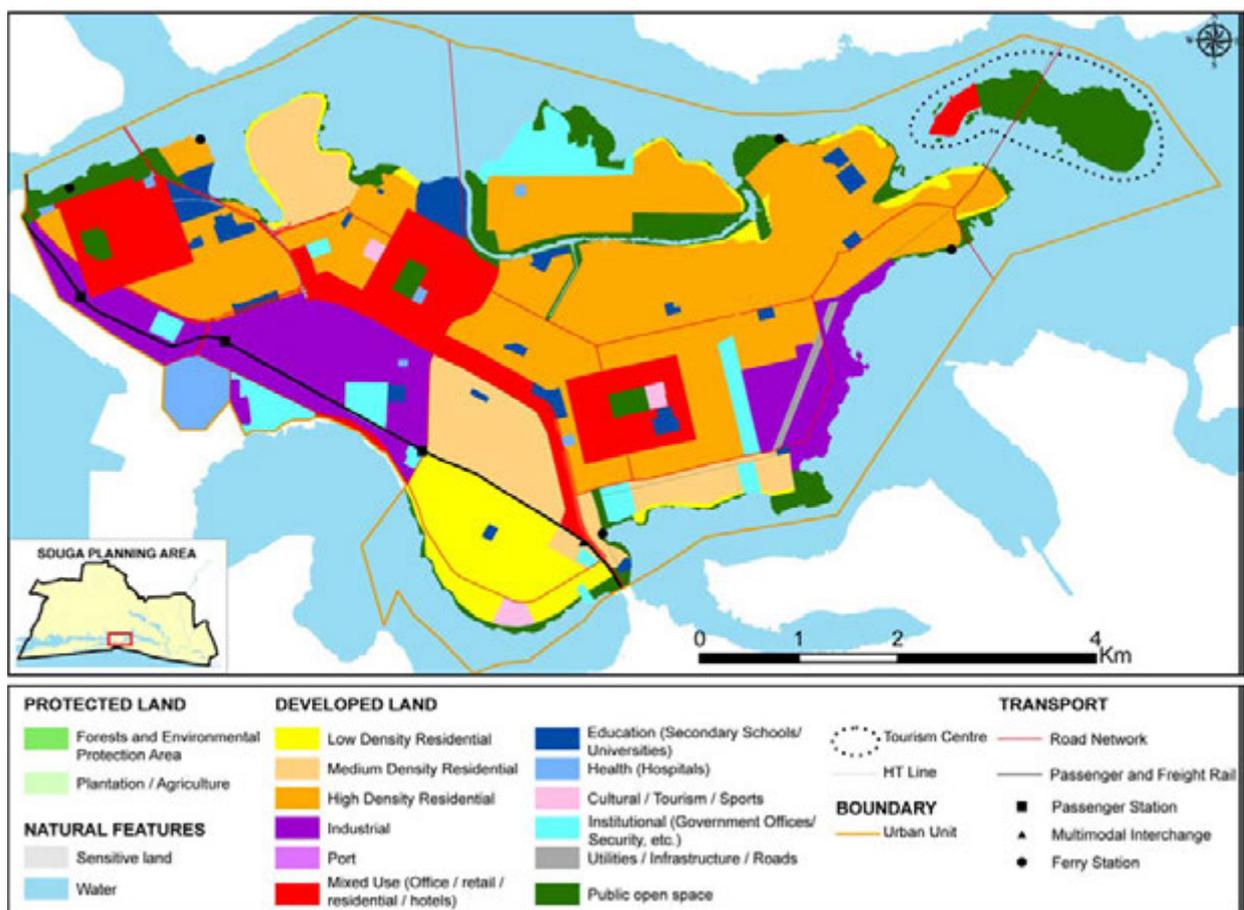
- In comparison the density for Treichville shows a constant medium density range. In fact the densities of residential areas in Treichville are likely to be in the high density range. This is because large areas of the commune are occupied by Port and Industrial zones.
- This Unit contains some 198,953 residents in informal settlements.

The total number of households projected for the Urban Unit, taking an occupation rate of 4.0 persons per unit (p/p/u) for formal housing and an occupation rate of 6.0 p/p/u for the existing rehoused informal sector population, is 247,168.

Employment is forecast to grow from 371,200 to 480,763, an increase of 30%, with significant growth in the secondary sector.

6.11.2 Land Use Framework

The Land Use Framework for Urban Unit 6 is illustrated on Figure 6.23.



Source: JICA Study Team

Figure 6.23 Urban Unit 6: Land Use Framework 2030

The proposed broad land use budget for the Petit- Bassam Urban Area Land Use Framework in 2030 is set out in Table 6.20, an urban utilization rate of 100%. This budget includes only the major land uses to

indicate the future Land Use Framework; as previously noted the total for Equipment includes double counted land requirement. Table 6.21 set out the detailed community facility and utility land requirement for the 2030 projected population. A complete list of the community facilities required for this Urban Unit, under the current Côte d'Ivoire planning standards, is set out in the Appendix F.

Table 6.20 Urban Unit 6 : Broad Land Use Budget 2030

LAND USE	Ha
Forests and Environmental Protection Areas	0
Plantations / Agriculture	0
Habitats	
Residential – High Density (> 220 p/p/h)	1,044
Residential – Medium Density (> 70;< 221 p/p/h)	291
Residential – Low Density (< 71p/p/h)	229
Activities	
Industrial	391
Mixed Use (Office, Retail, Residential, Hotels)	378
Equipments	
Community Facilities and Infrastructure	4677*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats

Table 6.21 Urban Unit 6 : Community Facilities Land Requirement

FACILITIES	No	TYPE	Ha
Security (02)	64	Gendarmerie, Police station	90.98
Town Hall (02)	26	Mayor, technical Services	9.34
Public gardens and Green spaces	-	Relaxation and recreation spaces	<i>5% de la superficie urbaine totale</i>
Infrastructures (03)	2,020	Communication, Potable water, Electricity	2,304.84
Health (04)	181	CSU, FSU, CSUS, CSDR	551.68
Education (04)	1,607	Infant school, Primary, Secondary Canteen	1,343.10
Economic activities (02)	371	Market, Bus station,	124.10
Sociocultural (03)	112	Multipurpose Centre, Social centre, Training, Youth club and female centres	33.31
Sport (04)	268	Sport entertainment, Sport centre, Sport complex, Stadium	219.50
Total	-		4,676.90

Source: JICA Study Team

6.11.3 Development Themes

Petit Bassam is the other urban centre of Abidjan. In contrast to the government / office centre of Plateau, it is the industrial and commercial centre of the city. It contains the most important economic asset of Cote d'Ivoire: the Port of Abidjan. Further development of this area within the Plan 2030 time frame must focus on five main goals:

- Enhance the Port operation and its associated industrial, transport and commercial back up facilities. This should include upgrading of the existing freight rail line.
- Urban renewal through high rise residential and mixed use development to accommodate further population growth, release land for open space and community facilities, and develop the Unit as major office centre.
- Raise the quality of the environment for those who live in this Urban Unit.
- Provide a comprehensive and coordinated public transit system of passenger rail, ferries and feeder bus services together with TOD.
- Implement the strategic road network to reduce pressure on the existing main arterial roads and bridges. Consider dedicated heavy goods vehicle only routes to service the port.

In the longer term and beyond this Plan, as the economy of the Cote d'Ivoire reaches that of a more mature developed country, future urban plans should consider the relocation of industrial premises and conversion in clean industries and serviced based rather than manufacturing. The aim is to ensure that in the future the city has a high quality living and working environment within its central urban area.

6.12 UNIT 7 – Special Function Area (Abidjan Port)

6.12.1 Planning Context

Unit 7 is considered a Special Function Area as it deals with Abidjan Port and its associated areas alone. The land area is 4,074ha. The port is focused around the Vridi canal and the harbour area of Ebrie Lagoon.

- The existing port and some committed expansion (20ha) are located mainly in the commune of Treichville. There is also a fruit quay and ship repair area of the port on the Banco Bay coast of Plateau commune.
- The committed extension of the Port of Bouley Island lies within the commune of Yopougon and is proposed to cover an area of 679ha ²⁶.
- A proposed port area of 1550ha is dedicated to the oil industry on the 'cordon littoral' west of the Vridi Canal that lies within the commune of Port Bouet.
- In addition there are proposed land reserves for port back up facilities on the mainland coast within Yopougon.

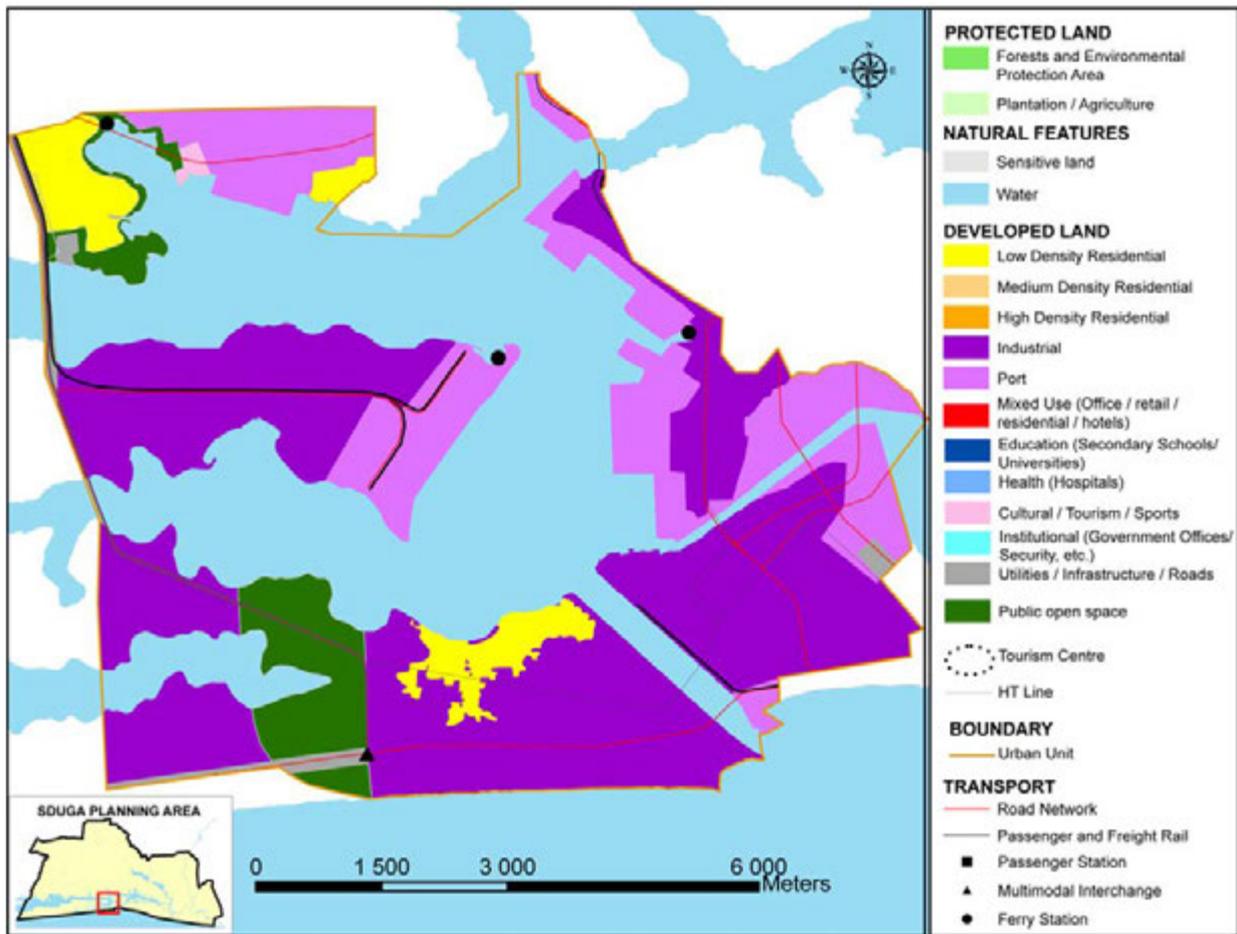
²⁶ Port Autonome d'Abidjan – An International Reference.

From Figure 6.24 it can be seen that land adjacent to the existing and proposed expanded port areas either exist or are planned for industrial zones, in the communes of Treichville, Port Bouet and Yopougon. Other than a proposed workers housing area, on Bouley Island one of the above port and industrial areas include residential development.

Employment is forecast to grow from 87,413 to 213,268, an increase of 144%, this growth will be primarily in the secondary sector.

6.12.2 Land Use Framework

The Land Use Framework for Urban Unit 7 is illustrated on Figure 6.24.



Source: JICA Study Team

Figure 6.24 Urban Unit 7: Land Use Framework 2030

The proposed broad land use budget for the Special Function Area Land Use Framework in 2030 is set out in Table 6.22, which indicates an urban utilization rate of around 95%. This budget includes only the major land uses to indicate the future Land Use Framework.

Table 6.22 Urban Unit 7 : Broad Land Use Budget 2030

LAND USE	Ha
Habitats	
Residential – Low Density (< 71p/p/h)	278
Activities	
Port	990
Industrial	2,370
Equipments	
Community Facilities and Infrastructure	436*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats and Activities

6.12.3 Development Themes

The eastern part of Bouley Island is committed for the expansion of Abidjan Port and related port back up industrial and transport facilities, including a lorry park. Brakré Island is committed for petro chemical and oil refinery development and related industrial development including workers housing. The fourth bridge will link the area to the Yopougon mainland and other bridges are proposed to link the two islands and Port Bouet. At present these are road only bridges although in the future a freight rail link may be considered as the port expands.

The extensive development in this area will introduce industries with a high risk of heavy pollution into the waters of Ebrie Lagoon and Lake Brakré as well as land occupied by coconut, palm, cassava and maize plantations. The proposed development of the area must be subject to SEA, EIA and TIA study to ensure that environmental impact is mitigated and monitored. Of particular concern is the impact upon the Lagoon fish species, which are fished for local consumption in Abidjan.

6.13 UNIT 8 – Northern Greater Abidjan (Azaguié)

6.13.1 Planning Context

Unit 8 is focused on the urban environs and rural hinterland of Azaguié some 35km to the north of the centre of Abidjan in Plateau. The land area of this spatial unit within the Greater Abidjan area is 21,101 ha.

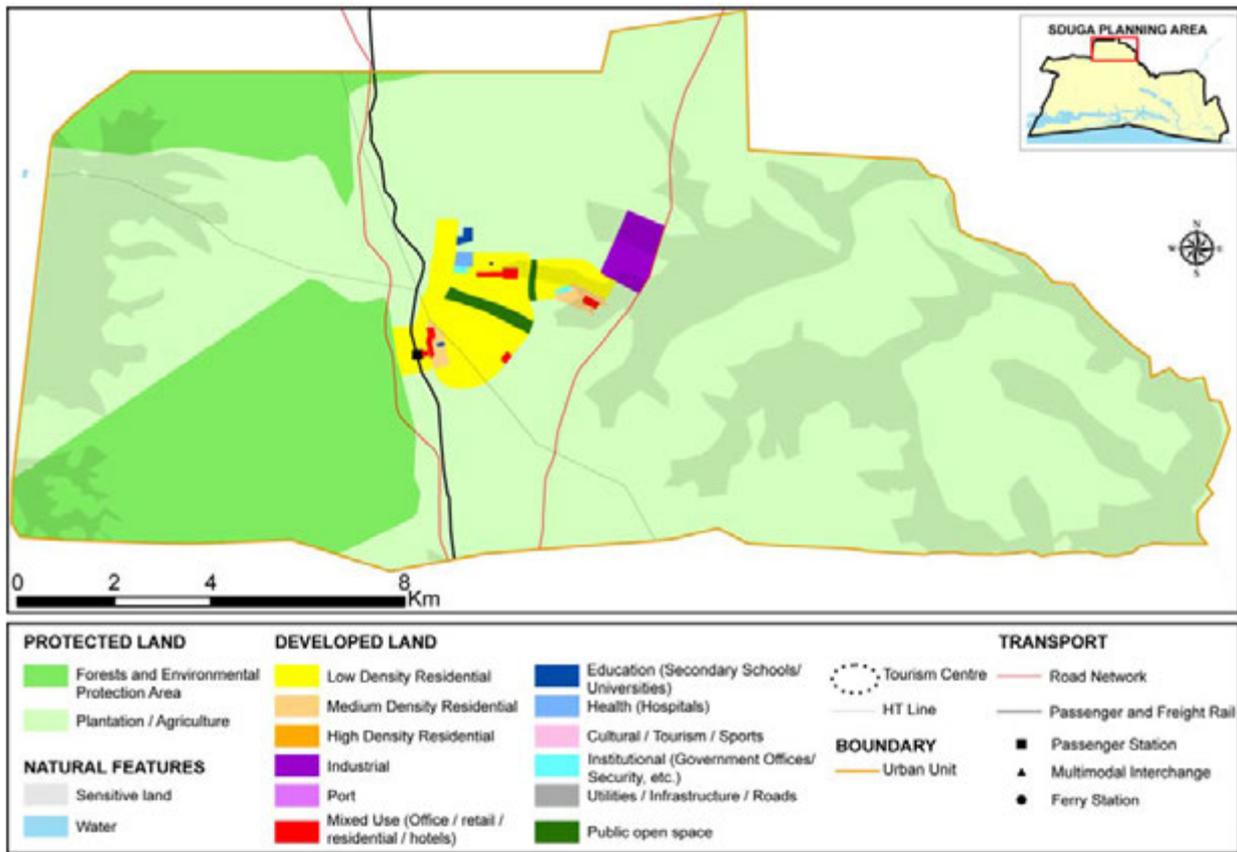
The estimated total population of the Unit at 2014 is 17,915 residents. The projected total population for 2030 is 19,037, an additional 1,122 residents, an increase of 6%.

The total number of households projected for the Urban Unit, taking an occupation rate of 4.0 persons per unit (p/p/u), is 10,869.

Employment is forecast to grow from 11,208 to 31,153, an increase of 178%, with significant growth in both the tertiary sector.

6.13.2 Land Use Framework

The Land Use Framework for Urban Unit 8 is illustrated on Figure 6.25.



Source: JICA Study Team

Figure 6.25 Urban Unit 8: Land Use Framework 2030

The proposed broad land use budget for the Northern Greater Abidjan Land Use Framework in 2030 is set out in Table 6.23, which indicates an urban utilization rate of around 4.0%. This budget includes only the major land uses to indicate the future Land Use Framework; as previously noted the total for Equipment includes double counted land requirement. Table 6.24 set out the detailed community facility and utility land requirement for the 2030 projected population. A complete list of the community facilities required for this Urban Unit, under the current Côte d'Ivoire planning standards, is set out in the Appendix F.

Table 6.23 Urban Unit 8 : Broad Land Use Budget 2030

LAND USE	Ha
Forests and Environmental Protection Areas	4,138
Plantations / Agriculture	16,028
Habitats	
Residential – Medium Density (> 70;< 221 p/p/h)	51
Residential – Low Density (< 71p/p/h)	628
Activities	
Industrial	134
Mixed Use (Office, Retail, Residential, Hotels)	31
Equipments	
Community Facilities and Infrastructure	234*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats

Table 6.24 Urban Unit 8 : Community Facilities Land Requirement

FACILITIES	No	TYPE	Ha
Security (02)	3	Gendarmerie, Police station	4.51
Town Hall (02)	2	Mayor, technical Services	0.66
Public gardens and Green spaces	-	Relaxation and recreation spaces	<i>5% de la superficie urbaine totale</i>
Infrastructures (03)	98	Communication, Potable water, Electricity	114.30
Health (04)	9	CSU, FSU, CSUS, CSDR	27.36
Education (04)	77	Infant school, Primary, Secondary Canteen	66.60
Economic activities (02)	16	Market, Bus station,	6.15
Sociocultural (03)	6	Multipurpose Centre, Social centre, Training, Youth club and female centres	3.30
Sport (04)	12	Sport entertainment, Sport centre, Sport complex, Stadium	10.88
Total	-		233.79

Source: JICA Study Team

6.13.3 Development Themes

Under the Framework Plan for Greater Abidjan Azaguié is seen as a satellite town growth area. That requires employment opportunities for the local residential population. This is not viewed as a dormitory

town for commuting into Abidjan city. Population projection to 2030 indicates that this town will experience almost 69% growth. However, it is unlikely this will stimulate major urban growth.

1. Azaguié – agricultural hub

It is proposed that new development be focused around the establishment of an Agricultural Hub. It is recommended that a new industrial area for food processing of agricultural produce be established as a major employer for this area.

2. Equitable provision of community facilities

It will also be important to upgrade existing and provide new community facilities, including adequate schools and medical, to serve the growing population. This will include a full range of local government facilities.

3. Contained urban expansion

The two towns should be expanded into one comprehensive development area. This combined urban area should not extend beyond the two arterial roads that link Azaguié with Abidjan. That would include the industrial area for food processing, which ideally should have direct links with an upgrade the railway station that has freight loading facilities. Development should continue to be low density with some medium density mixed use development in the towns centres focused around the station and bus termini.

4. Protection of a non-urban green zone

An important requirement for a satellite town community is that it separated from the main urban conglomeration of Abidjan by green undeveloped areas. This reinforces the identity of residents as a self-contained and self-sustained community. The development of the satellite town should be supported by land use controls that protect and enhance the existing agricultural land. New technology to increase agricultural productivity should also be encouraged.

6.14 UNIT 9 – Eastern Greater Abidjan (Alepe, Bonoua)

6.14.1 Planning Context

Unit 9 covers the predominantly rural eastern part of Greater Abidjan beyond the Ebrie and Patou Lagoons. These are the partial commune areas focused on the urban areas of Alepe and Bonoua. Within the Greater Abidjan area their combined land area is 93,946 ha.

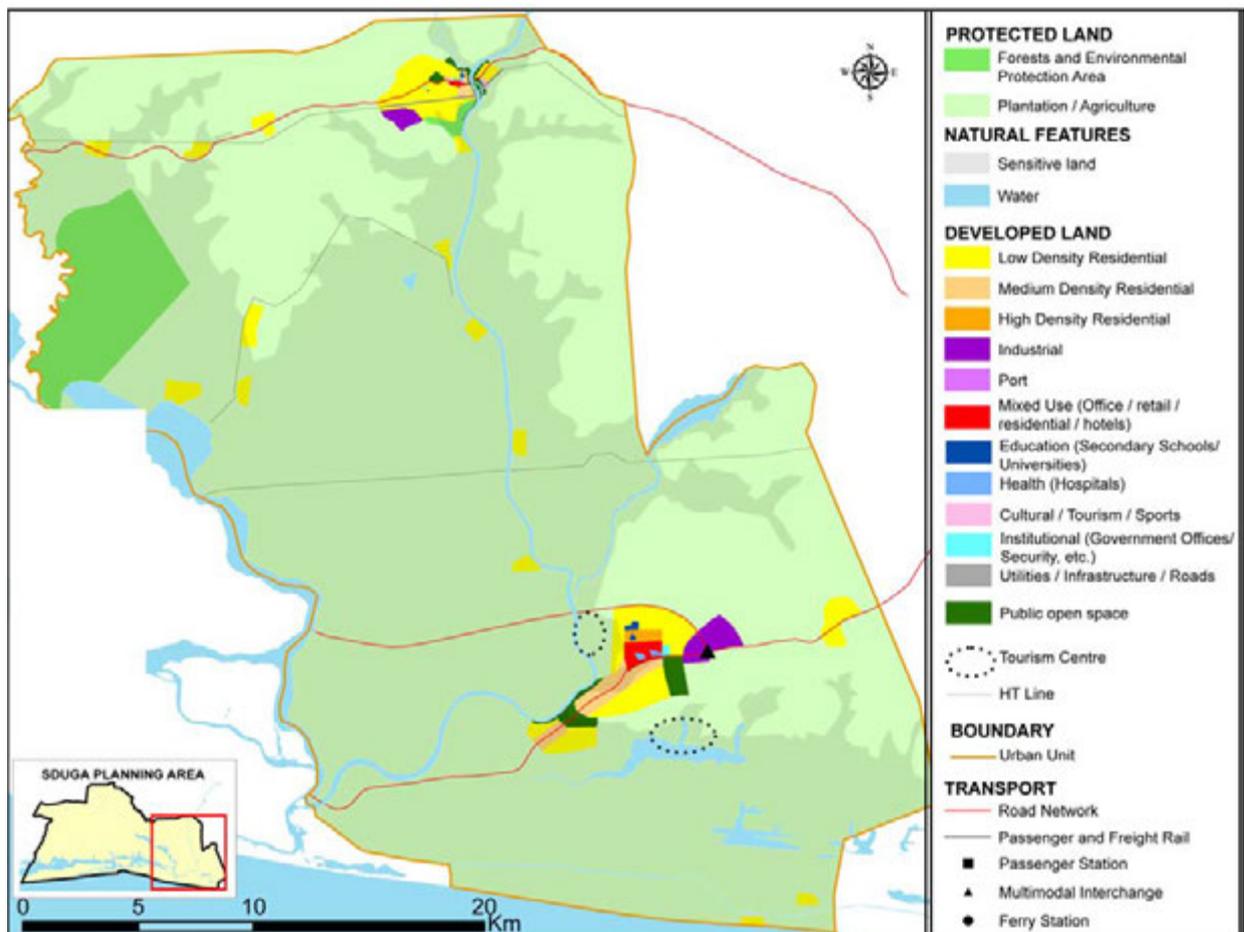
The estimated total population of the Unit at 2014 is 93,278 residents. The projected total population for 2030 is 117,575, an additional 24,298 residents, an increase of 26%.

The total number of households projected for the Urban Unit, taking an occupation rate of 4.0 persons per unit (p/p/u), is 103,174.

Employment is forecast to grow from 75,549 to 128,608, an increase of 70%, with significant growth in both the secondary and tertiary sectors.

6.14.2 Land Use Framework

The Land Use Framework for Urban Unit 9 is illustrated on Figure 6.26.



Source: JICA Study Team

Figure 6.26 Urban Unit 9: Land Use Framework 2030

The proposed broad land use budget for the Eastern Greater Abidjan Land Use Framework in 2030 is set out in Table 6.25, which indicates an urban utilization rate of around 5.0%. This budget includes only the major land uses to indicate the future Land Use Framework; as previously noted the total for Equipment includes double counted land requirement. Table 6.26 set out the detailed community facility and utility land requirement for the 2030 projected population. A complete list of the community facilities required for this Urban Unit, under the current Côte d'Ivoire planning standards, is set out in the Appendix F.

Table 6.25 Urban Unit 9 : Broad Land Use Budget 2030

LAND USE	Ha
Forests and Environmental Protection Areas	3,625
Plantations / Agriculture	85,844
Habitats	
Residential – High Density (> 220 p/p/h)	81
Residential – Medium Density (> 70;< 221 p/p/h)	463
Residential – Low Density (< 71p/p/h)	2,864
Activities	
Industrial	408
Mixed Use (Office, Retail, Residential, Hotels)	147
Equipments	
Community Facilities and Infrastructure	2,432*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats

Table 6.26 Urban Unit 9 : Community Facilities Land Requirement

FACILITIES	No	TYPE	Ha
Security (02)	32	Gendarmerie, Police station	46.09
Town Hall (02)	16	Mayor, technical Services	6.76
Public gardens and Green spaces	-	Relaxation and recreation spaces	<i>5% de la superficie urbaine totale</i>
Infrastructures (03)	1,022	Communication, Potable water, Electricity	2,502.82
Health (04)	91	CSU, FSU, CSUS, CSUR	599.07
Education (04)	814	Infant school, Primary, Secondary Canteen	1,458.47
Economic activities (02)	188	Market, Bus station,	134.76
Sociocultural (03)	57	Multipurpose Centre, Social centre, Training, Youth club and female centres	36.18
Sport (04)	136	Sport entertainment, Sport centre, Sport complex, Stadium	238.36
Total	-		2,431.4855

Source: JICA Study Team

6.14.3 Development Themes

Under the Framework Plan for Greater Abidjan Alepe and Bonoua are classified as satellite town growth areas. This requires self-supporting employment opportunities for the local residential population. They are not considered dormitory towns for commuting into Abidjan city. Population projection to 2030 indicates that this Urban Unit will experience nearly 64% growth. Due to the relatively isolated location of Alepe it is unlikely this will stimulate major urban growth. In the case of Bonoua the pressure for urban expansion is likely to be significant.

1. Alepe - agricultural hub

It is proposed that new development for Alepe be focused around the establishment of an Agricultural Hub. It is recommended that a new industrial area for food processing of agricultural produce be established as a major employer for this area.

2. Bonoua - major urban and logistics centre

Bonoua, on the main east route into Abidjan, should be planned as a main urban centre and agricultural hub. Development would be low and medium density residential with a mixed use TOD town centre. The current employment range of Bonoua should be expanded to include; services and commercial within the town centre to serve the wider catchment area of the town; industrial zone for food processing and light manufacturing; and a major logistics and lorry park area. These latter facilities are to facilitate the bulk-breaking of items travelling from Ghana and produce from the eastern rural areas. One of the aims of locating the logistic / lorry park at Bonoua is to aid in the reduction of heavy goods vehicles trips into the Abidjan. The logistics and lorry park should be located outside the town and have direct access to a new Bonoua highway by-pass road, as proposed under the Framework Plan.

3. Equitable provision of community facilities

It will also be important to upgrade existing and provide new community facilities, including adequate schools and medical, to serve the growing populations in each town. This will include a full range of local government facilities.

4. Protection of a non-urban green zone

The existing agricultural land, natural landscape assets (for instance, Comoe River) and cultural diversity (Oghlwapo community) must be protected from urbanization. An important requirement for a satellite town community is that it separated from the main urban conglomeration of Abidjan by green undeveloped areas. This reinforces the identity of residents as a self-contained and self-sustained community. The development of the two satellite towns should be supported by land use controls that protect and enhance the existing agricultural land. New technology to increase agricultural productivity should also be encouraged.

6.15 UNIT 10 – Western Greater Abidjan (Dabou, Jacquville)

6.15.1 Planning Context

Unit 10 covers the predominantly rural western part of Greater Abidjan. These are the partial commune areas focused on the urban areas, separated by the Ebrie Lagoon, of the large town of Dabou on the mainland and the smaller coastal town of Jacquville on the ‘cordon littoral’ Within the Greater Abidjan area their combined total land area is 34,026 ha.

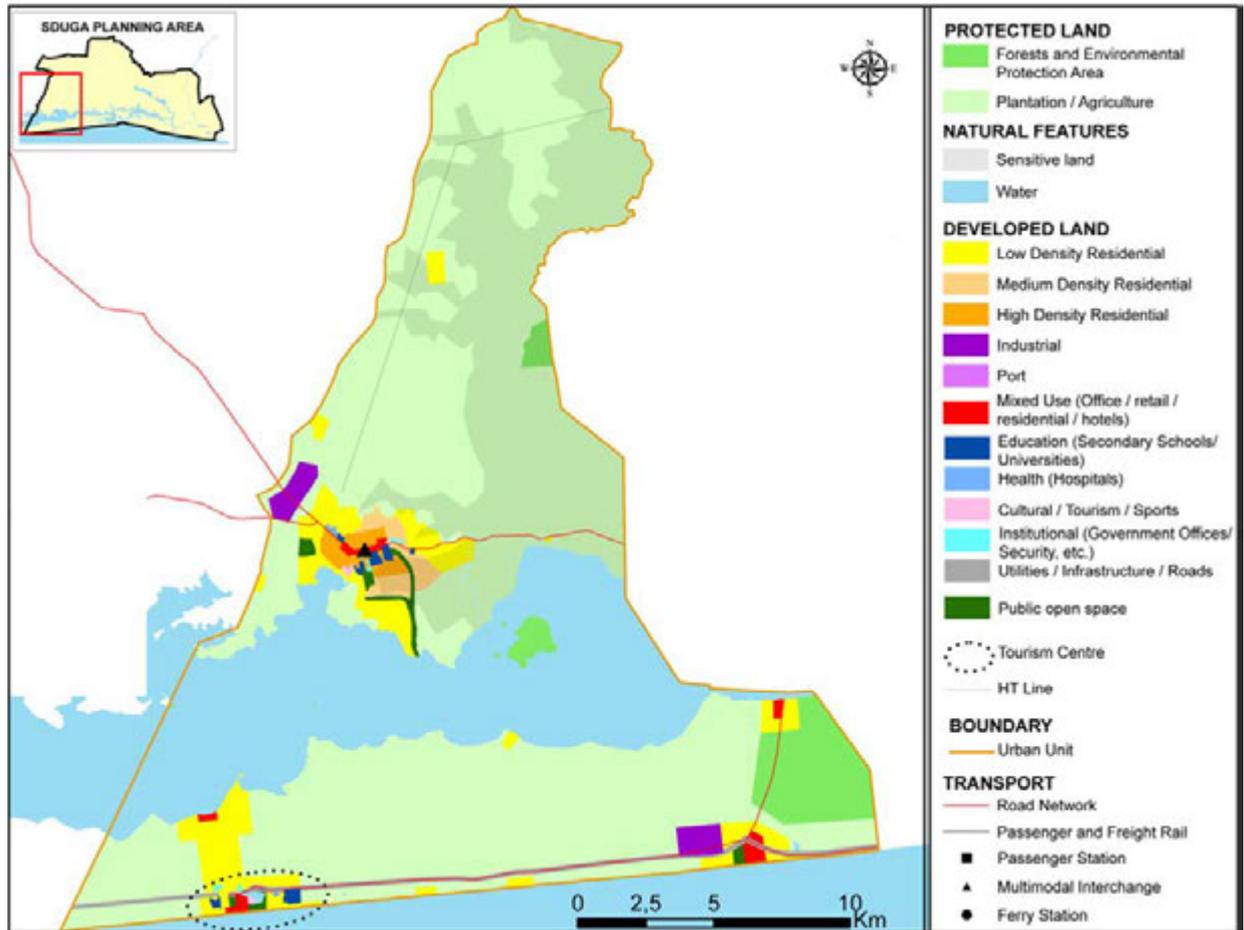
The estimated total population of the Unit at 2014 is 70,081 residents. The projected total population for 2030 is 110,517, an additional 40,436 residents, an increase of 58%.

The total number of households projected for the Urban Unit, taking an occupation rate of 4.0 persons per unit (p/p/u), is 128,022.

Employment is forecast to grow from 62,266 to 132,950, an increase of 114%, with significant growth in both the secondary and tertiary sectors.

6.15.2 Land Use Framework

The Land Use Framework for Urban Unit 10 is illustrated on Figure 6.27.



Source: JICA Study Team

Figure 6.27 Urban Unit 10: Land Use Framework 2030

The proposed broad land use budget for the Western Urban Area Land Use Framework in 2030 is set out in Table 6.27, which indicates an urban utilization rate of around 13%. This budget includes only the major land uses to indicate the future Land Use Framework; as previously noted the total for Equipment includes double counted land requirement. Table 6.28 set out the detailed community facility and utility land requirement for the 2030 projected population. A complete list of the community facilities required for this Urban Unit, under the current Côte d'Ivoire planning standards, is set out in the Appendix F.

Table 6.27 Urban Unit 10 : Broad Land Use Budget 2030

LAND USE	Ha
Forests and Environmental Protection Areas	1,832
Plantations / Agriculture	27,683
Habitats	
Residential – High Density (> 220 p/p/h)	276
Residential – Medium Density (> 70;< 221 p/p/h)	358
Residential – Low Density (< 71p/p/h)	2,368
Activities	
Industrial	376
Mixed Use (Office, Retail, Residential, Hotels)	198
Equipments	
Community Facilities and Infrastructure	2,947*

Source: JICA Study Team

Note:* Some of this land requirement is included within Habitats

Table 6.28 Urban Unit 10 : Community Facilities Land Requirement

FACILITIES	No	TYPE	Ha
Security (02)	41	Gendarmerie, Police station	57.28
Town Hall (02)	22	Mayor, technical Services	8.40
Public gardens and Green spaces	-	Relaxation and recreation spaces	<i>5% de la superficie urbaine totale</i>
Infrastructures (03)	1,271	Communication, Potable water, Electricity	1,451.23
Health (04)	114	CSU, FSU, CSUS, CSDR	347.36
Education (04)	1,010	Infant school, Primary, Secondary Canteen	845.68
Economic activities (02)	233	Market, Bus station,	78.14
Sociocultural (03)	71	Multipurpose Centre, Social centre, Training, Youth club and female centres	20.97
Sport (04)	170	Sport entertainment, Sport centre, Sport complex, Stadium	138.21
Total	-		2,947.30

Source: JICA Study Team

6.15.3 Development Themes

The Unit, whose eastern boundary follows that of the two communes, is unique in comparison with the other urban units. For besides containing two satellite towns and their rural hinterlands the area immediately south of the Songon – N'djem Bridge is proposed as the western edge of the Abidjan conurbation, a new town will be located here. These three urban areas are anticipated to function in different ways. There could well be an argument for adjusting the eastern boundary.

The population in this Unit is projected to more than double by 2030, both through natural growth and improved accessibility to the centre of Abidjan via the new bridges and proposed highways. Anecdotal information of increased land prices in the vicinity of Songon and N'djem indicate a demand for development land in these areas.

1. Dabou – major urban and logistics centre

Dabou is an important local governance and agricultural hub. This role is to be augmented and will be the main objective of future planned growth. Development would be low and medium density residential with a mixed use TOD town centre. The current employment range of Dabou should be expanded to include; services and commercial within the town centre to serve the wider catchment area of the town; industrial zone for food processing and light manufacturing; and a major logistics and lorry park area. The development of a logistic / lorry park in this location is to aid in the reduction of heavy goods vehicles trips into the Abidjan along the future upgraded and widened Dabou Road.

2. Jacqueville – tourism hub

Development is to be focused on the rejuvenation of the town as a tourist destination for international and domestic visitors. This will include the provision of new resort hotels. Beyond the town along the Atlantic coastline and the Ebrie Lagoon waterfront a range of tourist facilities should also be encouraged. These waterfronts should also be available for low density private vacation home development. Urban development throughout the Jacqueville should be limited to low density and low rise buildings, including hotels and commercial development.

There may also be the opportunity to expand employment and commercial development opportunities through support facilities, including security and emergency operations, for the offshore oil and gas fields. The pipelines from these fields make landfall at Jacqueville and run alongside the existing Jacqueville Road to Abidjan.

3. Implementation of strategic transport network

The development of Abidjan Port expansion and associated Petro Chemical /industrial areas on Bouley and Brakré Islands will stimulate growth with this Unit. The planned improvements to existing roads and the construction of new highways to the port expansion areas must be completed to ensure efficient operation of the complex. The roads within the Unit to be considered a priority are:

- Dabou Road Widening
- Coastal Road from Jacqueville to Port Bouet
- A dedicated Truck Road from N'djem to the port area.

Bus and ferry public transit must be provided at both local and intercity level. New mixed use TOD development multi modal transport nodes should be provided in Dabou, Jacqueville and the proposed

new town, described below. A direct and modern passenger ferry service should be provided between Dabou and Jacqueville.

4. New western cordon littoral town

Some five kilometres south of N'djem the future Coastal Road will join the Jacqueville Road, that leads to the Ebrie bridge crossing. This is the proposed location for a new ocean front tertiary level urban centre to serve a maximum population catchment of up to 60,000 residents. This town will mark the south western edge of the Abidjan conurbation. Development densities should range from high at the town centre to low at its periphery. The building height profile should allow for high rise in the centre stepping down to mid-rise and low-rise at the ocean front and town edge. A full range of community facilities should be provided.

The town lies some 20km from Jacqueville, 25km from the Abidjan Port expansion area, and 10km from Songon. Although commuting into the main employment areas of Abidjan can be expected the town should be economically self-sustaining. Employment will focus on; supporting public and commercial services for residents, tourism and a zone for agricultural / fish processing and light industry manufacturing.

In the longer term, beyond the time frame of the Plan 2030, it is anticipated that this town may be extended eastwards become a major residential and service centre for any future westward expansion of Abidjan Port and its back-up port facilities. During the timeframe of this Plan 2030 the existing natural and agricultural land will be protected and enhanced as a green break between the new port area and the new town.

5. Equitable provision of community facilities

It will also be important to upgrade existing and provide new community facilities, including adequate schools and medical, to serve the growing populations in each town. This will include a full range of local government facilities.

6. Protection of a non-urban green zone

Beyond the urban edge, though including the area east of the new town as noted earlier, the existing agricultural land and natural landscape assets - beaches, waterfronts and Brakré Lake - must be protected from urbanization. The satellite town communities of Dabou and Jacqueville are to be separated from the main urban conglomeration of Abidjan by green undeveloped areas. This will also be the case under the place for the new town, to reinforce the identity of residents as living in self-contained and self-sustained communities. The development of the two satellite towns and the new town should be supported by land use controls that protect and enhance the existing agricultural land. New technology to increase agricultural productivity should also be encouraged.

7.0 Land Use Policies for Greater Abidjan

7.1 Land Use Sector Policies

Under the Greater Abidjan Urban Master Plan 2030 Sector Policies are formulated to direct and achieve sustainable development in terms of:

- Spatial Development
- Development Control
- Governance

In 13 sectors, a total of 190 policies were elaborated as shown in the Table 7.1.

The policy actions, key consultative stakeholder and lead agencies responsible for implementing the policies are set out in the Implementation Responsibility Matrix, Appendix G.

Table 7.1 Land Use Policies for Greater Abidjan

Sectors	Sector Goal	Policies
1. Land Use and Growth (11)	Growth Management Centres	LU1 - LU2
	Balanced Growth	LU3 - LU5
	Compact Development	LU6 - LU9
	Preserve Agricultural Land	LU10
	Natural Environment	LU11
2. Settlement (15)	Location of Residential Development	H01 - H04
	Housing Quality	H05 - H08
	Public Housing	H09 - H012
	Housing Design	H013 - H015
3. Urban Development (15)	Create and Manage Urban Form	BE1 - BE3
	Establish a Legible Public Realm and Urban Image	BE4 - BE6
	Integrated Landscape Framework	BE7 - BE13
	Conserve and Enhance Cultural Heritage	BE14
	Green Buildings and Green Technologies	BE15
4. Transport (20)	Traffic Management System	T11 - T13
	Public Transport	T14 - T17
	Freight Transport Network	T18 - T110

	Parking	TI11 - TI12
	Road Network	TI13 - TI14
	Green Transport	TI15 - TI20
5. Social Infrastructure (9)	Planning and Coordination of Community Facilities	CF1 - CF2
	Support for Education Sector	CF3 - CF4
	Support for Health Sector	CF5
	Support for Religious Services	CF6 - CF7
	Support for Emergency Facilities	CF8
	Support for Government and Social Facilities	CF9
6. Commerce (13)	Location of Commercial Development	CO1 - CO6
	Establish New Zoning Districts	CO7 - CO9
	Enhanced Role of Town Centres	CO10 - CO13
7. Industry (8)	Location of Industrial Development	ID1 - ID4
	Provision for Industrial Land	ID5 - ID6
	Advanced Technology Cluster	ID7 - ID8
8. Urban Design and Amenity (22)	Comprehensive Residential Design	DA1 - DA3
	Traditional Neighbourhood Character	DA4 - DA7
	Strengthen Urban Areas Identity	DA8 - DA17
	Diverse Development Pattern	DA18
	Commercial and Industrial Development Design Standards	DA19 - DA22
9. Open Space and Landscape (16)	Development of Parks / Recreation and Open Space System	OSL1 - OSL4
	Standards of Open Space and Recreation facility Provision	OSL5 - OSL8
	Park and Open Space Dedication and Maintenance	OSL9 - OSL11
	Recreation / Open Space Colocation	OSL12 - OSL13
	Landscape Design	OSL14 - OSL16
10. Utility (32)	Comprehensive Utility Infrastructure	UT1 – UT2
	Storm Water Management	UT3 – UT5
	ICT (Information and Communications Technology)	UT6 – UT7
	Power and Energy	UT8 – UT10
	Water	UT11 – UT16
	Waste Water Disposal	UT17 – UT19
	Solid Waste Management	UT20 – UT33
11. Tourism (13)	Tourism Development	TO1 - TO10
	Domestic Tourism Facilities	TO11 - TO12
	Tourism support Facilities	TO13
12. Natural Environment (13)	Protection of Environmentally Sensitive Areas	EN1 - EN4
	Restoration of Damaged Natural Environment	EN5 - EN7
	Avoidance of Natural Disasters	EN8 - EN13
13. Sustainable Development (3)	Comprehensive Credit Rating System	SD1 - SD2
	Optimise Use of Natural Resources	SD3

7.2 Land Use and Growth Policies

SECTOR GOAL: Manage and optimize the opportunities for sustainable urban and economic growth to provide a balanced mix of urban and employment centres whilst protecting agricultural land and the natural environment.

7.2.1 Growth Management Centres

Policy Objectives: Main growth will be focused within urban centres, main employment areas and designated expansion areas within the Abidjan Autonomous District Communes and Grand Bassam, as well as the satellite towns of Jacquville, Dabou, Azaguie, Alepe and Bonoua to provide 'compact city' growth.

Policy LU 1: Urban Growth Centres

Define a hierarchy of urban centres where main residential, commercial and social infrastructure facilities and densification will be provided. These centres shall capitalise on existing and committed transport and utility infrastructure.

Policy LU 2: Employment Growth Centres

Promote the clustering of industrial and knowledge enterprises by expanding the areas already provided with adequate road and utility infrastructure.

7.2.2 Balanced Growth

Policy Objectives: Create a balanced growth approach in the Growth Management Centres identifying growth areas that will establish the timing and sequencing for future development and infrastructure provision.

Policy LU 3: Urban Expansion Areas

Direct spatial growth by phasing development approvals: to encourage early development to areas within the peripheral communes of AAD. In order to optimize development potential of areas already adequately serviced by roads and utilities and avoid early up-front public capital expenditure to service new development.

Policy LU 4: Revitalization of Older Urban Areas

Encourage the rehabilitation and revitalization of older urban areas in tandem with the development of new areas so that essential commercial, service and community facilities are readily available for the future population.

Policy LU 5: Expand Existing Centres

Direct new development to areas contiguous with existing urban and employment centres both within AAD and to the satellite towns of Alepe, Azaguie, Bonoua, Dabou and Jacquville; to capitalise upon existing road and utility infrastructure provision.

7.2.3 Compact Development

Policy Objectives: Promote a compact system of urban development by limiting growth to existing urban centres where urban services may be provided in a cost-efficient manner with an emphasis on targeting existing neighbourhoods to spur revitalization and promote infill opportunities, encourage public transport use, reduce urban sprawl and protect rural landscapes.

Policy LU 6: Urban Expansion Areas

Focus new development to the peripheral communes of AAD and the existing urban and employment centres of the satellite towns as the prime areas for growth.

Policy LU 7: Revitalize Existing Centres

Within the high density inner city areas promote private sector and PPP urban renewal projects as the primary catalysts for urban renewal.

Policy LU 8: Public Transport Hubs

Promote mixed use high density development in Transit Oriented Development (TOD) hubs.

Policy LU 9: Access to Arterial Roads

New development areas should have a minimum access spacing of 400m onto Arterial Roads.

7.2.4 Preserve Agricultural Land

Policy Objectives: Protect active farming operations and associated wetland areas from urban encroachment to aid national food security and export goals.

Policy LU 10: Agricultural Land

No redevelopment of productive agricultural and associated wetlands and water catchment areas will be permitted.

7.2.5 Natural Environment

Policy Objectives: Protect, preserve and enhance the river, wetlands and forested landscapes to promote biodiversity and the aesthetic characteristics of the natural landscape.

Policy LU 11: Natural Environment

Development within these areas will be restricted to low density, low rise and minimal site coverage residential, resort hotel and recreation facilities, where the existing landscape elements and character shall be predominant features of the development. Permission for a new development will be subject to approval of an EIA and Vegetation Survey, including mitigation, reinstatement and management programmes.

7.3 Settlement Policies

SECTOR GOAL: Support stable, long-term residency with a mix of well-maintained housing types to target the full spectrum of ages, incomes, family types and household sizes of existing and potential residents.

7.3.1 Location of Residential Development

Policy Objectives: encourage residential densification in existing towns and neighbourhood areas that are attractive to first-time buyers, accessible to services, and can be efficiently served with utilities and infrastructure.

Policy HO 1: Residential Clusters

Residential development will only be permitted in land zoned for residential use; continuous residential frontage ribbon development along roads will not be permitted outside urban centres or residential clusters.

Policy HO 2: Apartments in Town Centres

Promote apartment housing development by the private sector in central urban areas and within TOD hubs.

Policy HO 3: Densification in Existing Utility Serviced Areas

Promote densification of private and public sector provided housing land to areas which have existing and excess utility and infrastructure capacity provision.

Policy HO 4: Restriction on commercial usage in Residential Property

Commercial usage of existing private residential properties shall not be allowed in residential areas. The changing of existing residential usage along major roads to commercial usage shall not be allowed except in certain designated areas as set out in zoning guidelines on the Detailed Urban Plan.

7.3.2 Housing Quality

Policy Objectives: maintain, protect, and upgrade the housing stock to provide safe housing that meets the needs of families in established neighbourhoods to improve the quality of life.

Policy HO 5: Affordable Housing

Develop zoning regulations which advocate the inclusion of affordable low and medium cost housing in residential developments.

Policy HO 6: Removal of Non-Conforming Uses

Use development and redevelopment opportunities to reduce the number of nonconforming and incompatible uses within residential areas.

Policy HO 7: Improvement of Sub Standard Housing

Encourage the improvement and redevelopment of dilapidated housing areas.

Policy HO 8: New Housing Areas

Approval to new residential areas should require a well-planned street system, nearby recreational areas and are within a walkable distance (maximum 500m) to commercial facilities.

7.3.3 Public Housing

Policy Objectives: provide subsidized housing for the low income proportion of the future population growth projected for the Greater Abidjan Area.

Policy HO 9: Utilise Public Land

Underutilised government land should be designated for redevelopment to provide high-density public housing.

Policy HO 10: Location of Public Housing

Public Housing should be located in areas with adequate utility provision and community facilities including education and health for the proposed population and with convenient and inexpensive access to markets, commercial centres and public transport system.

Policy HO 11: Informal Housing Removal

All informal housing units illegally occupying Government land shall be removed and residents resettled into nearby public housing areas with the additional aims of maintaining a local community structure, and a location that enables walkable connection to local employment opportunities.

Policy HO 12: Living Environment

Public housing shall be developed to provide good quality housing and living environments, with the ground floor reserved for small scale commercial uses which are appropriate for residential areas by the residents, and landscaped open space with children's playground and other resident amenities.

7.3.4 Housing Design

Policy Objectives: enhance the quality of housing design and site planning through the use of sustainable green building practices that will contribute to a better quality of living environment for all residents.

Policy HO 13: Special Needs

Assist in the development and redevelopment of housing stock for citizens with special needs - the elderly, persons with disabilities and other special needs- in areas that are walkable and located close to public transit nodes.

Policy HO 14: Sustainable Housing Standards

Encourage well planned and designed housing developments and buildings to internationally recognised sustainable criteria and standards that can help provide safe, moderate cost housing.

Policy HO 15: Design Innovation

Encourage the private sector and public agencies to develop a wider choice of innovative housing utilizing green building and green technologies techniques.

7.4 Urban Development Policies

SECTOR GOAL: Provide a sustainable urban environment that can grow upon the values and benefits gained from: compact urban centres that promote walking and public transit; the ease of connection between home, work, community facilities and leisure; a complexity of land use, urban form and built fabric that responds to cultural traditions and daily activities; and an aesthetically pleasing and comfortable public realm.

7.4.1 Create and Manage Urban Form

Policy Objective: Encourage mixed use and community facility development within and near existing communities or public transportation infrastructure to reduce vehicle trips and support walking as a transportation choice.

Policy BE1: Optimize Development Density

Provide a balance of built form with open space and the provision of community facilities by facilitating the revitalisation of inner urban areas, establishing high density nodes at TOD, and controlling development at the urban edge; to promote economic vitality, a high quality living environment and an integrated urban environment.

Policy BE2: Neighbourhood Connectivity

Promote communities that are physically connected to each other and developments that are integrated into the urban structure.

Policy BE3: Universal Accessibility

Enable the widest spectrum of people, regardless of age and ability, to more easily participate in their community life by increasing the proportion of areas that are usable by people of diverse abilities including pedestrians and cyclists.

7.4.2 Establish a Legible Public Realm and Urban Image

Policy Objective: Define a legible township image that reduces reliance on automobiles, increases opportunity for walking and improves the vitality of the community and public health.

Policy BE4: Walkable Streets, Spaces and Identity

Provide appealing and comfortable pedestrian street environments and a variety of open spaces in order to promote pedestrian activity, public health and provide greater coherence and legibility to the street scene character.

Policy BE5: Distinctive Identity

Define, conserve and enhance distinctive identity areas and gateway locations, including landmark development sighting through place making strategies, building on the natural physical, cultural and historical elements of Abidjan and Cote d'Ivoire.

Policy BE6: Integrated Development and Building Height

Ensure that all new developments are sympathetic in form, scale, mass, bulk, height and character to their immediate surroundings, whilst protecting special character areas and the visual primacy of selected sites.

7.4.3 Integrated Landscape Framework

Policy Objective: Provide landscapes that complement the recreational and amenity open spaces of the urban areas to beautify the city and link with the natural landscapes of the locality to promote biodiversity and a wide range of outdoor leisure pursuits.

Policy BE7: Comprehensive Design of Urban Landscape and Public Realm

Establish a comprehensive landscape network augmented with public art that pervades the public realm providing shaded walking links, variety in leisure and recreation uses, visual amenity and aesthetic excellence.

Policy BE8: Safeguarding Urban Landscape

Protect and enhance the network of existing and future open spaces, with special emphasis on river valleys and waterfronts, whilst promoting improved levels of accessibility to encourage better health and quality of living.

Policy BE9: Greening the Urban Environment

Greening the urban environment through the provision of high quality attractive public realm that permeates through urban areas enabling better quality of life for all residents will be encouraged.

Policy BE10: Conserve the Natural Landscape and Minimize Site Disturbance

Preserve existing trees, native vegetation and pervious surfaces to provide habitat and promote biodiversity while encouraging connectivity with waterfront and key activity nodes by a variety of travel modes.

Policy BE11: Open Space Provision

Ensure that private and public open space provision is sufficient to meet future demand from all community groups whilst regenerating landscapes and shaded pocket parks and plazas in residential areas which are deficient in local open space for residents.

Policy BE12: Sports Stadium and Recreation Facilities

Promote strategic locations for sports stadia and recreation facilities that are accessible by a range of transport modes to encourage community health and wellbeing and aid in the promotion of sports tourism.

Policy BE13: Recreation and Leisure Opportunities

Ensure improved provisions of low impact active and passive recreational facilities and sports facilities at the edge of identified urban centres.

7.4.4 Conserve and Enhance Cultural Heritage

Policy Objective: To safeguard and make accessible the historical and cultural traditions implicit in archaeological and historical sites and those sites or areas where the traditions of Côte d'Ivoire are still practiced for present day and future generations.

Policy BE14: Designate Cultural Heritage Conservation Areas

Preserve and enhance the traditional cultural heritage of significant archaeological sites, settlements, heritage areas and buildings to reflect unique climatic, social and historical influences of the site and region, and can and does contribute towards the tourist product of Greater Abidjan and Cote d'Ivoire.

7.4.5 Green Buildings and Green Technologies

Policy Objectives: Ensure that Sustainable Development is demonstrated in all applications for development and building approvals and is extended to include an internationally recognised credit system for community development and green technologies that reduces the carbon footprint of new developments through low energy construction methods and innovative energy cogeneration solutions.

Policy BE 15: Green Buildings and Green Technologies

Encourage the design and construction of buildings, communities and infrastructure to utilize green building practices that promote improved environmental performance including energy efficiency.

7.5 Transport Policies

SECTOR GOAL: Towards a sustainable energy efficient transport system supporting economic development, population growth and enhanced mobility of Greater Abidjan.

The goal could be achieved by redirecting travel patterns from private to public transport by integrating transport modes, improving and promoting public transport and discouraging the use of private transport. The public transport system in the Greater Abidjan Area must be competitive, convenient, user friendly and accessible to all groups.

Policy Objectives: To provide a comprehensive and integrated transport network which is convenient, user friendly and accessible to ensure mobility across all income groups to serve all areas of Greater Abidjan for both the movement of people and cargo.

7.5.1 Traffic Management System

Policy Objectives: To establish comprehensive measures to control private vehicle traffic in urban centres to a manageable level and to provide smooth flow of traffic stream.

TI 1: Travel Demand Management

Measures such as access control, road pricing, parking pricing, high occupancy vehicle (HOV) lanes, flexible or staggered work hour, shall be defined to restrain private vehicle usage. Among others, in parking pricing, parking vehicles, whether they may be located on or off street, should be charged a fee, which is also expected to bring about considerable revenue for infrastructure investment and to eventually deter private vehicles from entering the CBD and shift to public transport.

TI 2: Traffic Management

Traffic management for certain area should be well studied and implemented to improve traffic circulation in Urban Centres including implementation of Area Traffic Control if relevant. Through intelligent transportation systems (ITS), bottlenecks responsible for traffic congestion should be identified on a real-time basis to provide traffic information and to optimally disperse the traffic. Improvement measures such as Area Traffic Control (ATC), traffic safety assistance, traffic enforcement assistance should also be introduced.

TI 3: Transit Oriented Development (TOD) Zone

Establish TOD Zones and prepare facilities and regulations to accommodate travel demand. Promote high-density commercial land use around stations to benefit both urban economy and business of the operator.

7.5.2 Public Transport

Policy Objectives: To provide a comprehensive and integrated public transport network which is convenient, user friendly and accessible to all income groups to serve all urban centres – sub regional, district, neighbourhood and local; community facilities; employment centres, leisure and tourism sites.

TI 4: High Capacity Public Transport Corridors

Undertake the development and planning of the high capacity transit system that will ultimately provide a north south line from Anyama to Grand Bassam, including a link to the International Airport, and a West East Line from Songon to Bingerville and possibly additional corridors depending on demand. The relevant technology will be adopted whether it be rail mass transit or bus rapid transit dependent on demand.

TI 5: Bus Services

Establish a comprehensive bus network by rerouting and introducing new routes to provide maximum penetration into residential areas and major employment and retail centres and provide integration with high capacity public transport network as a feeder of the system. Improve quality of vehicle, driver and service, including accessibility, safety, punctuality, reliability, frequency of service and comfort. Such a comprehensive service is likely to reduce the current high reliance in the informal sector such as Gbaka. Intelligent Transport Systems (ITS) such as travel information system should be introduced. Provide bus priorities such as bus lane and priority at intersection.

TI 6: Multi Modal Centres

Develop Multi Modal Centre which integrate inter province and intercity TOD bus terminal railway station, and where feasible Park & Ride facilities, in Anyama, Adjamé, Songon, Bingerville, and Grand Bassam. Attention should also be paid to intermodal transfer functions between different mass transit modes, between feeder bus and mass transit, and between private transport modes and mass transit. Also introduce efficient use of public transportation using integrated cashless payment for multi-use of public transport and for convenience of the users. Above all, introduce a transfer discount ticket system between different bus and rail operators to reduce the total public transport cost and lead to an increase in ridership.

TI 7: Taxi Service

Control the number of commune and inter commune taxi to a manageable level and improve the quality of service, including in vehicle condition, driver quality and reliability as well as provide better accessibility such as dedicated taxi stands.

7.5.3 Freight Transport Network

Policy Objectives: To ensure the efficient and economic viability of international and inter country transportation of goods to and from Abidjan Port. Reduce the amount of goods and freight transported by road through urban centres by encouraging a modal shift to rail through the provision of an upgrade freight rail system linked to logistic centres.

TI 8: Freight Rail

Develop a freight rail network serving the nation and the adjacent land locked countries that services the port. Also develop a container marshalling yard and station near the port and revitalize the operation of freight trains to deal with the container traffic.

TI 9: Truck Ban

Prohibit access of HGV into high density urban centres for certain period of time or whole day and strictly enforce the regulation. Designate truck routes for access from the logistic centre, industrial areas, hinterland and adjacent countries to the port.

TI 10: Logistics Centres

Relocate the existing warehouses in the city and provide logistics centre and decentralize distribution activities close to Ring Road Y4 to reduce the movement of HGV into high density urban centres. Communicate, supervise and disseminate the information to drivers in consideration of the management and the promotion of logistic efficiency.

7.5.4 Parking

Policy Objectives: To regulate parking; in order to limit the number of parking spaces in town centres, decrease on-street parking, restrict private vehicle parking on public spaces and promote fringe parking outside urban area.

TI 11 Urban Parking Control

Set up parking regulate in urban centres. On-street parking should be removed or tightly controlled to be replaced by the space for general traffic or ROW of public transport and bicycles. Local Planning Authority shall regulate the requirement of supply of parking spaces for the development on private land. Control guidelines for the development such as a building code should be prepared. In addition, a parking information system shall be necessary, guiding car users to the most appropriate public and private parking lots along with parking availability information through information devices such as parking information signboards.

TI 12: Parking Area for Trucks

Current parking and other ancillary facilities such as customs for heavy goods vehicles and logistic vehicles in Vridi, Gonzaqueville, Yopougon, and Attécoubé shall be relocated outside the urban area perimeter of towns. Development of such sites and facilities will require a Traffic Impact Assessment and Environmental Impact Assessment for submission to the relevant Authority and approval of the proposals by that Authority.

7.5.5 Road Network

Policy Objectives: To upgrade and improve roads as well as construct new roads in line with the strategic road hierarchy in order to provide safe and efficient access to urban centres and sufficient capacity to meet the demand from population and employment growth.

TI 13: Road Development

Establish a comprehensive road development program and coordinate with the relevant authorities regarding implementation. The developments include road widening, road improvement, new road development, and intersection improvement.

TI 14: Road Safety Improvement

Implement road safety monitoring, black spot identification and improvement to ensure safety for road users and residents. Particularly in order to reduce accidents involving pedestrians and to ensure safety, more pedestrian facilities such as crosswalks, pelican crossings, and pedestrian bridges/underpasses should be provided.

7.5.6 Green Transport

Policy Objectives: To establish comprehensive measures and facilities to achieve green transport solutions, i.e. reduce fossil fuel consumption and pollution emission and promote healthy lifestyles for residents.

TI 15: Pedestrian Way and Bikeway

Provide and improve all facilities for pedestrian and provide dedicated bikeway networks in residential and recreational areas to encourage alternative means of short journey transport and promote healthy lifestyle. Moreover, Pedestrian and Cyclist networks should link to public transport stations to encourage utilization of a bicycle park and ride system. The networks should be easy to access, aesthetic, clean and safe.

TI 16: Access for All

Regulate and develop specific guidelines and standards for integrating universal design to transportation facilities such as pedestrian walkway and public transport terminuses and stations to be able to accommodate all users including the elderly, pregnant women, disabled people and children.

TI 17: Traffic Calming

Provide traffic calming measures, such as speed hump, roundabout, visual narrowing, Cul-de-sac, etc., to reduce vehicle speed in resident areas for enhancing safety and living quality.

TI 18: Walking Street

Introduce walking streets for shopping and community activities by prohibiting vehicle access for certain time period which could enhance community lifestyle and relationship. Also, some pedestrian streets in the centre of the city could be developed as “transit malls” to make an easy access to buses, taxis, or even light rails to realize a public transport user-friendly environment.

TI 19: Green Vehicles

Introduce the use of vehicles that have less environmental impact than standard vehicles, especially for buses and taxis.

TI 20: Water Transport

Develop a high quality public transport along the lagoon with services between Songon and Bingerville with intermediate stops and linkages to the Plateau and other planning new developments using high capacity ferries such as catamarans.

7.6 Social Infrastructure Policies

SECTOR GOAL - Enhance social stability and quality of life in the Greater Abidjan area, through integrated planning and improving access to Community Facilities for all the population.

7.6.1 Planning and Coordination of Community Facilities

Policy Objectives: The key objectives for the community facilities sector in respect of physical and spatial development are:

- Enhance social stability and quality of life by:
 - promoting equitable accessibility and availability to public facilities to all residents, and
 - enhancing coordination of strategic planning and distribution of community facilities
 - Promote co-location of community facilities, at identified centres or appropriate locations for each service, for convenience, better accessibility and effective use of resources.

Policy CF1: Distribution of Community Facilities

Community facilities will be located strategically in line with the spatial strategy to improve accessibility and choice.

Policy CF2: Co-location of Community Facilities

Community facilities will be collocated and integrated with private sector developments at identified mixed-use centres in line with the spatial strategy.

7.6.2 Support for Education Sector

Policy Objectives: achieve a modern education system by improving accessibility and availability in close proximity to pupil catchment area through a variety of travel modes to a range of school types.

Policy CF3: Balanced Distribution of Government and Private Schools

Sites for new schools and school complexes by school types/levels will be strategically accessible via a range of transport modes. Opportunities for community use of school facilities will be identified.

Policy CF4: Higher Education / Knowledge Centres

Cluster higher education and knowledge centres, including research centres, universities, colleges and vocational training institutions at locations which have good accessibility to a variety of transport modes.

7.6.3 Support for Health Sector

Policy Objectives: improve accessibility and availability to health services through locating facilities (hospitals and clinics, health centres) strategically in urban centres and rural communities.

Policy CF5: Enhance Accessibility to Health Service Network

Improve accessibility and availability to health service facilities through strategic distribution in line with the urban centres hierarchy.

7.6.4 Support for Religious Services

Policy Objectives: enhance accessibility and availability to religious facilities as a social foundation for the multi religious society of Côte d'Ivoire.

Policy CF6: Enhance Accessibility to Religious Facilities

Safeguard sites for places of worship and religious study.

Policy CF7: Preservation of Historic Places of Worship

Historic temples, churches, mosques will be conserved and protected in line with Policy BE14.

7.6.5 Support for Emergency Facilities

Policy Objectives: improve accessibility and availability for emergency services and support expansion of emergency services strategically to respond to increased and diversified demand.

Policy CF8: Integrated Emergency Response Service System

Provide an integrated emergency response service network, through identification of strategic sites and collocation of individual facilities, and comprehensive planning approach including coherent address system, and roads network.

7.6.6 Support for Government and Social Facilities

Policy Objectives: improve accessibility and availability to government and social facilities to:

- Provide an equitable level of accessibility to the government and social facilities to aid social cohesion and improve livability in each area.
- Cluster government and social facilities according to the spatial strategy for better identification, accessibility and convenience for users, and effective use of government resources.

Policy CF9: Co-location of Government service facilities

Promote co-location / joint location of government service facilities in line with the urban centres hierarchy and identify sites through Detailed Urban Plans.

7.7 Commerce Policies

SECTOR GOAL: Promote the Greater Abidjan area as a choice location for international organisations and business entities to establish their regional offices and headquarters, supported with urban centres that provide a variety of commercial services and facilities in convenient locations for the population.

7.7.1 Location of Commercial Development

Policy Objectives: To meet the growth of urban centres ensure that commercial uses are located near and convenient to existing neighbourhoods in appropriate areas from land use and zoning, service delivery, and transportation perspectives.

Policy CO 1: Town Centre Mixed Use Development

Focus commercial development in mixed use commercial town centres with easy access or in conjunction with and public transit nodes, such as TOD, to prevent the proliferation of strip commercial areas along streets and main roads and the development of commercial areas that do not relate well to surrounding land uses.

Policy CO 2: Commercial Zoned Areas

Locate commercial uses within commercially-zoned areas where urban services are available. No commercial uses shall be approved without resolution of all traffic, infrastructure, storm water management, and compatibility issues.

Policy CO 3: Equitable Commercial Distribution

Commercial development shall be distributed in accordance with the scale of the urban centre hierarchy to ensure adequate commercial facilities are available within easy access to residential areas.

Policy CO 4: Hotels and Service Apartments

Provision is to be made for the development of hotels and service apartments in the urban core of AAD, Plateau, Adjame, Petit Bassam, Port Bouet and urban centres with convenient access to the main business areas.

Policy CO 5: K Economy

K-Economy activities shall be permitted in residential premises to encourage the development of knowledge base of the nation.

Policy CO 6: Business Parks

Establish high quality Business Parks that will complement and add value to existing and proposed Industrial Clusters.

7.7.2 Establish New Zoning Districts

Policy Objectives: Establish and utilize new zoning districts that better reflect uses and allow greater specificity in guiding commercial, office and mixed use development.

Policy CO 7: Transit Oriented Development Centres

Develop high quality mixed use, mixed density centres as TOD's based on the public transit system to achieve balanced growth and patterns of movement.

Policy CO 8: Ebrie Lagoon Waterfront

Develop key ferry station locations within urban areas for mixed use development that supports shopping, tourist and entertainment centres with mixed retail, hotel and office development.

Policy CO 9: Logistics Centres

To support the growth of the industrial sector logistic centres should be established in close proximity to the Y4 Ring Road interchanges and railway lines with direct access from major arterial roads. They should include facilities for bulk breaking and distribution. Permission to develop will require approval to both a Transport Impact Assessment and an Environmental Impact Assessment.

7.7.3 Enhanced Role of Town Centres

Policy Objectives: The vital and vibrant town centre area is important for the continued growth of urban centres.

Policy CO 10: Town Centre Residential

Encourage mixed-use commercial, new residential and community facility development in town centres to provide high levels of occupancy and activity.

Policy CO 11: Venue for Cultural Events

Provide open space plazas and cultural centres in town centre as places for events to increase the cultural, recreational and economic vitality of the town.

Policy CO 12: Markets

Private sector commercial development within town centre is to incorporate petty traders' premises for food courts, covered and open air produce markets.

Policy CO 13: Leisure and Entertainment Centre

Enhance the town centre as the premier shopping and entertainment centre within urban centres.

7.8 Industry Policies

SECTOR GOAL: Develop and support existing economically viable industries, and provide for the development of clean, food processing, high technology and K-Economy industries that will become major employment centres to provide a stable local economic base and attract foreign investment for future growth.

7.8.1 Location of Industrial Development

Policy Objectives: ensure that industrial uses are located in areas that are appropriate from a land use and zoning, service delivery, and transportation perspective.

Policy ID 1: Urban Industrial Cluster Centres

Zone for the establishment of industrial clusters that will allow for a range of new clean and incubator industries and small business enterprises to complement and increase the capability of existing industrial and K-Economy facilities to attract foreign investment.

Policy ID 2: Removal of Bad Neighbour Uses

All manufacturing industrial and industrial machinery storage or maintenance premises within residential areas, close to schools and in town centres are to be progressively removed the land rehabilitated and rezoned for appropriate uses.

Policy ID 3: Rejuvenation of Older Industrial Areas

Within the Petit Bassam and Port Bouet industrial areas promote the upgrading of existing premises to accommodate SME's and new clean and service related industries to complement the opportunities arising from the expansion of the Port and the provision of upgraded freight and public rail facilities.

Policy ID 4: Agricultural Industry Nodes

Zone to promote the location of food processing plants to develop and expand local industry and employment opportunities close to urban centres of Alepe, Azaguie, Bingerville, Bonoua, Dabou, and Jacquerville.

7.8.2 Provision for Industrial Land

Policy Objectives: to reserve land for industrial development expansion that is adequately utility serviced and integrated with public transportation networks.

Policy ID 5: Expansion of Industrial Cluster Centres

Provide land for future industrial development, and complementary uses such as business and logistics parks in the vicinity of existing zoned industrial areas.

Policy ID 6: Small Clean Industry Sites

Provide land adjacent or close to the Y4 Ring Road interchanges for clean and light service industry development, warehousing and logistics. Environmental buffers should be provided where such sites are adjacent to residential areas, schools and healthcare facilities.

7.8.3 Advanced Technology Cluster

Policy Objectives: support the longer term establishment of an Advanced Technology Cluster for Cote d'Ivoire within the Greater Abidjan area.

Policy ID 7: Advanced Technology

Preference for new industrial development within urban areas will be given to industries that support the promotion of Cote d'Ivoire a 'Knowledge Hub' through the clustering and co-location advantages of new and emerging high and bio technology research, development, tech transfer and manufacturing enterprises arising from association with the existing Universities in Abidjan.

Policy ID 8: Agriculture

Protect agricultural lands and encourage the development of sites for new food production technologies in rural areas in order to support rural development and maintain urban and rural equity.

7.9 Urban Design and Amenity Policies

SECTOR GOAL: Enhance the living, working and recreation environment through the implementation of design standards to create attractive streetscapes, public spaces and architecture and to foster creation of strong neighbourhoods and attractive commercial and industrial areas.

7.9.1 Comprehensive Residential Design

Policy Objectives: Implement design standards that provide opportunities for mixed residential uses particularly locations close to transit, through the use of high-quality building materials, and incorporate public spaces and appropriate transitions with adjacent uses.

Policy DA 1: Mixed Use Neighbourhoods

Encourage the development of new and redeveloped neighbourhoods that foster social interaction and community building through the integration of residential, recreational, and commercial uses.

Policy DA 2: Interconnected Pedestrian and Cycleway Routes

Design for a network of sidewalks and bicycle paths that provide interior circulation, as well as connections to nearby schools, shops, or other activity centres.

Policy DA 3: Variety in Residential Development

Utilize the zoning to ensure that regulations allow a variety of housing types, various residential densities, and where appropriate, neighbourhood-oriented office, service and retail land uses.

7.9.2 Traditional Neighbourhood Character

Policy Objectives: maintain traditional neighbourhood character in existing neighbourhoods and ensure that infill and redevelopment are guided by design standards that reflect their character.

Policy DA 4: Infill Development

Guide infill development in existing neighbourhoods to ensure that new and renovated buildings respect the established characteristics of the surrounding neighbourhood in terms of scale, massing, materials, and orientation to the street.

Policy DA 5: Pedestrian Friendly Streets

New or reconstructed streets in older town centres and neighbourhoods should be upgraded to provide pedestrian and handicapped friendly pavements and crossings for all users and planted with street trees to provide shade, amelioration of the built environment and aesthetic quality to town centres and neighbourhoods.

Policy DA 6: Corner Buildings

Corner buildings should be architecturally designed to contribute a focus and rhythm to the neighbourhood visual identity. Such buildings should be designed to include ground level retail and small scale community facilities where appropriate. Utilize the zoning to ensure that regulations allow a variety of housing types, various residential densities, and where appropriate, neighbourhood-oriented office, service and retail land uses.

Policy DA 7: Building Material

Building materials should in the first instance be in character and harmony with the existing neighbourhood vernacular and also consider sustainable and green building technologies.

7.9.3 Strengthen Urban Areas Identity

Policy Objectives: strengthen the identity and sense of place of in existing urban areas, including its variety of neighbourhood characteristics and encouraging a mix of residential and neighbourhood commercial development in new development areas.

Policy DA 8: Vibrant Town Environment

Create town environments which are rich in its diversity of both built and natural forms and spaces and in the range of inspirational, visual and sensual experiences.

Policy DA 9: Heritage Districts

Prepare a comprehensive heritage preservation program which establishes heritage areas in towns and the design review for any changes or alterations to properties which have a heritage value.

Policy DA 10: Design Variety

New development should incorporate design elements that are reflective of their historical and traditional character whilst promoting a rich blend of traditional and modern.

Policy DA 11: Streetscape

The visual experience of the streetscape character and sequence of orientating views shall be enhanced along the major pedestrian and road movement corridors in particular those that focus on the Town Centre and public transit nodes.

Policy DA 12: Visual Definition

Measures shall be implemented to improve the visual definition, continuity and streetscape character of the major road network, to provide greater coherence and legibility within the urban areas.

Policy DA 13: Gateways

Establish special entry or gateway features at key entrances to the main towns to create a sense of arrival and identity.

Policy DA 14: Architectural Design

New and redevelopment shall be of a high standard of architectural design appropriate to the Town's regional tropical setting and sympathetic to the built and natural context of its immediate neighbours and locality.

Policy DA 15: Building Heights

Building heights shall be controlled to ensure the visual primacy of town centre areas, the protection of special character areas and the accenting of entry gateways and activity nodes.

Policy DA 16: Landmarks

Promote the development of major landmark buildings or complexes at key locations such as town centres and gateways to urban areas.

Policy DA 17: View Corridors

Important views of urban centres skyline and landmarks, including public transport buildings, visible from within the built up areas, public open spaces and road corridors leading to urban centres shall be created, enhanced and protected from intrusion by buildings, advertising boards and any other structures.

7.9.4 Diverse Development Pattern

Policy objectives: Support mixed use industrial, commercial and business development to encourage proximity and clustering of complementary uses, create new employment and business centres, and offer opportunities for pedestrian and transit travel to reduce vehicle travel.

Policy DA 18: Industrial Areas and Business Parks

Encourage development of industrial areas and business parks areas designed with a centrally located amenity centre consisting of shopping space, office and work space, an educational facility, and recreational uses in an integrated multi-functional approach.

7.9.5 Commercial and Industrial Development Design Standards

Policy Objectives: Implement, maintain and update the design standards created to achieve attractive commercial and industrial districts including transportation corridors with cohesive architectural treatment, landscaping, and appropriate transitions to adjacent uses.

Policy DA 19: Transition Areas

Use design guidelines to provide appropriate transitions and where necessary buffer zones between different types of land uses in order to avoid adverse impacts on adjoining properties.

Policy DA 20: Advertising Signage

Explore means of reducing the number of advertising signs within Town limits, and complete removal in any identified Heritage Areas.

Policy DA 21: Industrial Uses

Approved uses will be required to meet government regulations governing landscape, architectural style, noise, odour, glare, exterior lighting, vibration, smoke, dust, fumes or gases, storage of material, hazards, water supply and waste.

Policy DA 22: Design of Infrastructure

Urban design considerations must be taken into account in the planning, design and implementation of transportation and utility service systems and structures, including bridges and pylons.

7.10 Open Space and Landscape Policies

SECTOR GOAL: Create distinctive identities and images for urban centres as Tropical Gardens that are sensitive to their natural site and provide a healthy outdoor environment throughout the urban area, whilst promoting and maintaining adequate parks, open space and recreational and outdoor sports facilities for the future population.

7.10.1 Development of Parks / Recreation and Open Space System

Policy Objectives: develop a hierarchy of public urban parks and open spaces within a Large Green Network including private green open space - that will provide a variety of recreational opportunities and supporting facilities for all citizens, taking account of the needs of different age groups including those with disabilities.

Policy OSL 1: Open Space Hierarchy

Establish standards of provision and facility guidelines for an open space hierarchy that complements the social infrastructure provision based on population and communities. The hierarchy to include, for example:

Regional Parks (>10 ha) including designated forest areas and wetlands.

Central Urban Parks (8-10 ha) and other centralized outdoor recreational facilities according to available natural amenity precipitants in each premier urban centre, to serve 500,000 population.

Town Parks (-8 ha) within each town centre of approximately 200,000 population catchment.

Community Parks (2-4ha) at 5 minutes walking distance in residential and mixed development zones.

Mini Parks 0.2-1ha) at 2.5 minutes walking distance from all dwellings in new housing developments as well as in existing residential areas.

Policy OSL 2: Recreation Facilities

Provide a variety of recreation facilities, sports stadia and pitches, performance amphitheatres, play grounds, fitness trails and equipment, bicycle routes, skate board and extreme sports parks, grassed areas, etc., to encourage a wide range of recreation opportunities and the healthy lifestyle of all citizens.

Policy OSL 3: Green-Blue Open Space System

Incorporate the natural landscape of river valleys, wetlands and flood protection system into a comprehensive Large Green Network incorporating park and open space including dry-weather parks and Linear Parks, and encourage development and/or redevelopment of the river, lagoons and ocean frontages for recreation and amenity as connecting landscape elements in the Large Green Network.

Policy OSL 4: Urban Landscape System

Provide adequate space for shade trees along all streets and improve the plant species and aesthetic quality of street and urban plazas landscape together with pedestrian and bicycle friendly design as part of the Large Green Network.

7.10.2 Standards of Open Space and Recreation Facility Provision

Policy Objectives: update the existing standards of open space and recreation facility provision to match the rising standard of living expectations of the population to encourage a healthy lifestyle.

Policy OSL 5: New Open Space and Recreation Facility Standards

Review the existing provision standards as and set the minimum open space provision at a comparable level to other emerging advanced economy nations within urban areas.

Policy OSL 6: Private Open Space Provision

All new private development to provide landscape to street frontage and in the case of residential development landscaped open space at a level of not less than 2 m² per person.

Policy OSL 7: Public Open Space Provision

Public Open Space provision within urban areas to be upgraded throughout the Greater Abidjan area at a level of not less than 8 m² per person (0.8 ha per 1000 population). Open space levels outside urban areas should be considered as a bonus.

Policy OSL 8: Recreation Facility Provision

Recreation Facility provision is to be upgraded throughout the Greater Abidjan Area to fulfil and where possible exceed the existing provision standards.

7.10.3 Park and Open Space Dedication and Maintenance

Policy Objectives: preserve and value the open character of the community, whether urban, suburban, or rural, through maintenance of open spaces to ensure the provision of valuable natural and scenic resources for present and future generations.

Policy OSL 9: Retention of Landscape Assets

Ensure the retention and enhancement of major treed areas, designated forest, plantations, water course, lagoons, wetlands, and hill ridges as visual backdrops, orientating elements and landscape amenity.

Policy OSL 10: Existing Trees

Retain and maintain individual mature champion trees found in all areas and ensure that the character of designated areas which have a preponderance of mature trees is preserved.

Policy OSL 11: Waterways

Designate river corridors, ponds, lagoons and wetlands for the implementation of measures to improve their amenity value (including dry weather parks along river valleys) and implement guidelines for developments within or abutting the river and Lagoon waterfront corridors.

7.10.4 Recreation / Open Space Colocation

Policy Objectives: promote cooperation among the relevant Government organizations in the development of core parks, recreational facilities, and open spaces to enable shared usage by the public.

Policy OSL 12: Shared Education Facilities

Coordinate with the Education Department to encourage the availability of schools' recreational facilities to neighbourhood residents when appropriate.

Policy OSL 13: Colocation

Ensure development of core parks in proximity to residential areas and in areas with high colocation recreation potential (for example; retail areas, public transit nodes, offices and schools).

7.10.5 Landscape Design

Policy Objectives: provide high quality landscape design through plant selection, furniture, hard and soft elements, water features, shade structure and the use of public art.

Policy OSL 14: Pocket Parks and Plazas

Develop landscaped pocket parks and plazas in urban centres to provide green breathing spaces and venues for informal public performance and cultural events.

Policy OSL 15: Design Guidelines

Compile design guidelines for hard and soft landscape elements which cover the selection of suitable plant species, sustainable construction material, signage and lighting, landscape furniture, etc.

Policy OSL 16: Pedestrian Environment

Designate and implement pedestrian friendly street networks and green pedestrian networks within urban centres, major activity nodes and areas surrounding transit nodes which also cater for the needs of the aged and the handicapped.

7.11 Utility Policies

The scope of works for the SDUGA Study does not require the preparation of planning proposals for future utility infrastructure provision to 2030. To arrive at the land use framework for Greater Abidjan the current utility master plans, where available from the relevant government departments have been incorporated into the land use framework plan as they stand. In addition, and to ensure a comprehensive and integrated sector approach to the future planned development of Greater Abidjan, the following are a set of advisory land use policies that have been prepared in draft format. These are to guide the MCLAU in the next stages of the plan development for Greater Abidjan into the legal Schema Director (Master Plan).

SECTOR GOAL: create the conditions necessary for high quality living, working and business environment through the provision of efficient infrastructure, utilities and services that contribute through the use of renewable energy and resources to reduce the carbon footprint of Cote d'Ivoire.

7.11.1 Comprehensive Utility Infrastructure

Policy Objectives: provide comprehensive utility provision to serve the demands of the growing population and met the capacity required for sustainable economic growth.

Policy UT 1:

Enhance the provision of infrastructure, utilities and waste disposal services by means of a coordinated strategy involving all appropriate authorities and agencies to ensure a reliable service and sufficient capacity to meet the needs of the people.

Policy UT 2:

Local Authorities in coordination with the appropriate authorities and agencies, to ensure that infrastructure, utilities and waste disposal services development plans complement the Greater Abidjan area planned requirements.

7.11.2 Storm Water Management

Policy Objectives: adopt measures to mitigate the flooding of developed areas through adequate bunds and retention areas; and prevent the contamination of agricultural lands and natural wetland habitats by water borne pollutants emanating from roads, construction sites, storage and developed areas.

Policy UT 3:

A coordinated storm water management strategy is to be formulated for the Greater Abidjan area between to identify and implement measures to mitigate floods.

Policy UT 4:

Agricultural land, wetland areas, river valleys shall be designated as flood retention areas where new development except for retention / enhancement of existing or recreation use is prohibited.

Policy UT 5:

Proposals for development (including roads and underground utilities) and flood prevention measures (including bunds) adjacent or within areas designated as flood retention basins are required to submit a Drainage Impact Study for approval prior to approval of any development permit.

7.11.3 ITC (Information Communication Technology)

Policy Objectives: Policy to create a communication environment that allows optimal opportunities for all residents, businesses and industries within Greater Abidjan to participate fully in the interdependent global information economy.

Policy UT 6:

In coordination with the relevant agencies, develop an integrated communication and information technology infrastructure for the Greater Abidjan to promote the development of Advanced Technology industries.

Policy UT 7:

Provide a utility reserve for future Fibre Optic Corridors alongside the proposed highway improvements – Yopougon to Dabou, Abobo to Alepe, Port Bouet to Bonoua, and Anyama to Bouley Island - as the main trunks to serve and link new development areas locally and nationally.

7.11.4 Power and Energy

Policy Objectives: provide sustainable energy facilities and renewable energy where possible, that can support the expansion of urban and rural areas and economic growth.

Policy UT 8:

New Sewage Treatment Plants (STP) and Solid Waste transfer and disposal facilities must include for cogeneration.

Policy UT 9:

Electricity utilities are to provide a highly reliable electricity supply, and an efficient service in the service areas, including low losses in their distribution networks, as per the guidelines and regulations of the Ministère du Pétrole et Energie, CI-Energie.

Policy UT 10:

New energy technologies are to be encouraged including biomass generating facilities, solar energy, wind turbines and solar photovoltaic systems. Opportunities for private development energy credits by transferring surplus generation back into the main grid should also be encouraged.

7.11.5 Water

Policy Objectives: protect catchments, ground water pumping stations, water resources and tanks to improve water quality and ensure sufficient supply of water for domestic, agricultural, industrial activities and where feasible power generation.

Policy UT 11:

Prohibit all discharge of domestic and industrial waste into river and watercourses which form the catchment of the Ebrie, Adjin, Potou Lagoons, as well as those which may form the catchment to the Comoé River, within Greater Abidjan.

Policy UT 12:

Undertake a comprehensive qualitative and quantitative ground water survey across the entire Greater Abidjan area to ascertain the status of the existing aquifer with the intention of progressively eliminating ground water extraction in urban areas except for agricultural purposes.

Policy UT 13:

Encourage measures to reduce the level of water usage for irrigation through the use of water efficiency measures including rainwater harvesting. Ground water from wells in urban areas is only to be used for agricultural purpose due to current contamination.

Policy UT 14:

In coordination with the installation of Sewage Treatment Plant provision to the urban areas of Greater Abidjan facilities will be provided to enable the production of Treated Sewage Effluent (TSE) for use as drip feed irrigation for all landscaped public developments including parks, open spaces, government buildings (including schools and hospitals), and road landscaping.

Policy UT 15:

Irrigation of private development landscaped areas shall be by metered potable water when such service is available.

Policy UT 16:

Require all new development to implement measures to reduce water demand by installing rainwater collection equipment and to recycle wastewater for non-drinking purposes.

7.11.6 Waste Water Disposal

Policy Objectives: connect the urban areas of AAD Greater Abidjan to a centralized sewage system that enables water recycling and cogeneration, and will eliminate waste contamination of the ground water aquifer and discharge into river and Lagoon network.

Policy UT 17:

All existing development and future new development are to be progressively connected to a centralized sewerage system.

Policy UT 18:

Full waste water treatment is to be provided in the urban areas of Greater Abidjan on land made available by Government through the construction of Wastewater Treatment Plants with facilities for cogeneration, potable water and TSE recycling.

Policy UT 19:

All industrial and manufacturing sites shall be equipped to treat hazardous industrial wastes and their effluent shall meet standards set by the MINESUDD.

7.11.7 Solid Waste Management

Policy Objectives: improve and enhance the quality of life and to build up a supportive environment for local socio economic trends within Greater Abidjan through integrated solid waste management fostering the participation of civil society and all other relevant stakeholders.

Policy UT 20:

Solid Waste management in greater Abidjan area will be governed by the policy directives as set out in the ANASUR.

Policy UT 21:

Selection of sites for waste transfer station, landfill sites, incinerator plants and their design, construction and operation must comply with the entire environment, economic and physical factors specified by the statutory guidance and rules and regulations.

Policy UT 22:

Establishment of new waste transfer stations, landfill sites and incinerator plants within Greater Abidjan should be limited to accept waste from one side or the other of the Ebrie Lagoon, not both, to avoid the transportation of waste material across the lagoon through the centre of Abidjan City i.e., Petit Bassam, Yopougon, Plateau, and Cocody.

Policy UT 23:

Incineration or any “Waste to Energy” project must prevent the negative effects on the environment particularly polluting air, soil, surface water and groundwater, and the resulting risks to public health.

Policy UT 24:

Ensure that sustainable disposal of solid waste and land filling is limited to the inert waste and other waste that is not suitable either for recycling or for biological processing.

Policy UT 25:

Hazardous and Radioactive waste disposal or storage is not permitted within the Greater Abidjan area.

Policy UT 26:

The operation of Landfills, Waste Transfer Stations, Materials Recovery Facilities, Incineration Plants and Composting Facilities shall meet all relevant standards and prevent or mitigate the negative effects on the environment.

Policy UT 27:

The dumping of solid waste on public lands, which have not been designated as a sanitary land fill site, shall be prohibited. Such uncontrolled practices must be stopped with immediate effect and such sites should be rehabilitated as per the guidelines.

Policy UT 28:

The strategy of “reduce, recycle and reuse” of waste products shall be adopted throughout Greater Abidjan. This shall be facilitated by the provision of recycling collection points within urban and rural areas.

Policy UT 29:

Encourage the public/private partnerships where appropriate to manage solid waste to ensure cooperate social responsibility.

Policy UT 30:

Feasibility studies, TIA, EIA shall be carried out to determine the suitability of sites beyond the existing or future proposed expansion urban areas for use as Sanitary landfills and potential for Private Investment.

Policy UT 31:

The time schedule for waste collection and transportation should be imposed to coordinate all waste transfer stations in urban and rural areas to avoid the traffic congestion and enable smooth functioning of waste collection.

Policy UT 32:

E-waste generated in Greater Abidjan shall be handled environment friendly manner.

7.12 Tourism Policies

SECTOR GOAL: To contribute towards the expansion of the tourism product of Cote d’Ivoire in accordance with the vision of the Ministry of Tourism to make Côte d’Ivoire one of the top five tourist destinations in Africa by 2030, and provide international and domestic tourism facilities on “Responsible Tourism Principles”.

7.12.1 Tourism Development

Policy Objectives: Capitalize upon the natural waterway and rural landscapes proximity to the Felix Houphouët- Boigny International Airport and improved accessibility within the region to provide tourist attractions and facilities that will promote growth in international and domestic tourists.

Policy TO 1: Resort Tourism

Support the development of a range of resort style hotels for international and local tourists along the Atlantic Ocean and Ebrie Lagoon waterfronts whose design and layout reflect and harmonizes with the surrounding natural landscape setting.

Policy TO 2: Conservation of Grand Bassam UNESCO World Heritage Site

Implement measures to protect, preserve and enhance the “France” district of Grand Bassam as a sustainable international tourist destination. Including; renovation of historical buildings, upgrading of streets and gardens landscapes, sewage treatment, provision of parking areas, and the protection of the beach frontage and ocean facing buildings from rising water levels and stormwater wave erosion.

Policy TO 3: Eco Tourism

To provide eco-tourist facilities based on nature, community and agriculture such as soft adventure, Health treatment centres, Agro tourism, themed analogue forests, water parks and waterfront tourist venues in wetland, river, ocean and lagoon side locations.

Policy TO 4: Cultural and Spiritual Tourism

Identify sites and buildings of heritage and spiritual significance for the promotion of traditional culture, arts and crafts to be developed as tourist attractions with convenient parking. Develop tourist circuits to and through Greater Abidjan.

Policy TO 5: Ebrie Lagoon Water Front

Within urban areas develop the Ebrie Lagoon and its river frontage as a major leisure, culture and entertainment stop off for tourists as well as local residents.

Policy TO 6: MICE (International & Domestic)

Provide venues for MICE (Meetings, Incentives, Conventions and Exhibitions) in urban centres and business parks for local and international corporate events.

Policy TO 7: Theme Parks

Encourage the development of theme / entertainment parks in areas with good public transport access. Establish Waterparks to attract both local and international tourist streams.

Policy TO 8: Hotel Accommodation

Provide for a range of mid to high rise hotel accommodation in urban centres, with an emphasis on 4 and 5 Star rating within the Plateau area, along waterfronts, and within business parks with facilities to hold large scale meetings, conventions, cultural activities, weddings and exhibitions.

Policy TO 9: Boutique Hotels, Home stays and Motels

Encourage Small Medium Enterprises (SME) in tourism through Boutique Hotels, Home stays, Guest houses. These should be provided in the areas of natural beauty and undeveloped landscapes. Establish Motels suitable locations at the edge of urban centres along the main inter-province roads. Availability of parking facilities and security are the prime requirement.

Policy TO 10: Medical Tourism

Promote the development of specialist hospitals as low cost surgical and advanced treatments, medical rehabilitation and cosmetic service alternatives for foreign visitors and patients.

7.12.2 Domestic Tourism Facilities

Policy Objectives: widen the range of leisure, cultural and entertainment attractions close to Abidjan for Cote d'Ivoire citizens to meet the demand for a more sophisticated domestic product as local disposable income levels grow; and also cater to the demand for low cost accommodation facilities for the public who come to the Greater Abidjan area.

Policy TO 11: Low Cost Accommodation

Encourage local tourism SME in Greater Abidjan through the provision of low cost accommodation, such as Hotels, Rooms, and Dormitories etc., for Cote D'Ivoire residents, who travel into Greater Abidjan for "short stay"; for Business, Study, Health, and tourism.

Policy TO 12: Sporting Venues and supporting hospitality facilities

Develop stadiums and other sporting venues that can support national and international sporting events whilst serving the immediate local population.

7.12.3 Tourism Support Facilities

Policy Objectives: Upgrade and enhance standard of the tourism industry to meet international and rising local expectation of service and the range of facilities that are required to attract the higher disposable income level of tourists.

Policy TO 13: Tourism Industry Centre

In conjunction with Education and Knowledge centres promote the establishment of a major Tourism Industry Centre for hotel, airline, catering and outdoor .These centres to provide training programmes and support information for tourist front liners in hospitality, management, adventure and eco-tourism, health and safety, language skills, travel agency, marketing and promotion.

7.13 Natural Environment Policies

SECTOR GOAL: protect and enhance the natural environment as a factor to consist human life, a source for economic activities, and a source of spiritual and aesthetic harmony that provides relief from urban living; is free from the major forms of pollution and conserves Cote d'Ivoire's biodiversity.

NOTE: The 11 Environmental Polices listed below should be read in concurrence with the Policies 8 (Urban Design & Amenity Policy), 9 (Open Space & Landscape Policy) 10 (Tourism Policy), 12 (Utility Policies) & 13 (Sustainable Development Policies) included in the Greater Abidjan Urban Master (Framework) Plan.

7.13.1 Protection of Environmentally Sensitive Areas

Policy Objectives: protect and enhance wetlands, riverine areas, forests and natural hill areas as areas which various kinds of organisms inhabit and breed, and in which the natural landscape is the dominant characteristic.

Policy EN 1: Wetlands

No development shall be undertaken in wetland areas which have functions of biodiversity, and are part of the flood prevention system.

Policy EN 2: Forest and Undisturbed Hill and Valley Areas

No development shall be undertaken in natural forest areas or on undisturbed land of natural vegetation, and restore of quality of natural environment.

Policy EN 3: Sustainable Development of Waterways

Rivers and lagoons offer the potential for recreation use, waterfront development and green transport which can add to the improvement of the quality of life for local residents. Development in these areas must be undertaken in accordance with internationally acceptable sustainable development criteria and standards, and subject to EIA verification of proposals, mitigation measures, management and monitoring programmes.

Policy EN 4: Development Control of Riverine Areas

In accordance with current regulations no building development shall be approved within 100m of the sea, or within 25m of rivers and lagoons. Proposals for the open space, access ways, structures and piers related to water transport shall be subject to EIA including hydrodynamic modelling impact.

7.13.2 Restoration of Damaged Natural Environment

Policy Objectives: rehabilitate damaged natural environment as ecologically viable natural habitats to improve the natural environment and add to biodiversity of native flora and fauna.

Policy EN 5: Reinstatement of Natural Habitats

Rehabilitate brownfield sites, areas subject to land fill, extraction quarries and unproductive rubber and palm plantations to uses which have the majority of land area given to the reinstatement of natural ecologically sustainable habitats.

Policy EN 6: Removal of Polluting Sources

Existing developments and storage sites which result in pollution of the ground water system, destruction of the natural environment, or pose a health hazard to the biosphere within rural areas shall be removed.

Policy EN 7: Buffer Zones

Landscaped buffer zones utilizing native plant species and incorporating wildlife habitats that are linked to existing natural areas by means of 'ecological corridors' or 'stepping stones' are to be provided between pollution emitting developments and receivers such as residential areas, schools, healthcare facilities, recreation and sports venues.

7.13.3 Avoidance of Natural Disasters

Policy Objectives: ensure that measures are in place to avoid or mitigate potential natural disasters arising from new development.

Policy EN 8: Enhancement of Flood Defences

Utilize green technologies and materials to maintain flood defence systems and create wetland habitats that contribute to water management and quality.

Policy EN 9: Hillside Development

Development on hillside with slope that exceeds the rules and regulations set by Government allowable level is not permitted. All hill slope development proposals will be required to undertake a geo-technical study provide supporting evidence of mitigation geotechnical and storm water drainage engineering measures to protect adjacent areas from slope failure and storm water discharge.

Policy EN 10: Elimination of Sewage Discharge

Controls, infrastructure, sewage treatment plants (STP), and/or on site STP packages shall be required for all new developments. The goal of this policy is to ensure that there shall be no further discharge of untreated domestic or industrial wastewater into the rivers and drainage system.

Policy EN 11: Improve the Quality of Natural Water Sources

Studies shall be initiated to investigate the feasibility of new approaches to increase oxygenation, aeration and water quality of the rivers and lagoons to support aquatic life. This will involve review of the entire water catchment and ground water system that extends beyond the Greater Abidjan area.

Policy EN 12: Elimination of Polluting Sources

Undertake an ‘Integrated Strategic Environmental Assessment’ for Greater Abidjan to identify measures for Disaster Management. This should include land use planning and site development measures to: restore lands that have been subject to the storage or disposal of hazard waste; mitigate or eliminate existing noise, air and ground pollutants; and require EIA measures and monitoring for all new development including industrial, mining, transport, utilities, and land and height extensive developments.

Policy EN 13: Protection of Coastal Areas

Maintain the ecological ‘services’ provided by the lagoons and ocean coast, including shoreline stability, carbon absorption and water purification. To preserve the natural & cultural heritage of coastal areas from development that destroys habitats, fauna, the innate tourist quality and assets, and contributes to coastal erosion.

7.14 Sustainable Development Policies

SECTOR GOAL: to achieve a sustainable way of life in Greater Abidjan by preserving and enriching Côte d’Ivoire’s physical and cultural identity and improving the environmental, economic, social, and cultural quality of life for its residents.

7.14.1 Comprehensive Credit Rating System

Policy Objectives: progressively introduce a sustainability credit rating system that will be mandatory for all development applications.

Policy SD 1:

Formulate and adopt a Green Rating System for the Built Environment, based on best international sustainability practice, for Cote d’Ivoire as the standards to be achieved by all new buildings in Greater Abidjan.

Policy SD 2:

Formulate sustainability goals, criteria and measures for a new Green Rating System for New Communities; to cover - living systems, liveable communities, water conservation and recycling, energy conservation and renewable energy, stewarding of material and waste. Achieving the minimum credit rating standard should be the prerequisite for development approval.

7.14.2 Optimise Use of Natural Resources

Policy Objectives: ensure that natural resources are used in an optimum manner for development, improvement of service delivery and to control future development.

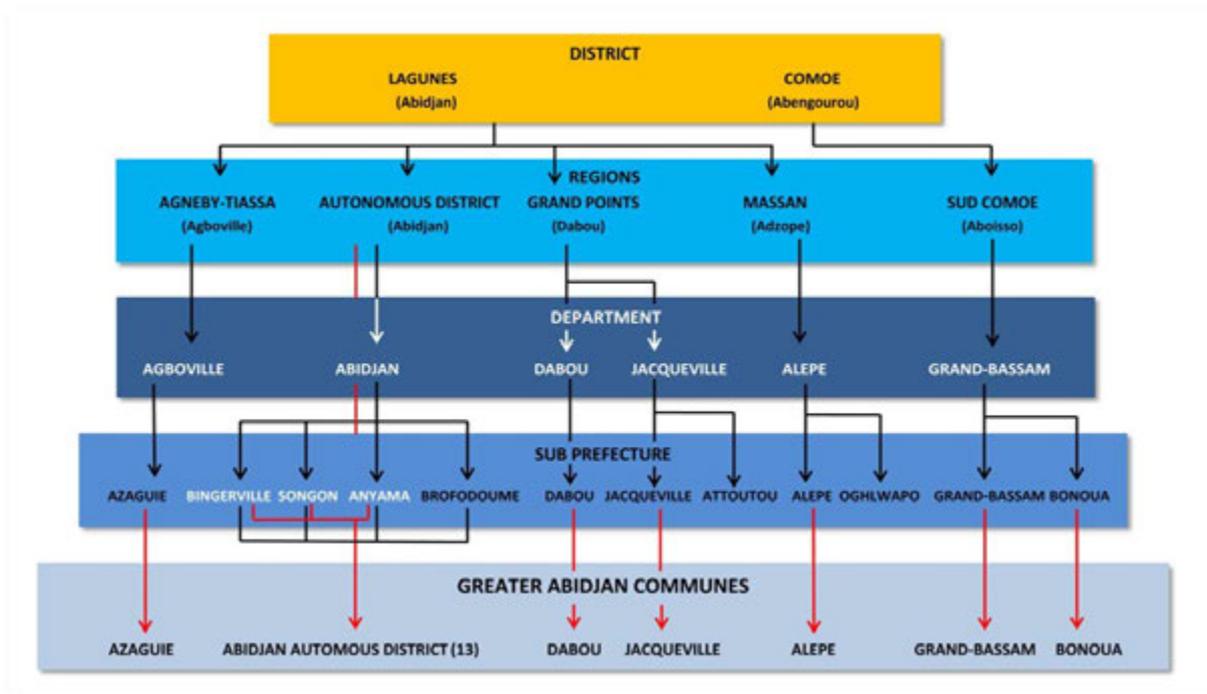
Policy SD 3:

Undertake a ‘Integrated Strategic Environmental Assessment’ for the Greater Abidjan area, to identify the environmentally sensitive areas in the area for conservation and demarcation of new developments in the future.

8.0 Implementation

8.1 Background

Government Agencies, ministries, regions and communes will play a key role in implementing policy actions (see Figure 8.1) that will require the need for effective coordination and focusing of the delivery effort. In order to implement the Greater Abidjan Urban Development Framework 2030 (Master Plan 2030) a number of key Government Actions are required. First, the high level approval and adoption of the Master Plan 2030, which is fundamental to the plan's status and credibility within the development planning process. Second, the revision of Detailed Urban Plans (PUD's) and their supporting regulations; which are necessary to direct sustainable growth and give physical expression to the plans. And third, an integrated planning governance structure is required to implement the Master Plan 2030 and carry forward the programme of plan-making and regulatory control updating for statutory approval.



Source: JICA Study Team

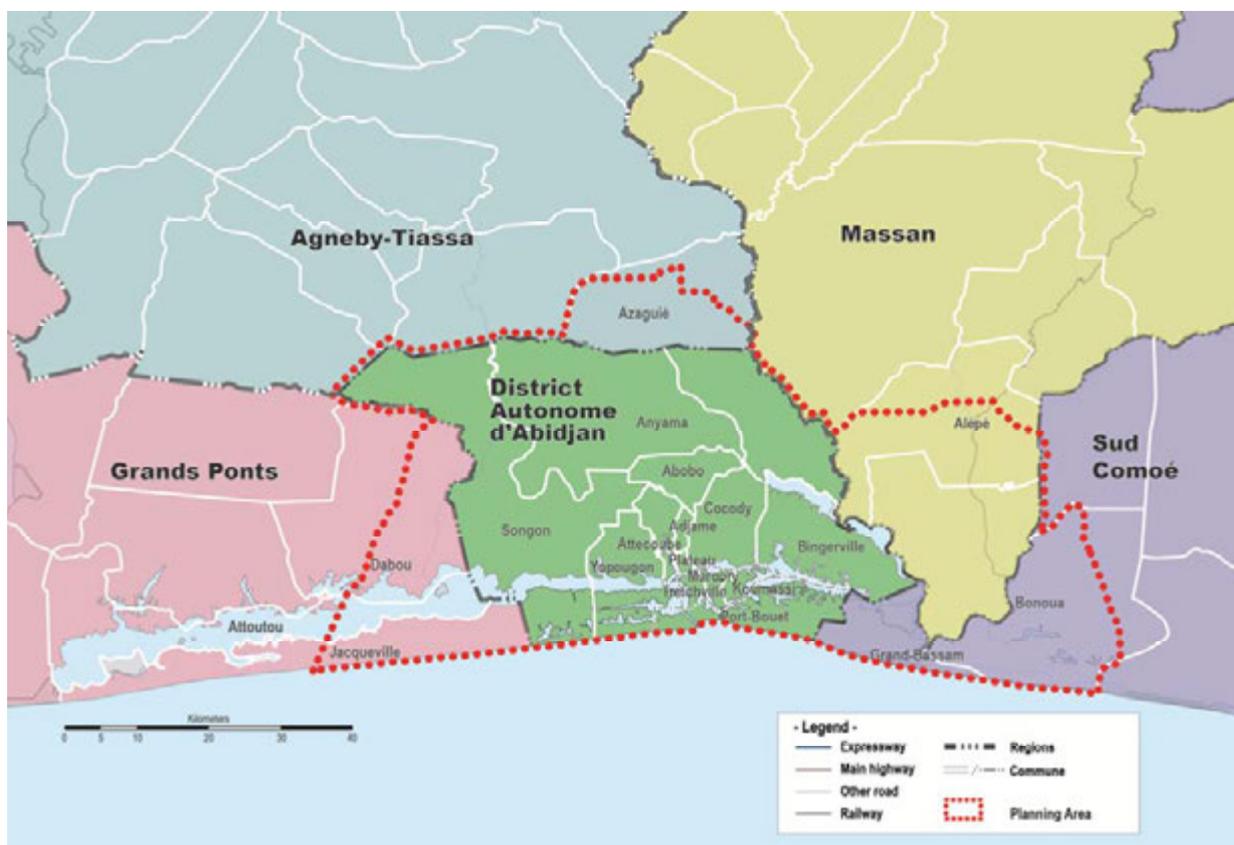
Figure 8.1 Greater Abidjan Governance Structure

This Chapter focuses on the third of these Government Actions the integrated governance structure to implement the Plans. The Law of Decentralizing Local Governments 2003 has widened the responsibility of 'plan making' to guide future land uses and development control. The Master Plan 2000 was formulated under the auspices of the Ministry of Construction (subsequently the MCLAU). Decentralisation has broadened this responsibility so that the MCLAU, Regions and Communes, in total 25 entities, are empowered to make development master plans, see Figure 8.1 above.

The Greater Abidjan area in itself is a notional boundary that encompasses a zone subject to varying levels of urbanization influenced by the Abidjan urban conurbation. This 'zone of influence' has been recognised in previous master plans for Abidjan and has progressively expanded since the 1960's. Taking the 'Place De La Republique' in Plateau as the centre of Abidjan, the current extent of the Greater Abidjan area, stretches from the centre some 52 kilometres to the west, 61 kilometres east, and 42 kilometres north. The Greater Abidjan Master Plan 2030 area, see Figure 8.2, includes one entire region, the Abidjan Autonomous District, which accounts for 54.6% of the total area (210,052ha); and parts of four other regions – Grand Ponts 11.5% (44,396ha), Agneby-Tiassa 5.5% (21,101ha), Massan 16.5% (63,285ha) and Sud Comoé 11.9% (45,769ha). Within this Greater Abidjan area there lies entirely or in part 19 communes.

The implementation structure will therefore need to incorporate the legal mandates of the relevant 'plan making' authorities as well as a coordination system that assigns equal responsibility to implement an integrated Master Plan. This will involve governance bodies, ministries and other government agencies responsible for project implementation. The future development of the city will require both the development of discrete projects, for public purpose to local communities, as well as those with a regional influence to stimulate economic growth.

Beyond 'plan making' the entity responsible for implementation must have direct access to government funds or donor funding to ensure timely and coordinated implementation of projects. The lack of funds and the uncoordinated nature of project programming between implementing agencies has been the crucial failure of previous Master Plans. This situation is dramatically illustrated by the fact, that many of the undeveloped projects from the Master Plan 2000 were identified in plans drawn up in the 1970's and 80's.



Source: JICA Study Team

Figure 8.2 Regional and Commune governance areas within Greater Abidjan

8.2 SDUGA Master Plan 2030 Status

The preparation of this Master Plan 2030 has been undertaken under the auspices of the Ministry of Construction, Sanitation and Urban Development (MCLAU); with account being taken of national policies directed towards sustainable development in the Cote d'Ivoire and Abidjan as well as other Ministries and Agencies' plans, proposals and policies. The Master Plan 2030 will provide the strategic policy context, as an advisory development framework, within which the more detailed statutory gazetted Scheme Directeur d'Urbanisme du Grand Abidjan and the detailed PUD and PUD will be prepared and implemented. These plans must be consistent with the Master Plan 2030 and associated regulations and guidelines.

In order to enable the successful implementation of the Master Plan and to establish a strong foundation for future sustainable planning and growth management, recommendations have been made for an integrated multi-sector development assessment process to enable improved compliance and enforcement.

The institutional framework for updating the Schema Directeur d'Urbanisme du Grand Abidjan 2000 and to cover the period to 2030 is organized to ensure the participation of all major stakeholders

throughout the entire process.²⁷ The institutional framework comprises: a governing body plus a management body. The latter to ensure effective implementation and a coherent master plan of Greater Abidjan.

1. Organizing Body for the Master Plan

Steering committee:

- The Office of the President of the Republic;
- The Office of the Prime Minister;
- The Relevant Ministries

Monitoring and Evaluation committee of the project (Joint Coordinating Committee (JCC)):

- The Office of JICA-RCI;
- The Relevant Ministries;
- The Autonomous District and the 19 Communes concerned.

Project Implementation Agency:

- The relevant Ministries ;
- Autonomous District;
- The JICA Study Team

2. Management Bodies for the Master Plan

- Urban Agency of Greater Abidjan; responsible for project supervision of the urban studies, i.e., urban detailed plans, review of legal frameworks, the planning of development programmes.
- Advisory Board; will consist of technical organizations and concerned ministries. They will validate projects proposed by the Urban Agency of Greater Abidjan.
- Implementation Agencies; will be under the supervision of the relevant Ministries and will be responsible for coordinating approved projects.

8.3 Urban Planning Implementation Process

The urban planning implementation process has two main components: statutory planning and development control. Figure 8.3, illustrates the statutory planning process.

²⁷ Presented by MCLAU at AA Seminar in Ghana, April 2013.



Source: JICA Study Team

Figure 8.3 Abidjan Statutory Planning Process

8.3.1 Statutory Planning

8.3.1.1 Urban Planning Law – Greater Abidjan Director Master Plan

Statutory Planning is governed by the requirements of the Urban Planning Law - LAW N° 62-253 OF JULY 31st, 1962. This applies to the formulation and approval of Urban Master Plans and Detailed Urban Plans which must be gazetted to have legal force. The Schema Directeur d'Urbanisme du Grand Abidjan 2000 (Master Plan 2000) is currently the only planning document to have such legal standing. This law empowers the MCLAU with the responsibility to:

- Determine the perimeters of the part of the national territory that are required to have a director master plan.
- Determine the perimeters of the parts of national territory that are required to have detailed urban plan.
- Formulate the director master plan to provide the general framework for the development on the part of the national territory considered. This plan is to set out the essential elements; it is a long-term forecast on the forms and stages of development and modernization of the territory.

- Complete, where necessary, the director master plan by drawing up a detailed urban plan on certain sectors or areas which specify the detail of urban organization and rules of land use.
- Formulate a detailed urban plan to a part of the territory not covered by a director master plan.

Approval of the Plans is required from the President of Cote d'Ivoire before it can be gazetted as a legal document.

The Master Plan 2000 was prepared under a "Centralized" administrative structure. The plan was formulated by MCLAU (then MCL) and BNETD who were not obliged to make consultations to local administrations. Under this centralized administration style, local governments had no power or responsibilities.

8.3.1.2 Status of Detailed Urban Plans within Greater Abidjan

Since the Master Plan 2000 four Detailed Urban Plans have been prepared. Currently three; Port Bouet, Bingerville, and Songon, have been presented to the President's Office for approval. They have not been gazetted. The fourth for Grand-Bassam has not been approved by MCLAU. No plans have been prepared by the local governments within the Greater Abidjan area.

8.3.1.3 Law of Decentralizing Local Governments (Collectivites Decentralisees)

This Law was put into force by Cabinet Decree in 2003, with implementation finalized in 2005. Under the simplified form, decentralized government would only have "Regions" and "Communes", with a caveat that "Districts" (e.g. Greater Abidjan) falling under Ministry of Interior control, as a part of Central Administration. Figure 8.2 above, identifies the Regional and Commune governments within the Greater Abidjan area who are empowered to make Master Plans and implement them under this law. The local government plans must be approved by the Council of Ministry's, which includes the MCLAU, prior to submission for gazetting plans.

Though the Law on Decentralization was adopted in 2003, there has been virtually no transfer or delegation to local governments. No budgetary transfer on human resources on the delegated activities, no land title transfer of publicly owned lands (Reserve foncier publique), no technical capacity transfer, and no budgetary allocation necessary for physical project implementation.

8.3.2 Development Control

The development process is illustrated in Figure 8.4.

Development Control



Source: JICA Study Team

Figure 8.4 Development Control Process

The SDUGA Study does not propose changes to the current development control procedure as it involves and requires approvals from the plan making levels of governance. This should ensure, through adequate staffing and oversight, that the broad planning strategies and policies proposed under the master plans are transferred down to what is actually built.

8.4 Planning Agencies

A number of agencies have been proposed or set up over recent years to streamline the implementation of urban planning proposals. The following examples summarise the main proposals for urban areas.

8.4.1 Capital City's Proposed Planning Agencies

The Government of Cote d'Ivoire has recognised the need to establish inter-ministerial agencies to plan and manage the sustainable growth of both the national and economic capitals of the country. This section reviews the information, basically drafts, of some of the ongoing items being discussed that has been made available to the JICA Study Team. The documents referred to below are primarily concerned with the institutional structure of the agency. Neither of the agencies has been set up by statutory decree. Therefore, in the terms of this report this proposal can only be considered as an example of the issues to be considered for an implementation strategy for the Master Plan 2030.

8.4.2 Ministry of Construction, Sanitation and Urban Development

The government of Abidjan has explored the establishment of an Abidjan Urban Development Agency. This body was envisioned to incorporate the relevant government agencies and stakeholders to plan and manage in an integrated manner the future growth of the Greater Abidjan area. In April 2013 at an International Seminar in Accra, Ghana, the following points were presented. It is understood that at this time the objectives of setting up the Abidjan Urban Development agency have not been met. Due to the sensitive nature of the ongoing discussions the JICA Study Team has not been given access to further information, although discussions have been held with MCLAU and AAD.

Final Declaration of the Accra Conference, April 2013.

In terms of establishing a comprehensive urban master plan for metropolitan areas the conference declaration stressed the importance of:

- promoting private investment in economic sectors,
- revitalizing industrial areas,
- developing district capitals and other key towns, and
- realizing infrastructure and services projects.

To implement the plan for sustainable city growth it must be coordinated through national, regional and local levels.

8.4.3 The Yamoussoukro Example - Urban Planning and Development Agency

A proposal for an urban management strategy for Yamoussoukro²⁸ sets out an institutional framework for the “overall harmonious urban development of Yamoussoukro by coordinating all the activities relating to the design, plan and the development of the entire Yamoussoukro.” The proposal for Yamoussoukro sets out the draft for a comprehensive agency whose remit includes conducting studies, investigation and research related to the planning and development of the city of Yamoussoukro. The institutional structure references the wide range of stakeholders and agencies involved in the establishment of an Urban Planning and Development Agency. For ease of reference the proposals structure is set out below in Figure 8.5.

²⁸ Proposal for the creation of a structure to ensure the sustainable urban development of the political and administrative capital Yamoussoukro (Work Document), April 2012: Alexandre Kouame.

1.0 **The Agency Domain of Intervention**

The main domains of intervention of the Agency are as follow: territorial planning; urban planning; urban development and the living conditions; sustainable urban development; housing; transport; the planning of facilities; the environment; land use planning; local economic development

2.0 **Administrative Structure of the Agency**

A. **A Board of Management** composed of:

- The local and regional authorities of the District: the urban communes (the current communes of Yamoussoukro),
- The Autonomous District of Yamoussoukro
- The Ministries in charge of: Construction, Urban Planning and Housing; the Administration of the Territory; Local and Regional Authorities; Economic facilities; Transport; The Economy and Finance; The Environment.

The power and duties of the Board of Management will be:

- To set the main guidelines for the Agency's work,
- To ensure the proper execution of the missions assigned to the agency,
- To approve the annual budget and the program for technical and financial operations of the Agency as well as funding modalities.

B. **An Executive Committee** composed of:

- En Executive Director with the rank of Director General of the Central Administration,
- Heads of departments, with the rank of Director from the Central administration, according to the missions and fields of activity of the Agency.

For example, the activities can be grouped under the following sectors: Territory Planning, Urban Development, Urban planning, Housing, Land use planning, Urban monitoring, Local economic development.

3.0 **Resources of the Agency**

The income and expenditures of the Agency are estimated and assessed in the annual budget of the structure. The resources come from:

- Grants from the government (Côte d'Ivoire);
- Financial aid from the Ivoirian government and Local & Region authorities;
- Financial aid from national or international community or private organisations
- Funds from lenders as part of the institutional support for capacity-building;
- Contributions and funds brought by partners;
- Gifts from service providers;
- Divers donations, gifts and other revenue

The expenses of the Agency come from the expenses related to its staff, functioning and investment.

4.0 **The staffs of the Agency are composed of:**

- Civil servants from public administrations on secondment duties with authorisation from the cabinet ministers,
- Agents from the private sector, hired upon the proposal from the Executive Director of the Agency. The hiring of such staff is done in according to the inter-professional agreement labour law, which will be endorsed as an individual contract by the Executive Director of the Agency.

Source: Proposal for the creation of a structure to ensure the sustainable urban development of the political and administrative capital Yamoussoukro (Work Document), April 2012: Alexandre Kouame.

Figure 8.5 Yamoussoukro Urban Planning and Development Agency

8.4.4 Abidjan Autonomous District

The Abidjan Autonomous District (AAD) comprises a significant part of the Greater Abidjan Study Area. The AAD has set up an Urban Planning Agency (AUPA) to coordinate the urban planning within its area. The organization structure of the agency is still under review. A number of institutional issues are under review, including the role of the AUPA within the Directorate it belongs to as well as its related Ministry and partners which the different requests determine its activities (work program). Of prime importance will be support of sponsors within AAD to develop the Agency and the quality of the staff.

The proposed 'start up' organization structure for the AUPA is:

Directorate-General

- A Director General who is in charge of the administrative and financial management of the Agency on behalf of the Head of the District who he represents externally if needed.
- A Scientific Director in charge of the control, the monitoring and the coordination of studies.
- An assistant to the director in charge of the secretary tasks of the Director.
- An account manager in charge of the administrative and financial management
- An Assistant in charge of communication, documentation and internet management matters.

Observatory Hub

- An economist, expert of urban development issues and in charge of the urban Observatory of Abidjan.
- Two Study Assistants, specialists of statistics data collection and data treatment issues
- A Study Assistant, specialist of mapping and geographic information systems issues

Department of Territorial Planning

- An experienced Urban Planner in charge of the prospective issues.
- A Study Assistant, specialist of planning issues

Department in Charge of Projects

- A VRD engineer, specialist of environment, ecology and sustainable development issues
- A specialist of mobility, movements and transport issues
- A specialist of habitat and housing issues

In the longer term it is envisaged that this 'start up' structure would form the basis for a consolidated AUPA and would change through the years depending on the multiannual successive objectives and programs assigned to the Agency. The evolution of this organization chart is suggested in two ways: by increasing the number of the teams to meet the increasing number of the concerns of the agency and/or by increasing the means of the teams.

8.4.5 Conclusion

The examples above are mainly focused on the institutional structure and mechanisms of setting up self-contained planning agencies. In term of a sub-regional agency, in this case Greater Abidjan, the above agencies do not address how the project demands of many different agencies can be implemented in a coordinated manner. The following section sets out a proposal by the JICA Study Team of the implementing framework for the Greater Abidjan Master Plan.

8.5 Implementing the Master Plan

8.5.1 Issues

The resolution of the socio- military crisis has removed one of the factors that disrupted the implementation of the Master Plan 2000. The main issues that now need to be considered in creating an efficient and equitable implementation framework for the Master Plan 2030 are:

- Setting up a participatory institutional framework that encompasses the main stakeholders to enable the efficient operation of the planning and implementation process. The framework should also consider the role of donor agencies as funding sources. The Institutional Framework should be studied in detail under a separate study, as this is beyond the scope of this SDUGA Study.
- Coordinating the plan making authorities and implementation agencies to ensure an integrated implementation programme. This is essential to ensure that land and infrastructure is in place to facilitate timely development.
- Establishing a body that has a government approved budget of dedicated funding for the plan making and implementation of the Master Plan 2030.
- In addition to identifying publically funded projects, which is required under the planning law, include sector related land use policies to direct the planning and implementing agencies and assign the responsibility for action.

8.5.2 Strategy

The SDUGA Master Plan 2030 will be implemented through managing private sector investments and coordinating public sector programmes and commitments. The identification of a hierarchy of urban centres, see Figure 6.10, to provide a focus for future mixed use, mixed density developments will give clarity, direction and confidence to the private sector. Other benefits of this framework approach include the provision of greater access to and choice of transport for all community groups, better urban image and potential for improved quality of life.

Because of its strategic level of planning and cross sectorial approach, the SDUGA Master Plan 2030 provides a framework for integrated planning and policy actions. Ministry, Agency and Local Authority programmes can be better coordinated and implemented, leading to more efficient use of land and other resources, and reduction of environmental impacts.

8.5.3 Governance Strengthening For Implementation

The adoption and implementation of the SDUGA Master Plan 2030 and the roll out of its vision, objectives and policies to key Ministry and Agency stakeholders and the private sector will be supported through a wide range of governance initiatives.

Government guidance

This will involve the government providing:

- Spatial planning direction for the private sector development through land use zoning.
- Pump priming through utility and road infrastructure to attract private sector investment.
- Land development policies and actions to ensure sustainable development.

Creating a competitive land market

Government will raise the value of land by:

- Up-zoning of land to increase the gross saleable or leasable built up area.
- Introducing an incremental scale of land taxation to finance public works.

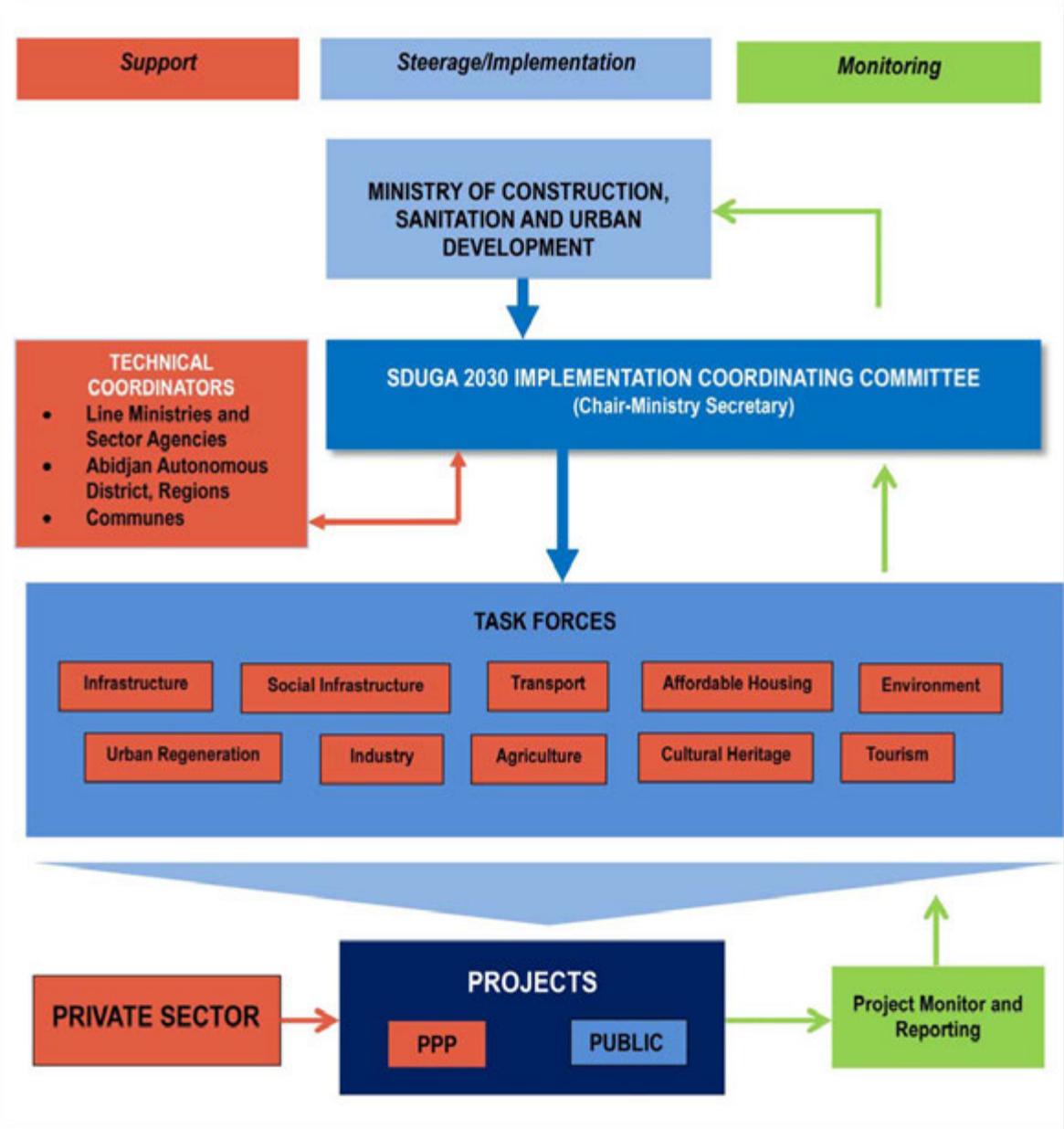
Bringing stakeholders together

Government will:

- Promote PPP for the development of public land and infrastructure provision.
- Facilitate and coordinate urban renewal and revitalization projects by the private sector.
- Encourage local economic development through land assembly and land readjustment.

An Implementation Coordinating Committee will be established and managed by the MCLAU, in accordance with its legal and wider role as strategic planning authority, to bring together the planning requirements in a sub-regional context, oversee the implementation of the SDUGA Master Plan 2030, guide policy and policy actions, and to report to Government annually, see Figure 8.6.

The Implementation Coordinating Committee will be guided by a clearly structured sequence of plans and supporting policies; Spatial Strategy, Implementation Strategy, Urban Unit Land Use Framework, Land Use Policies and selected Extended Area Master Plans.



Source: JICA Study Team

Figure 8.6 Greater Abidjan Implementation Process through Governance

8.5.4 Firewall Funding

The Implementing Coordinating Committee will be responsible for setting the funding levels and prioritizing project implementation for the SDUGA Master Plan proposals. This budget will be directly submitted to the Ministry of Economics and Finance. It will not form part of the MCLAU overall budget requirements. However, the MCLAU will be responsible for monitoring the expenditures. The budget

will be apportioned to meet the sectorial implementation and development control requirements identified by the Task Forces to achieve the SDUGA Master Plan 2030. The Task Forces will comprise teams of technical officers from the relevant 'Plan Making' Authorities, including sector ministries also responsible for planning and implementation. In all cases the defined budgets for the SDUGA Master Plan 2030 will be firewalled from global ministry and authority's budgets. However, expenditure will be responsibility of the relevant ministry or authority, and these bodies will be required to report on the progress of work and account for the expenditure to the MCLAU, who will then report back to the Ministry of Economics and Finance on the progress of implementation and any issues arising.

This Committee will also resolve any policy differences between Central Government, Regions and Communes and Local Authorities. A key function of the Implementation Coordination Committee will be to ensure that the SDUGA Master Plan 2030 supports and remains constant with the National Physical Plan and other high level statutory policy documents.

The Implementation Coordination Committee will be supported by a group of Technical Coordinators drawn from senior members of key Ministries, Agencies and Regional, Commune and Local Authorities. This group will be convened on a regular basis by the MCLAU.

Because implementation of the SDUGA Master Plan 2030 is a "whole of Government" responsibility, governance arrangements to strengthen cooperation and integration between Ministries, Agencies, Regional, Commune and Local Authorities are important to the success of the Master Plan. Ultimately development will be driven and undertaken by the Private Sector and Government will be required to create the institutional environment and implementation mechanisms to ensure a transparent, cost effective and time efficient system that will enable the private sector to view development and investment in Greater Abidjan as more attractive than other competing locations, within Cote d'Ivoire or internationally.

It is recommended that based upon the proposals of the SDUGA Master Plan 2030 a separate study on the Institutional Arrangements be undertaken to define:

- Stakeholder Roles
- Institutional Processes
- Rules for each of the stakeholders to achieve the SDUGA Master Plan 2030 sustainable development objectives.
- Responsibilities of the public and private stakeholders and their agencies
- Expectations of all parties to fulfil the proposals and policies of the SDUGA Master Plan 2030.
- Financing mechanisms, agencies and strategies.
- Statutory and legislative Requirements.
- Support to Local Authorities.

8.5.5 Implementation by Central Government, Ministries, AAD, Regions and Communes

The objectives and policies contained in the SDUGA Master Plan 2030 will need to be reflected in the decisions, corporate plans, business programmes and service delivery functions of the relevant Ministries, Agencies, and Local Authorities. Implementation of SDUGA Master Plan 2030 policy actions relevant to specific Ministries, Agencies and Local Authorities will be their responsibility and

will include an onus to regularly report to Government on the degree to which implementation has progressed and expenditure of the dedicated budgets.

Ministries, Agencies and Local Authorities responsible for implementing specific policy actions have been identified in Appendix G – Implementation Responsibility Schedule.

There are three broad categories of responsibility based on lead Ministry or Agency, key stakeholder and consultative stakeholder:

- Lead Agency; is the identified ministry or Agency, it is recommended that this is the MCLAU, responsible for directing and implementing the action. It is also responsible for reporting on an annual basis to the Ministry of Economics and Finance on the progress of implementation.
- Key Stakeholder Agencies; are Ministries, Agencies and Local Authorities identified as key stakeholders in the determination of policy and/or decisions arising from the implementation of the policy action. They are responsible for supporting the Lead agency and must provide all reasonable assistance to ensure the policy is successfully implemented.
- Consultative Stakeholders Agencies; are Ministries or Agencies who by respect of their legal authority need to be consulted to ensure that a comprehensive and integrated proposal is suitable for implementation.

Ministries, Agencies and Local Authorities identified as key stakeholders are to be consulted at various times in the implementation of the policy action. They must provide all reasonable assistance and meaningful input to ensure policy action is successfully implemented. Implementation of the policy actions may include a variety of actions, such as: preparing new plans or strategies; planning for, coordinating and constructing new infrastructure and community facilities; reviewing and revising capital expenditure programs; and reviewing and revising business systems and processes.

Public sector investment programmes should be coordinated and focused through the formation of specific Task Forces charged with planning, integration and implementing topic based plans and actions including urban regeneration schemes, affordable housing programs, environmental protection, cultural heritage projects, and transport demand initiatives. The work of the Task Forces will be overseen by the SDUGA 2030 Implementation Committee and inform the Government's annual budget process.

8.5.6 Implementation by the Development Industry

The SDUGA Master Plan 2030 and policies will be reflected in the Detailed Urban Plans and apply to all development applications. Development applications will also be required to prepare Traffic Impact Study (TIS), Environmental Impact Assessment (EIA) and utility provider approvals which will be integrated through a revised planning and development assessment process; that should be subject to a separate study.

The boundaries for urban growth will be defined through land use zoning under the Detailed Urban Plans. Beyond these defined urban growth boundaries applications for major new development will not be permitted.

Outside urban growth boundaries, greenbelts will be established with a land use focus on securing long term agriculture for food production and protection of the natural drainage catchment system, wetlands and natural ecological habitats. Together with landscaping and public open spaces a distinctive visual

buffer will be created to mark the transition from the built up areas of urban centres to green undeveloped areas.

Only in special circumstances will applications be permitted outside urban growth boundaries. Such cases might arise for example where development is in the national interest (e.g., to secure future food supplies, mitigation of natural disasters), and as such should be declared and listed as a “Large Scale Project” approved by the national strategic planning relevant authority and subsequent gazette.

8.6 Programme of Implementation

8.6.1 Spatial Development of Master Plan 2015 - 2030

Figure 6.16; illustrate the broad spatial programme for growth areas and major road and public transport for major works and studies over the 20 year strategy period. The proposed growth and implementation scenarios show the gradual expansion of the urban areas occurring as follows:

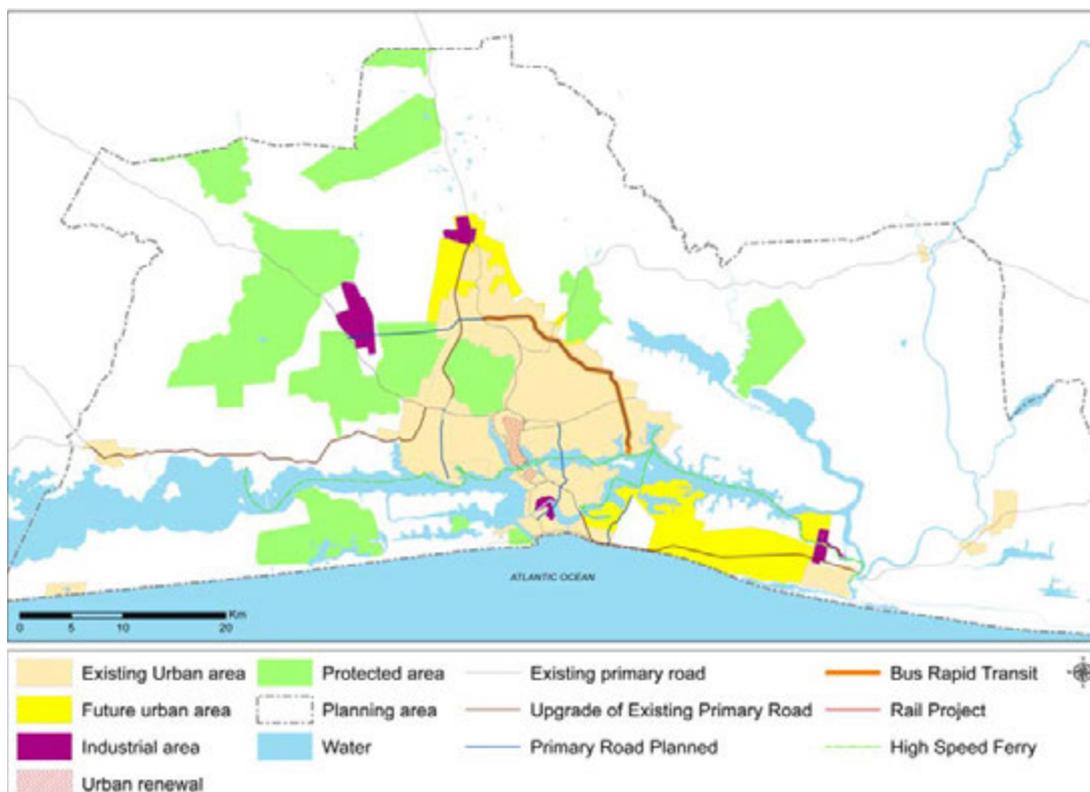
- 2015 – 2020 : 12,800 ha
- 2020 – 2025 : 7,700 ha
- 2025 – 2030 : 2,800 ha

The total urban area for Greater Abidjan will increase from some 44,000 ha (12.7% of the total Greater Abidjan area) in 2013 to 67,200 ha (19.2 %) in 2030. Of this increase 16,913ha (4.84%) is over and above that proposed under the Master Plan 2000 urban area.

8.6.1.1 2015 to 2020

During this period the implementation will focus on the urban growth and renewal areas from the north to the south of the city;

- The axis of Anyama to Grand –Bassam. A
- Urban Renewal to Plateau, Adjame and Treichville.
- Industrial zones in Attinguie, Anyama, Grand-Bassam and Vridi Port.
- The provision of public transit; north to south by Urban Rail, BRT to Abobo and Cocody, High Speed Ferry west to east along Ebrie lagoon.
- The construction of the northern and eastern sections of the Y4 ring road, and the road and bridge links to Bouley Island and Plateau through Yopougon.
- Various road widening projects in Marcory, including a bridge to service the new port expansion in Vridi.



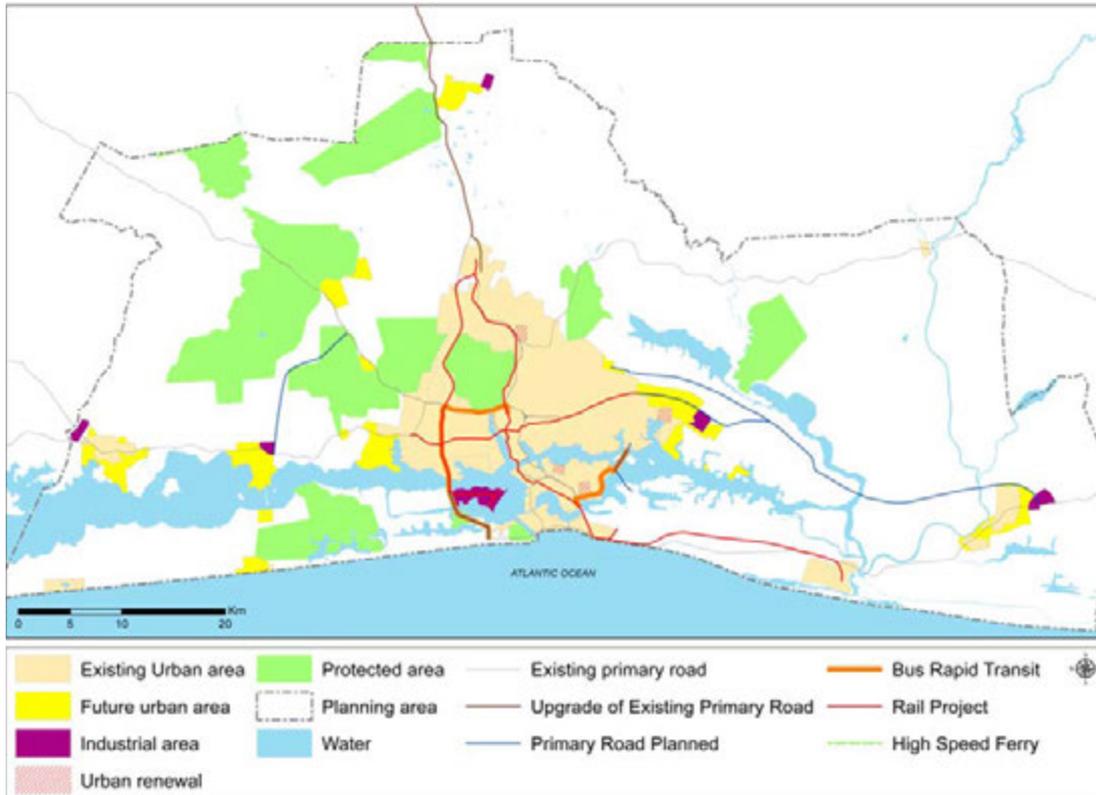
Source: JICA Study Team

Figure 8.7 Greater Abidjan Urban Development Implementation Strategy 2015-2020

8.6.1.2 2020 to 2025

The focus of growth is west to east and building upon the new infrastructure of the previous five years;

- Developing the Songon corridor, a new town at Attinguie and urbanizing the Bingerville peninsula.
- Urban Renewal to Abobo, Marcory, Koumassi and Bingerville.
- Industrial zones in Dabou, Bingerville, Bonoua, and Abidjan Port expansion.
- The provision of public transit; Urban Rail extended to Grand-Bassam, BRT to link Cocody with Koumassi. Provision of the western freight rail route to Abidjan Port Expansion.
- Extending the Y4 ring road by bridge at Isle Desiree to Petit Bassam and Port Bouet. New Bingerville by-pass to Bonoua. New roads to existing urban areas.
- Road widening of Dabou Road and Abobo by-pass.



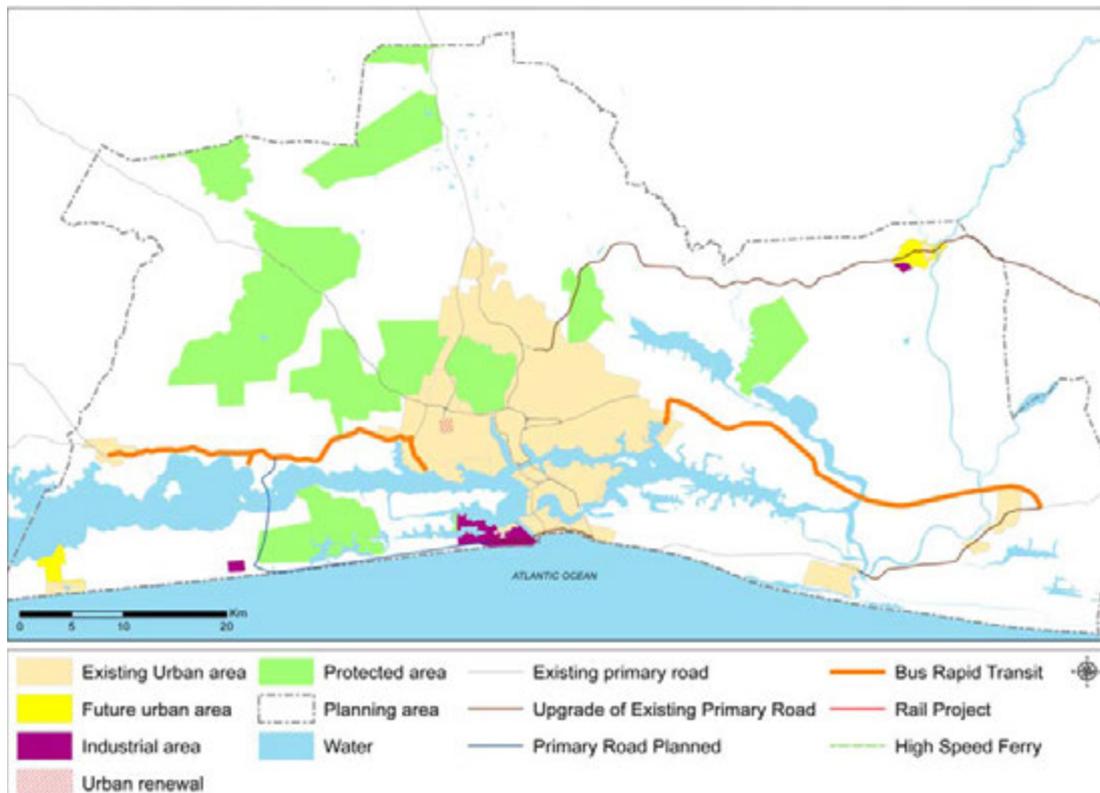
Source: JICA Study Team

Figure 8.8 Greater Abidjan Urban Development Implementation Strategy 2020-2025

8.6.1.3 2025 to 2030

The final phase of growth over the plan period is concentrated at the satellite towns of Alepe, Azaguie, Jacquerville and a new area west of the Abidjan Port extension on Bouley Island. In addition:

- Urban Renewal to Yopougon centre.
- Industrial zones in Ako-Brake, Alepe, Azaguie and Abreby / Ambroise.
- The provision of public transit: Urban Rail W-E line Yopougon to Bingerville; BRT's Dabou-Yopougon, Bingerville – Bonoua.
- Completion of the Y4 ring road west from Abobo to Vridi. New northern road Port Bout to Grand-Bassam. New roads to existing urban areas.
- Road widening of Alepe Road and western Banco Forest by-pass.



Source: JICA Study Team

Figure 8.9 Greater Abidjan Urban Development Implementation Strategy 2025-2030

8.6.2 Future Detailed Programme

The drawing up of a detailed programme is outside the scope of the SDUGA Study. Such a programme should include the following main components:

- Infrastructure: road improvement and upgrading to provide adequate access to areas and industrial zones where initial growth and investment in development is planned to occur; and longer term upgrading of primary roads to meet the traffic demand over the twenty year period from development, population and employment growth.
- Utilities: provision of water treatment plants, storm water drainage and flood prevention, waste water facilities, solid waste plants, upgrading of the primary electricity and water supply networks to keep pace with demand, and the provision of ICT infrastructure.
- Development Sites: defined PPP sites and major private sector Projects.
- Planning and Design Studies: studies such as; urban centre renewal and revitalization studies within AAD, Plateau Central Business District Master Plan, Detailed Urban Master Plans for Alépé, Azaguié, Dabou, Jacquerville, Grand-Bassam and Bonoua.
- Transportation: studies and implementation of; BRT system, Ferry Service and Station development, Urban Rail network and stations, Freight Rail line upgrading and new western freight line.

- Statutory Plans: review and gazettal of SDUGA 2030 Master Plan and required Detailed Urban Plans.

8.7 Monitoring and Updating

Monitoring and reporting on the progress of the implementation of the SDUGA 2030 Master Plan to the Government, key stakeholders and civil society leaders, will be a key component of implementation.

Monitoring is essential for an effective strategy and should contain clear targets or measurable outcomes to assist in this process. The strategic planning objectives and Implementation Responsibility Schedule (Appendix G) will form a useful basis for this exercise, the results of which can be used to update and amend future plans and policies. Supporting information will be provided where applicable, including a number of key performance indicators, to assist measuring the success of implementation.

The SDUGA 2030 Implementation Committee will collate and submit an annual SDUGA Master Plan 2030 Monitoring Report to the Government, outlining the progress of each agency against the Implementation Schedule. Consideration will be given to whether the SDUGA Master Plan 2030 is achieving the outcomes anticipated and is expected to continue to meet the forecasted needs.

The Monitoring report will identify (and where necessary, include statements of reason for not achieving):

- Progress of implementation against the timetable, expenditure and milestones for governance and legislative improvements.
- Progress of implementation of the policies and policy actions in the sectorial strategies. This should also include progress against any relevant national and Local Authority targets e.g. on community facility provision.
- Progress of transport and utility infrastructure providers against the programmes established in support of the development strategy.
- Any unintended effects identified from implementing the policies and policy actions.
- Any policies or policy actions that may need to be realigned to reflect changes due to technological improvements, major changes in demand or significant shifts in guidance issued by the Government, and
- The re-prioritization of any actions in response to the monitoring process

The Implementation Responsibility Schedule sets out the implementation responsibilities for each policy, providing details on implementation actions and agencies involved (See Appendix G). For the reasons described earlier the implementation of Utility Policies are outside the scope of the SDUGA Study.

9.0 Recommendations

The JICA Study Team shaped the responses to the government's comments on the Draft Final Report (which the JST received on 20th of December, 2014) and officially made a reply to the government on 19th and 22nd of January, 2015 (See Volume 1, Appendix A). Many of those comments were not issues that could be solved in the Urban Master Plan 2030 for Greater Abidjan (SDUGA 2030), but the task that should be addressed by the bodies concerned after the approval of SDUGA 2030.

Implementation methods of the Urban Master Plan 2030 for Greater Abidjan (SDUGA 2030) are proposed in Chapter 8 of Part 2 and Chapter 4 of Part 3 in Volume 2. The following tasks and the processes were wrapped up as the recommendations in consideration of the comments made by the government.

First Step <Approval>

1. High level approval and adoption of the Urban Master Plan 2030 for Greater Abidjan (SDUGA 2030)
2. Notifying the public through the gazette and a newspaper of national circulation
3. Organising the implementation coordinating committee for the SDUGA 2030

Second Step <Implementation>

4. Reviewing and Renewing the existing zoning guidelines and planning standards that are consistent with the SDUGA 2030
5. Preparing Detailed Urban Plans (PUd) of all the communes in Greater Abidjan, in particular for the areas under strong development pressure, in good coordination with stakeholders to promote the provision of community facilities
6. Encouraging the private sector to invest by reference to the SDUGA 2030 and the PUds
7. Closely coordinating with the National Development Plan for the next period and sector master plans at the national/regional level
8. Pushing ahead with the provision of public infrastructure including utility infrastructure in collaboration with donor agencies
9. Monitoring and evaluating the progress of the implementation of the SDUGA 2030

Third Step <Review/Revision>

10. Reviewing the socio-economic framework, land use framework plan and transport demand forecast at an appropriate timing, three or five years later for instance, based on the complete data of the 2014 Population Census
11. Revising the SDUGA 2030, if the need arises as a consequence of the review

The comments which were discussed by the government on urban planning and major infrastructure development fall into four main concerns, namely, (1) 2014 census, (2) expansion of Abidjan Port and development of Boulay Island, (3) additional development plans and projects, and (4) institutional issues. The JICA Study Team made recommendations on each concern as remarked below.

(1) 2014 census

The 2014 Census result was only made available at the last moment of finalising the study report, that is, January 2015. JST compared the census result with the JST's estimate on the population in 2013. The comparison revealed that the JST's estimate is higher than the census result by 5.7% for AAD and 12.5% for Greater Abidjan. Since the AAD population dominates (93%) the total GA population, the impact, in terms of agglomeration of such difference, against the urban planning process was considered very limited.

However, when looking at the population by commune/sous-prefecture, there were some areas that showed a significant difference in population size. Therefore, reviewing and updating of the socio-economic framework were undertaken for both current conditions and future estimates of population by commune/sous-prefecture in Greater Abidjan.

This review work was confined only to the commune/sous-prefecture population but not extended to more detailed data, such as quartier population, household size, or employment by industrial sector. Therefore, these detailed data required for the planning process were inevitably dependent upon the sampled Home Interview Survey conducted by JST in May, 2013.

Thus, it is necessary, after the completion of the 2014 census analysis, to review in 3~5 years time the Socio-Economic Framework, Land Use Budget and Transport Demand Forecast, and eventually revise the SDUGA 2030.

(2) Expansion of Abidjan Port and Development of Boulay Island

The JICA Study Team recommends discussing the above issue with all the relevant stakeholders including local municipalities, based on a draft master plan of future Abidjan Port expansion that should provide a justification of land use prepared by PAA, in order to determine the direction of the total land use framework for Boulay Island, and to finalise the detailed urban plans of Commune Yopougon and Commune Port-Bouët. It is considered urgent for them to prepare their PUDs, since the construction bid for the 4th Bridge was already approved by the Government.

(3) Additional Development Plans and Projects

Various development plans and projects, which were agreed on within the directly concerned organisations, were introduced to JST through intensive discussions at the government Working Group.

These plans were requested as the comment to be reflected in the Final Report. However, the following plans and projects listed in the comments should remain pending and could not be fully reflected in the land use framework drawings, because there wasn't enough time for the JICA Study Team to obtain the details of the subject plans and projects. Therefore, it is recommended to examine the consistency between the proposed SDUGA 2030 and the plans and projects listed below, when preparing their relevant PUDs.

- Development of Cocody Bay
- Development project in Marcory/Biétry/Boulevard de Marseille
- Aero city/exhibition centre
- Olympic Village and other major sports facilities
- Slaughterhouse in Anyama
- Several projects of waste treatment centres
- Equipment on the Tête d'Ours near the airport area
- Creation of additional cemeteries on the outskirts of Greater Abidjan

(4) Institutional Issues

The JICA Study Team emphasises the importance of the following three institutional issues:

- Although the government suggested in their comments to shift the proposed industrial areas of Bingerville and Jacquerville somewhere, it should remain pending and thus it is not fully reflected in the land use framework drawings, because there wasn't enough time for the JICA Study Team to obtain and examine their details within the very limited time before the deadline of Final Report submission.

The local government should propose and determine actual locations and boundaries of developed land/protected land and land use zones including industrial zones mentioned above in the studies of PUDs, respecting the drawings of the land use framework plans proposed by the JICA Study Team. Additionally, it should be mentioned that the locations of industrial zones should be combined with free-trade zones, according to the investment law, in order to promote investment into industrial zones.

- Development regulations in the protected lands should be set as a statutory framework after discussing with all the relevant stakeholders. The planning requirements should be definitely laid down in each land use zone as a statutory framework.
- Preparation of Detailed Urban Plans (PUDs) should be hastened in the areas where the development pressure is increasing or is expected to increase resulting from SDUGA/SDTU, for instance, such the area between Port-Bouet and Grand Bassam.

Japan International Cooperation Agency (JICA)

Ministry of Construction, Housing, Sanitation and Urban Development (MCLAU)

The Project for the Development of
the Urban Master Plan in Greater Abidjan
in the Republic of Côte d'Ivoire (SDUGA)

Final Report

March 2015

Volume II

Urban Master Plan for Greater Abidjan and
Other Project Related Tasks

Part 3

Master Plan of the Extended Areas (MPEA)

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1.0 Introduction

1.1 Introduction

This part is the draft of the Master Plan of extended areas (MPEA), prepared by the JICA Study Team. This Master Plan is a framework, as an exemplar of a Detailed Urban Plan (PUd) which is a mid- and long-term statutory framework for guiding the development and redevelopment of land.

It is also an opportunity for the JICA Study Team to provide integrated planning approaches by conducting a draft of a detailed urban plan. So this is the final step that shows the planning strategy proposed by the JICA Study Team, following the Urban Master Plan of Greater Abidjan.

The objectives of the Master Plan for extended area are to be used by cities/sub-prefectures as reference for preparing legal PUd, and to be used by MCLAU as reference for preparing new regulations for PUd after the completion of the SDUGA project.

1.2 Subject Areas

MCLAU set out the extended 6 areas that are experiencing various stages of formal and informal urban growth and should be considered for PUDs. The areas are:

- Bingerville - Eloka
- Anyama - Azaguié
- Yopougon - Attinguié
- Bassam - Bonoua
- Abobo - Alépé
- Songon - Dabou

These 6 areas require more detailed plans due to the pressure of urban growth both now and anticipated in the future.

In accordance with the agreements between JICA with MCLAU, the JICA Study Team has to produce proposed drafts of master plans for at least two growth corridors. Thus, based on the conclusions of urban analyses made during the study, the JICA Study Team has identified among others Bonoua as an area of rapid urban growth for years to come. In addition, to meet the dynamics of urbanization that will be generated by the creation of the new Attinguié industrial area, this area has also been identified as an area with great potential for growth.

Reasons for choosing Bonoua from among the other 6 areas include the following:

- Accessibility to Abidjan via Bassam -Bonoua corridor will improve vastly by virtue of the completion of the highway that is under construction and it is expected to grow the most rapidly of the 6 corridors.
- It will be easy to draw desirable spatial development framework, while urbanization in other areas is happening based on approved subdivision plans.
- The Commune of Bonoua is very well organized and there will already be a system to prepare the urban master plan at the city level, which is strongly unified centring on traditional organizations.

Similarly, there are the following reasons to choose Attinguié from among the 6 areas:

- Since the size of the Attinguié industrial zone and the logistics centre is the largest in the extended 6 areas, the industrial zone has a high impact on the surrounding area. On the other hand, the area around the industrial area is set to protect the natural environment and resources and preserve the agricultural land in the SDUGA 2030. Therefore, formulating a land use zoning plan promptly is needed in order to avoid protected land around the industrial zone being developed, because the start of the operation of the industrial zone is close at hand.

These two areas will carry significance for the future growth of the Greater Abidjan area in the following:

- Bonoua will complement the future growth of the Greater Abidjan with generation of employment clusters, functioning as an eastern gateway to the Greater Abidjan and a key junction of the wide-area road network.
- Developed during the first phase of implementation, Attinguié industrial zone will act as an accelerator of the future growth of the Greater Abidjan by attracting foreign investment. Appropriate control of land use in the surrounding area based on land use zoning plans may contribute to an increase in the value of the industrial zone.

The choice of these areas for the development of drafts of Master Plan for extended area have obtained agreement in principle by MCLAU which is aware of the challenges posed by these areas on the outskirts of the town of Abidjan in its future development while taking steps to better organize the urban fabric to anticipate future urban problems.

1.3 Scope of MPEA

The PUD is an operational tool for urban development planning at the municipality level as well as neighbourhood or a set of districts level, over a period of 5 to 10 years. Based on the existing situation, it must help to anticipate future needs in terms of land use, developments, supply in housing, public facilities creation, creation of employment opportunities and reserves for future equipment.

The following sets out the contents of the PUD prescribed in the Urban Planning Law.

1. The distribution of the lands based on the specific usage patterns.
2. The configuration of the neighbourhoods to be organized with the indication of desirable population densities.

3. The layout of the main and secondary routes excluding routes that will be used to service the buildings.
4. Reserved spaces for public services and facilities of general interest and open spaces.
5. The indication of forest reserves to be maintained or created and those subject to special conservation easements.
6. Preliminary drafts on drinking water supply, electricity supply and the sanitation of the city or the interested area.
7. A regulation that sets the rules and construction easements justified by the character of the sites.
8. An extension justifying the solutions adopted and offering emergency command of the operations expected in the plan.
9. An estimation of the expenses that will be accrued by the operations at the expense of the public authority with a distribution between the various interested communities.

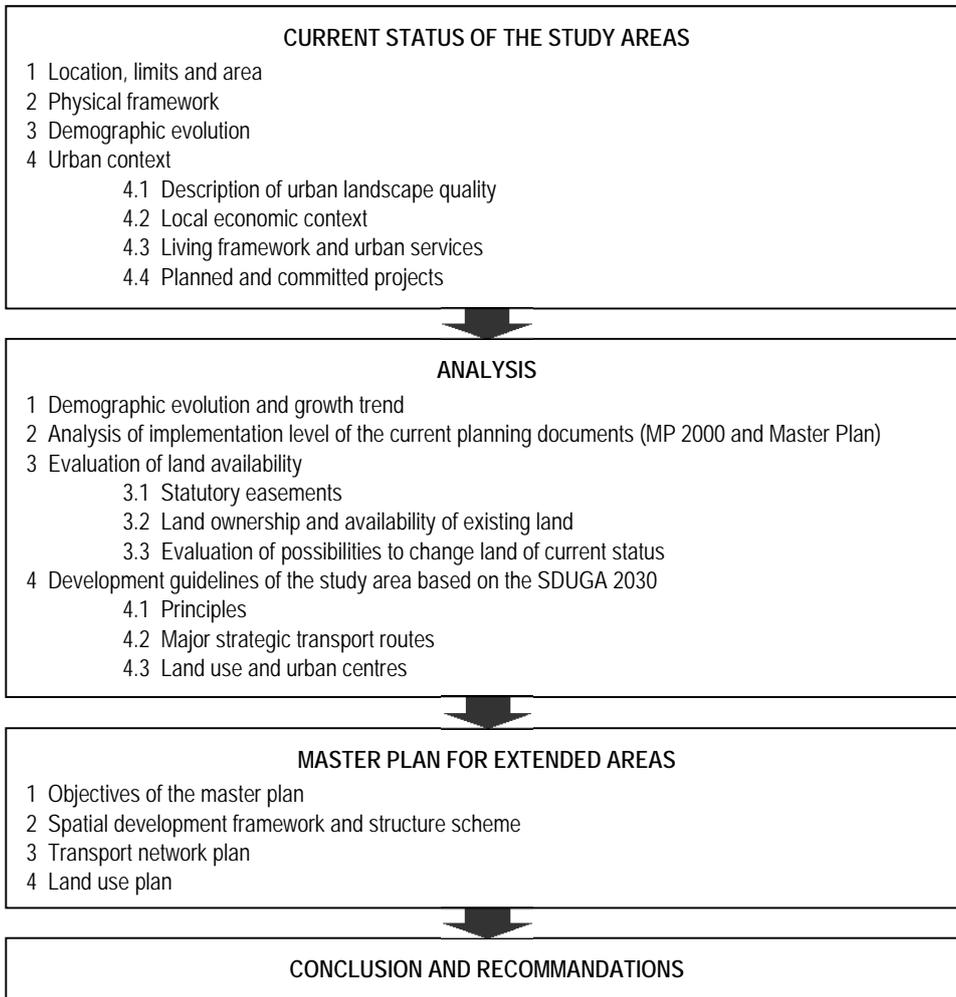
In addition to the above under the Urban Planning Law the Detailed Master Plan may also include:

10. New urban and renewal areas – building regulations to be defined.
11. Detail of land readjustment areas for public purpose and smart development.
12. Areas for land resumption by public collectives and institutions will be allowed to:
 - i. Build housing complexes for use as residences with their social, cultural and economic processes, or the creation of a subdivision destined to housing or industry.
 - ii. Progressive development following plans of all areas affected to dwelling or industry.

The role of the JICA Study Team regarding the PUd is to prepare specific “Parts” of a complete PUd, required by the Urban Planning Law. The scope of the Master Plan for extended areas prepared by JICA Study Team is mainly to set out the broad urban planning direction for about five items from 1 to 5 among the above.

1.4 Methodology

The Master Plans for extended areas are prepared based on the process as shown on Figure 1.1 below:



Source: JICA Study Team

Figure 1.1 Process of Master Plan for Extended Areas

The JICA Study Team analysed the demographic evolution and growth trend as shown in Figure 1.1 above by use of the JST’s estimate on the 2013 population, because the population by quartier in the 2014 Census was not available at the moment.

It is necessary for the local governments to take in account the points that the JST’s estimate was higher than the census result by 5.7% for AAD and 12.5% for Greater Abidjan and there were some communes/sous-prefectures that showed a significant difference in population size, and to update the socio-economic framework by use of the 2014 Census results, when the local governments will refer to the Master Plans of the extended areas for their Detailed Urban Plan preparation.

Although the Master Plan for extended areas will have 1:10,000 detailed GIS land use base maps, 1:25,000 as the planned scale of the land use plans is appropriate in the context of the objectives of the Master Plan to be used by cities/sub-prefectures as reference for preparing legal PUD, and to be used by MCLAU as a reference for preparing new regulations for PUD after the completion of the project. Table 1.1 shows the description and specifications of the Master Plan drawings.

Table 1.1 Drawings of Master Plan for Extended Area

Drawings	Description	Specifications
Diagram of Spatial Development Framework for Urban Planning Area	<ol style="list-style-type: none"> 1) Conservation Area (Natural Reserve / Sacred Areas / Sensitive Land) 2) Urban Areas (Existing Urban Areas & Expansion Urban Areas) 3) Primary Roads & Secondary Roads (Existing & Planned) 4) Urban Centre (Existing & Planned) and Sub Centres 5) Industrial Centre & Logistics Centre 6) Recreation/Tourism Centres 7) Urban Axes 	S = 1:50,000 By Illustrator
Transport Network Plan for Urban Planning Area	<ol style="list-style-type: none"> 1) Primary Roads (Existing & Planned) 2) Secondary Roads (Existing & Planned) 3) Tertiary Roads (Existing & Planned) 4) Transfer Stations 5) Urban Areas (Existing Urban Areas & Expansion Urban Areas) 6) Central Business District (CBD) (Existing & Planned) 7) Sub Centres 8) Industrial Centre & Logistics Centre 	S = 1:50,000 By Illustrator
Land Use Zoning Plan for Urban Planning Area	<ol style="list-style-type: none"> 1) Residential Zone 2) Commercial Zone 3) Industrial Zone 4) Educational Zone 5) Health Zone 6) Government Office Zone 7) Religious Zone 8) Utilities/ Transport/Security/Military Zone 9) Public Open Space/Recreation/Sports/Tourism Zone 10) Conservation Zone 	S = 1:25,000 By GIS

Source: JICA Study Team

2.0 Bonoua Extended Area

2.1 Current State of the Commune of Bonoua

2.1.1 Location and Limit of the Study Area

Located at the southeastern part of Côte d'Ivoire, in the extreme southeast of Greater Abidjan, the Commune of Bonoua is about 60km from Abidjan on the international axis (A100) linking Noé. (See Figure 2.1)

From an administrative point of view, the Commune of Bonoua is part of the South-Comoé Region and the Department of Grand-Bassam. It is the main town of the Sub-Prefecture of Bonoua as well as the capital of the said municipality. The communal perimeter which is subject to our study consists of five villages that are: Yaou, Samo, Kodjoboué, Adiaho and Tchintchévé.



Source: JICA Study Team

Figure 2.1 Location and Roads Map of Bonoua

2.1.2 Physical Features

2.1.2.1 Topography and Soil Characteristics

Bonoua is an area characterized by alternating plateaus and depressions sometimes marked by talwegs and shallows. The plateaus have altitudes that vary between 10m and 60m.

The geological characteristics of the soil in this locality help to distinguish two types of soil namely sandy-clay soils and alluvium type soils characterized by locally peaty hydromorphic soils. The constraints posed by these soils are a high sensitivity to erosion and a difficulty to drain storm water efficiently.

2.1.2.2 Vegetation, Climate and Hydrology

Formerly characterized by a relatively dense forest, the vegetation is now dominated by coconut, oil palm and rubber plantations dotted with some forest residues.

Bonoua is located in the humid tropics. The climate has four seasons, two rainy seasons and two dry seasons.

- A long dry season from December to April
- A long rainy season from May to July, with a maximum in May and June
- A short dry season from August to September
- A short rainy season from October to November

However, with the climate change globally encountered by countries, some disturbances are also recorded in the local climate.

The hydrographic network includes the Kodjoboué lagoon, the Ono lagoon and the Comoé River. These rivers delineate practically in the study area to the north, west and south.

2.1.3 Demographic Change

2.1.3.1 Current Population and Density

According to the general population and housing census of 2014, the demographic data obtained cover the entire Sub-Prefecture of Bonoua which population is 55,230 persons spread over a surface area of 32,701.33 ha with an average density of 1.7 persons/ha.

At the municipal level which is the object of our study area, the population in 1998 is 43,728 persons¹ on a surface area of 7,853.08 ha (including rivers) and 7,349.29 ha of land, or 24.01% of the sub-prefectural area and 2.04% of the surface area of urban planning zone of Greater Abidjan (384,601.77 ha).

However in anticipation of future results which may derive from RGPH 2014 launched by the Ivorian Government, the JICA Study Team made projections concerning population for 2020, 2025 and 2030 horizons. (See Table 2.1)

¹ Annex to Decree No. 2012-1154 of 19 December 2012 fixing the number of municipal councilors and deputy Mayors by commune

Table 2.1 Population and Density of Sub-Prefecture of Bonoua

Years	2014	2020	2025	2030
Population (persons)	55,230	61,044	66,488	72,687
Density (persons/ha)	1.7	1.9	2.0	2.2
Annual Growth Rate (%)	1.7%			

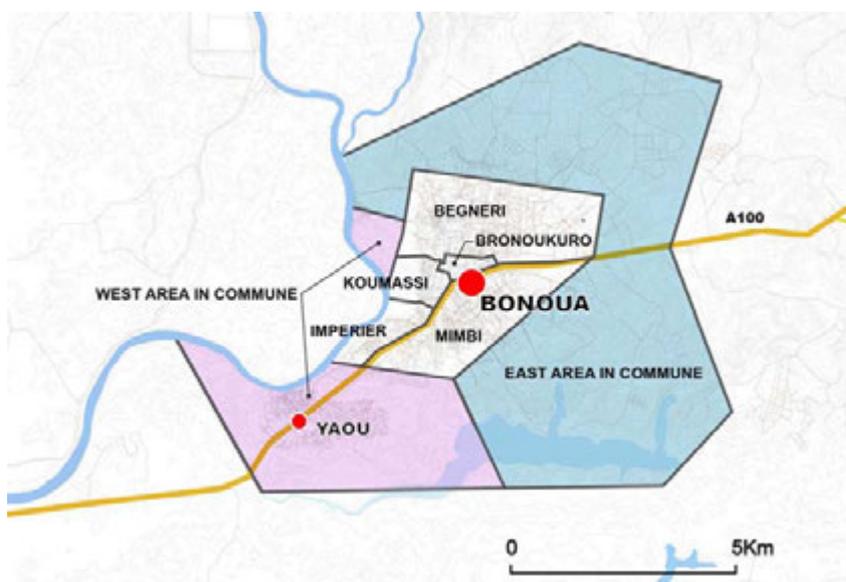
Source: INS 1998 Census, JICA Study Team

From this table, we can observe a fairly gradual evolution of the population, what explains the interest of this study that will help rationally planning spaces and making equitable distribution or establishment of basic infrastructure and socio-collective equipment to meet the needs to provide better living environment and conditions to populations.

Based on the distribution of the population made by neighbourhood, the neighbourhoods with the greatest number of residents are:

- Begneri (<33%)
- Bronoukro (<18%)
- Imperier (<7%)
- Koumassi (<23%)
- Mimbi (<16%)

The current average density of Bonoua Commune is estimated at 8 persons/ha (2013). (See Table 2.4)



Source: JICA Study Team

Figure 2.2 Neighbourhoods in Bonoua (1)

2.1.4 Urban Context

In general, the urban landscape of the town is homogeneous, discontinuous, sparsely populated and has large areas that are still undeveloped. Bonoua has the character of a rural town with streets mostly paved and buildings which are essentially concrete construction. Bonoua Commune's development is also favoured by its proximity to the city of Abidjan and its semi-rural character that provides a level of relatively affordable living conditions for the middle class. Therefore the city has a renewed interest from this part of the population. More and more families choose to live there while continuing to carry out their activities in Abidjan.

2.1.4.1 Description of the Quality of the Urban Landscape

2.1.4.1.1 Urban Framework

The urban structure of the Commune of Bonoua is organized around an old core (Koumassi) which is densely developed, located north of the international route A100. The extensions with medium building density of this old core grew in the northern and southern directions of the city as well as along the A100 road. This road is the main road of the city from which secondary roads, mostly paved, usually go to the north and south of the city. The old core is characterized by a non-regular grid while the extensions have an orthogonal grid, particularly neighbourhoods located south of the international route A100. The constraints linked to the site configuration make the urban fabric non-homogeneous and irregular.

The municipality is composed of several neighbourhoods; the most important are Koumassi, Begneni, Bronoukro, Mimbi and Kadjoboué. The oldest neighbourhoods are located in the centre of the city, on both sides of the expressway A100 and are densely populated and highly developed with an average density of 27 persons/ha. The extension neighbourhoods are located on the outskirts with low population density 2 persons/ha.

2.1.4.1.2 Housing Typology

The typology of housing in Bonoua is very diverse and consists of two types of habitat: the evolutionary habitat and residential habitat. The evolutionary and traditional habitat is mainly dominant in older neighbourhoods such as Koumassi, Bronoukro and Benigni which are densely populated. It is characterized by a high density of land use and houses with two or three levels. Extension area neighbourhoods are more characterized by economic and residential housing with a low land use density. It consists of low-rise villas or duplexes with grassed yards and some outbuildings. The table below gives an overview of the type of housing and density by neighbourhood.

Table 2.2 Housing Typology and Land Use Density

Neighbourhoods	Housing typology	Land use density
Koumassi	Evolutionary	High density
Bronoukro	Evolutionary	High density
Begnani	Evolutionary and residential	Medium density
Mimbi	Residential (standing)	Medium density
Koumassi extension I	Evolutionary	Low density
Koumassi extension II	Residential	Very Low density
Koumassi extension III	Evolutionary and residential	Very Low density
Mimbi extension	Residential	Very Low density
Bronoukro extension	Residential	Non- occupied
Begnani extension	Evolutionary and residential	Very Low density
Kodjoboué	Residential	Non- occupied
Yaou	Evolutionary and residential	Medium density

Source: JICA Study Team

Most houses in Bonoua are of good quality and built from concrete. However, due to its rural character, we can sometimes find houses built with local materials.



Source: JICA Study Team

Figure 2.3 Neighbourhoods in Bonoua (2)

2.1.4.1.3 Land Use

Bonoua is a relatively large urban centre with residential areas, administrative services and well established commercial areas especially along the international road A100. Two small rural

agglomerations, Yaou and Samo, are connected to the city less than 2km to the west and 8 km to the east on the expressway A100, respectively.

There are also some industrial units which are essentially located along the international road especially in areas of successive extension of the city and new industrial facilities in areas reserved for this purpose. The undeveloped spaces are occupied by agriculture, forests, lowlands and non-building areas. (See Figure 2.4)

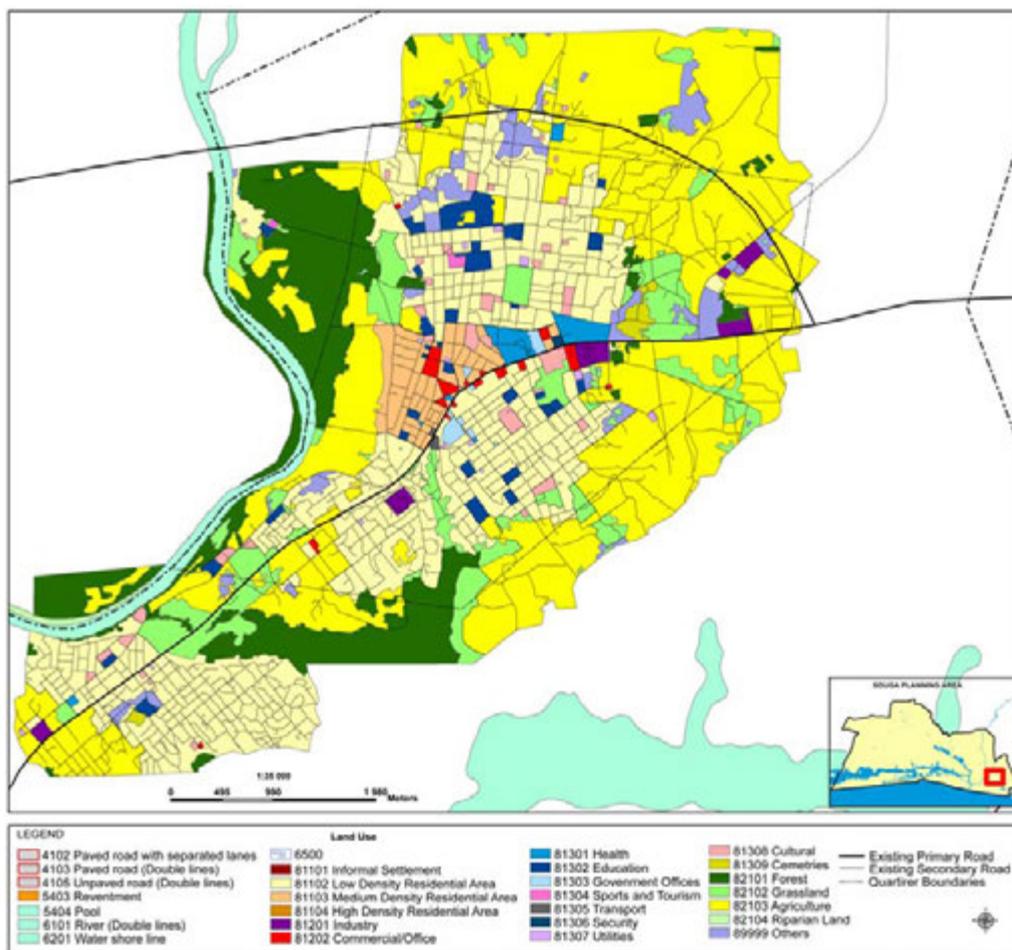
Land use in Bonoua is summarized in terms of surface area as follows in Table 2.3.

Table 2.3 Land Use in Bonoua

Categories	Surface area (ha)	Categories	Surface area (ha)
Low density Housing area	830	Infrastructure	5
Medium density Housing area	80	Cultural	41
Industry	24	Cemeteries	13
Commerce/Offices	15	Forests	354
Health	27	Bush	255
Education	56	Agriculture	1,225
Administrative Services	9	Others	94
Sport et Tourism	3	Paved roads (Double roads)	0
Transport	2	Unknown	4,317
Security	2	TOTAL	7,349

Source: JICA Study Team, Land Use survey, August 2013

Urban sprawl occurs in the eastern part of the city, on farmland where there is an important number of fruit, vegetables plantations or oil palm, rubber and coconut plantations. In the western part of the city there is a higher growth pressure along the A100 road towards Yaou and Grand Bassam. In these extension areas, new individual housing units are under construction and reflect the urbanization that occurs outside the urban area.



Source: JICA Study Team, Land Use survey, August 2013

Figure 2.4 Current Land Use Map of Bonoua

2.1.4.2 Local Economic Context

2.1.4.2.1 Economic Activities

The economy is heavily based on the agricultural sector which is the prime provider of employment in the city, followed by administrative and commercial activities.

(1) Primary Sector

Agriculture is the sector par excellence that provides more employment for people (about 50% of the workforce). Part of the production is for export including cash crops such as oil palm, rubber and pineapple. Coffee and cocoa are produced in small quantities because selling costs are considered to be low by many producers. Today's agriculture is affected by the phenomenon of cash crop change that causes the replacement of older and less profitable crops to more profitable ones.

Food crops are also produced in large quantities, especially cassava, rice, plantain banana, yam as well as vegetable crops (tomatoes, pepper, cabbage, parsley, okra, eggplant, peanut). But note that although natural conditions favour the growing of these crops, they remain less practiced in relation to cash crops. The producers prioritize the cultivation of cash crops.

Activities such as raising livestock and fishing are highly underdeveloped. Fishing is an informal and periodic activity while livestock is limited to backyard breeding (sheep, goats, cattle and poultry). Regarding fishing, fishery products mainly come from neighbouring cities such as Assinie, Adiaké or even Grand-Bassam. However, with such a hydrological network the city has, this activity could be a source of income for the local population.

(2) Secondary Sector

The industry sector is very little developed and occupies a small part of the economic activities of the city. Indeed, Bonoua currently has only three major functional industrial units that are CIPREM-CI, CBC and AWI. Other agro-industrial units such as SIACA or SOCABO exist but are no longer functional. It also counts some collection and weighing rubber production units.

Craft activities are also experiencing a boom with small informal processing units for local soap, palm oil or attiéké manufacturing. This type of activity is mainly practiced by women.

(3) Tertiary Sector

Due to the fact that the city is the principal city of the sub-prefecture and the city, many public and parapublic administrative services are represented. These are mainly:

- Sub-prefecture
- Town Hall
- Gendarmerie brigade
- Police station
- Municipal treasury
- Tax collection offices
- Inspectorate of Primary Education
- Water affairs and forestry offices
- Agriculture directorate
- General hospital

Commercial activities are largely carried-out in the central market made for this purpose on a surface an area of 1300m². Formal and informal trading facilities also develop along the access roads through small shops and stalls of various services. Informal activities are oriented more towards services commonly called small business and are mainly performed by young people. On the main road, major businesses with supermarkets, hardware stores, sales offices, etc. are located.

Tourism in Bonoua is much less important than those of neighbouring towns such as Grand Bassam and Assini. However, Bonoua possesses a significant number of tourism potential, which unfortunately remains untapped and undeveloped. Opportunities to develop tourism of a human type exist by enhancing, for example, traditional festivals. The POPO Carnival is an important cultural event and an

undeniable tourism opportunity for the Commune of Bonoua. Similarly, M'Ploussoué Park, whose name is based on the age group of the local population generation in power at the time of its establishment, offers an area of 16 hectares with tourist attractions. It contains a museum of four huts, an outdoor theatre with 600 seats, a conference room and a foyer for receptions and events. This park provides facilities for various events.

We also note the presence of some hotels but they do not meet international tourism standards.

2.1.4.2.2 Employment

Despite the economic activities that are carried out, the town is now facing unemployment of the working age population and urban poverty both of which are growing and whose consequences are evident. Many graduates are struggling to find a job there and engage in informal activities to meet their needs. The unemployed population is estimated at about 40% of the urban population.

To cope with this situation, the city regularly looks for partners that could finance industrial development.

2.1.4.3 Living Environment and Urban Services

2.1.4.3.1 Road Network and Existing Transportation System

Bonoua Commune is located on a major road (Abidjan-Ghana) or the national road A100, which passes through and is the main artery of the city. Therefore, it plays a role of transit which is a key factor for the transport sector. Some other roads are connected to this main axis in a more or less orthogonal way. These are secondary roads that connect the different neighbourhoods. Bonoua has nearly 18 km of paved roads (including national) and approximately 70 km of dirt road with only 30 km in good condition. The paved roads are concentrated in traditional areas such as Koumassi and Bronoukro Bégnéri located north of the A100 road. Axes between the surrounding cities and Bonoua are all paved.

Transport is characterized by local transport practiced by taxis operating within the city and they are generally in good condition. The bush taxis are frequently used for transport between the principal city of the sub-prefecture and surrounding villages.

We also have the transportation of goods with the purpose to move hinterland agricultural products towards the city and intercity transportation. For this type of transport, Bonoua has a company that operates for this purpose. The Société de Transport de Bonoua (STB), which was created in 1989, has buses that regularly link Abidjan. This company significantly contributes to the long-distance movements of Bonoua's residents. In recent years, mini vans, commonly called "EXPRESS", emerged to support the increasing demand in transportation. There are also other light vehicles serving the surrounding villages.

2.1.4.3.2 Utilities

(1) Distribution of Electricity and Public Lighting

The Commune of Bonoua is connected to the national electricity network. Two villages (Tchintchévé and Kodjoboué) of the municipality are not yet connected to the electricity grid. Public lighting is available in the neighbourhoods supplied by the grid. However, this lighting is not efficient and some parts of the town are either dimly lit or completely dark due to the poor functioning of the lanterns.

Apart from Kodjoboué and Tchintchévé villages, most of the households are serviced with electricity. There are nearly 2,839 subscribers.

(2) Drinking Water

The Commune of Bonoua is supplied with drinking water from three water towers. However, this provision capacity seems insufficient to meet the growing demand, especially in upland neighbourhoods, causing pressure drops or supply disruptions. However, the drinking water supply network covers the urbanized part of the city. Only neighbourhoods in the extension areas are not yet served as well as some villages including Kodjoboué and Tchintchévé.

The priorities of local authorities focus on strengthening the network in the village of Samo and in some of the extension neighbourhoods of the Commune of Bonoua.

(3) Sanitation and Drainage

There is no collective waste water sanitation network in Bonoua. Most of the households use a sanitation system which is more individual or autonomous. However, many septic tanks do not meet high quality standards, especially in older neighbourhoods.

Rainwater is drained through gutters and natural drainage towards urban lowlands and peri-urban areas. The drainage network, which comprises about 25 km of secondary gutters, seems to be sufficient to drain the existing road network, but it lacks regular maintenance. Also note that the extension areas are entirely without drainage.

2.1.4.3.3 Public Facilities

The town of Bonoua has several public facilities that cover the basic sectors namely:

(1) School Facilities

There are 59 public primary schools with 274 classes with a total enrollment of 11,429 students with an average of 42 students per class. In general, the classrooms are in a relatively advanced state of deterioration and learning conditions are sometimes difficult due to the lack of school furniture.

Regarding private schools, the town has 1,275 students for 24 primary classes. This proportion has increased in recent years to fill the gap in public schools. The city also has 2 kindergartens.

In high school, there are at least 5 public establishments with 3 being public with a total of 2,971 students with an average of 68 students per class. However, the city also has private secondary schools.

The city also has a private learning and vocational training centre which provides training in the fields of mechanical engineering, masonry, electricity, plumbing and carpentry since 1975. This institution allows the educational reintegration of students who encounter learning difficulties in general education and contributes to practical training.

(2) Sanitary Facilities

The number of health facilities includes the General Hospital of Bonoua which is the largest public facility of the city in term of health and three rural health centres in some of the villages surrounding the city. The buildings of these health facilities are dilapidated and the technical platform is outdated and

inadequate. This building has recently had the support of rehabilitation within the PPU. Considering the needs of the current population, it is clear that these facilities are not sufficient to meet the expectations in term of care.

Bonoua has also a private religious health centre which is well equipped (Don Orione Medical Centre) that receives patients from all over the country and neighbouring countries. Other private institutions provide care.

(3) Commercial Infrastructure

In terms of commercial equipment, the city has a large central market built on a 13000m² surface area which focuses mainly on business activities. This market consists of a large shed with arranged stalls and shops. The items which are sold there are mainly food products, clothing and utensils. There are also some neighbourhood markets.

A bus station was also equipped to accommodate the different carriers of the city, but it is not really exploited optimally. Several freight vehicles are parked along the streets and in fuel stations. Now with regard to the increase noted in the transport sector, this station seems to be very limited to receive transport vehicles.

(4) Socio-Cultural Facilities

The city has several socio-cultural facilities contributing to the development of populations. In particular there is a municipal stadium, a public library and a youth centre.

The M'Ploussoué park is the only multifunctional developed space of the city that serves as a space for events. It includes built spaces and open spaces consisting of:

- A museum with four permanent exhibition rooms built in the form of local traditional habitat. This museum shows through its exhibitions aspects of the history and living standards of the Abouré people through its collections of traditional instruments of work, statuettes, everyday objects, insignia of power, family chairs, etc. ;
- An outdoor theatre with a capacity of 600 seats;
- A conference room;
- A multifunctional youth centre;
- A bar – restaurant;
- A not yet functional craft centre;
- A botanical garden.

2.1.4.3.4 Environment Protection

The Commune of Bonoua and its surrounding areas were characterized by a vegetation of forest type. But the development of intensive commercial agriculture has caused the loss of this important forest geographical feature. Now this green environment is threatened by rapid urbanization resulting in the resurgence of urban developments.

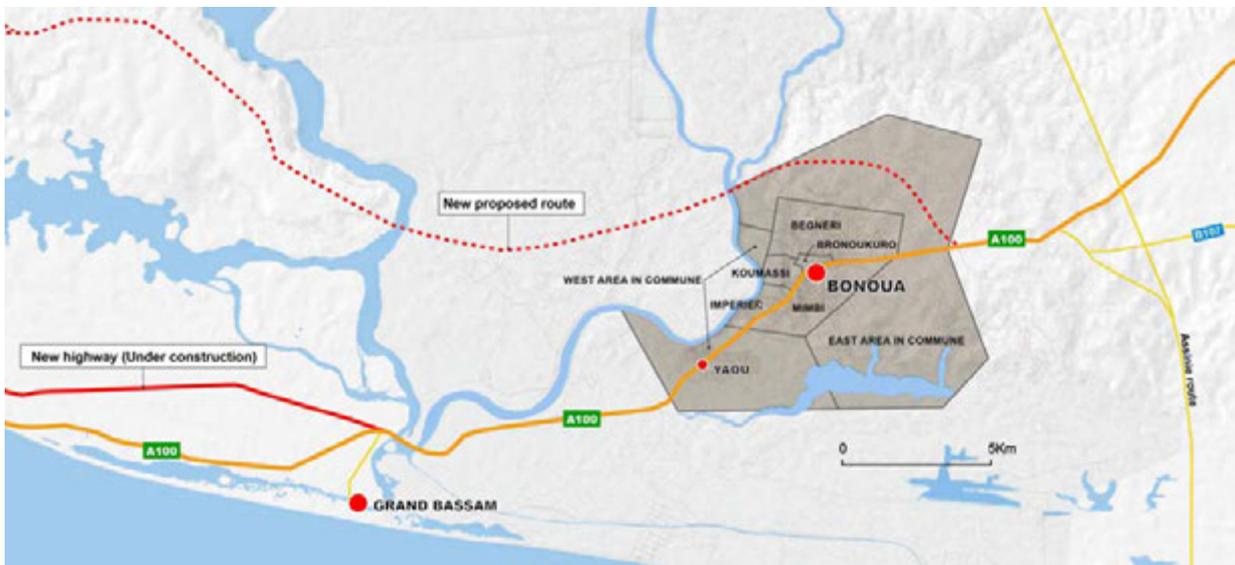
This urbanization leads to further production of solid and liquid wastes that are harmful to the environment. Garbage management which is apparently efficient does not solve the problem of

uncontrolled garbage dumps across the city, especially in the extension areas difficult to access. In addition, with the evolution of the city, sanitation issues will be more important with the risk of pollution of groundwater and waterways.

Also because of the physical characteristics of the soil and the relatively rough relief, they are subject to strong erosion or flooding.

2.1.4.4 Ongoing or Planned Projects

- Drinking water supply Project
- Abidjan-Lagos corridor Project (A100 road in Figure 2.5)



Source: JICA Study Team

Figure 2.5 Abidjan-Lagos Corridor Project

2.2 Analysis

2.2.1 Demographic Change and Trends of the Spatial Growth

2.2.1.1 Demographic Change

Based on the data provided by INS, the JICA Study Team has made population projections for 2013, 2015, 2020, 2025 and 2030 horizons. (See Table 2.4)

Thus, the municipal population grew from 43,728 persons in 1998 to 55,981 persons in 2013 and then to 207,581 persons in 2030. These projections show an average annual growth rate of about 3.6%, comparable to the national average which is 3.2%. This growth can be explained not only by the high natural growth linked to high fertility and declining mortality, but also by the strong attraction of the

Commune of Bonoua due to its proximity to Abidjan, some economic activities and also relatively low average cost of living in this locality.

The current and projected densities estimated by the JICA Study Team, based on the total surface area of lands by city, are shown in the following table:

Table 2.4 Population Distribution of Bonoua Commune by Area

Neighbourhoods	Surface (ha)	Population (persons)					
		1998	2013	2015	2020	2025	2030
Begneri	765.76		15,341	18,339	28,119	42,217	62,376
Bronoukro	46.15		8,476	9,498	12,625	16,778	22,294
Imperier	140.60		3,327	3,977	6,098	9,156	13,527
Koumassi	126.75		10,940	12,260	16,295	21,656	28,775
Mimbi	571.07		7,431	8,482	11,780	16,309	22,518
Bonoua East	1,554.15		2,854	4,139	8,572	15,367	25,569
Bonoua West	4,144.81		7,612	9,389	15,285	23,945	36,522
Commune Total	7,349.29	43,728	55,981	66,084	98,774	145,428	207,581
Density (persons/ha)		6	8	9	13	21	28
Annual Growth Rate (%)							3.6

Source: INS 1998 Census, JICA Study Team

2.2.1.2 Trends of the Spatial Growth

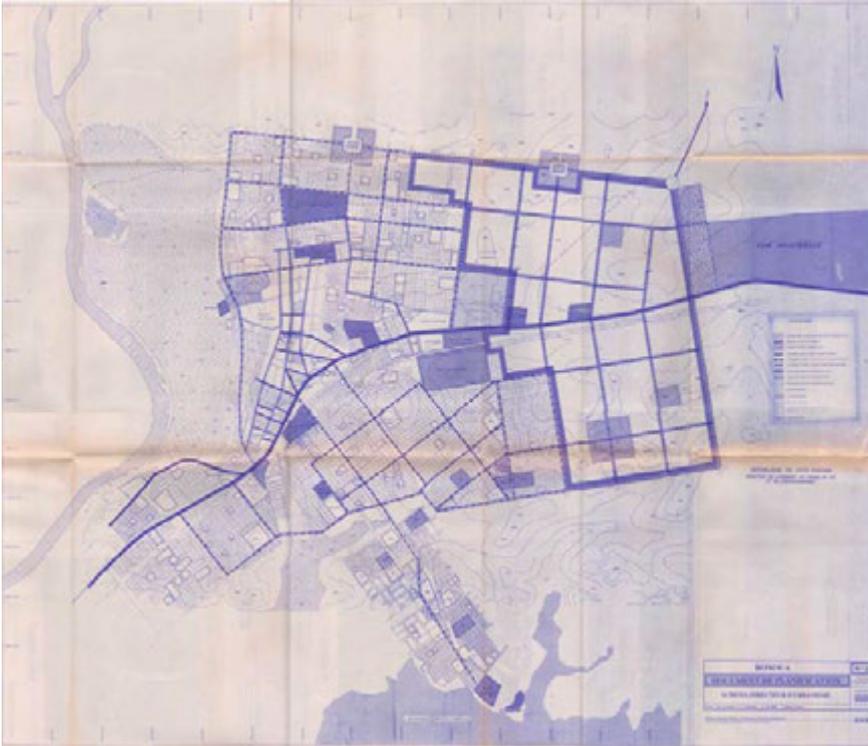
Although the relief of the city is particularly rough, the city has experienced a remarkable and significant spatial development over recent years. Spatial development of the city is currently led by the various subdivisions that are made in some areas. These developments are undertaken by landowners with technical assistance from the communal authority and are in fact extensions of existing neighbourhoods. And more subdivisions are initiated and carried out to meet the growing demand for urban land.

However, many plots from these subdivisions, although being legally acquired, are not developed by the owners for several years after acquisition. This could lead to an uncontrolled expansion of the city and ultimately a threat to farmland on the outskirts, as well as land speculation, if no action is taken by the authorities. Indeed, there is no provision to withdraw any undeveloped acquired land.

Extensions of the city occur essentially in the East and North of the current urban sprawl. To the West of the city after the village of Yaou, many subdivisions projects are also underway towards Grand-Bassam Commune. The dynamics of spatial development is highlighted much more by the intensification and expansion of habitat, especially in older neighbourhoods.

2.2.2 Analysis of the Implementation of the Previous Urban Master Plan

The last urban master plan of the city dates back 1981. Since then, no other master plan has been developed for the city to the point that the development of the city seems to be spontaneous. To cope with this situation, the Development Project of Coastal Towns (PDCC) was conducted in 1996 with funding from the European Union. However, defining new directions in the development of the city was allowed through a planning document. Indeed, this project was aiming among, other objectives, to increase the local capacity for planning, investment and management in the context of decentralization.



Source: JICA Study Team

Figure 2.6 Urban Master Plan for Bonoua (1981)

The following observations derive from the analysis of the degree of application of the PUD of Bonoua made in this planning document:

- A small increase in population regarding the results of the census of 1988 (21,150 inhabitants) compared to PUD's medium-term forecasts (44,500 inhabitants in 1990)
- A strong urban expansion with 1,100 hectares of subdivided land in 1997 against 800 hectares of urbanized land provided by the PUD in 1990
- A spatial growth generally following the extension areas proposed by the PUD outside the subdivisions located in the South that are beyond the perimeter of the PUD
- The area of 106 hectares for industrial and craft activities not yet developed
- Some planned public facilities failed to be implemented due to the lack of means

In order to improve this situation, the proposals of the PDCC focused on actions aiming at organizing the spatial development, first through the development of undeveloped plots and second to construct community facilities. Four major axes emerged from these proposals:

- The establishment of a structuring road network on the basis of the existing road network to guide spatial development
- The construction and rehabilitation of major proximity community facilities
- The creation of a drainage and sanitation network as well as improving the production of drinking water for better service

- Intensification and slowdown of existing subdivision
- Maintaining the industrial area
- The use of non-building land for agriculture or urban green spaces purposes

Today, the urban development of the city thus follows this document although it has no specific legal basis. However, although financial resources have been mobilized under the PDCC for the implementation of these proposals, they have only been partially realized and most of the actions taken are located in the northern part of the city especially at VRD level.

Indeed, the planned extension area to the east of the city has so far not been developed and the existing subdivisions remain weakly constructed or undeveloped, because of the non-servicing of these sites and the absence of certain road networks, especially in the south (subdivisions of Kodjoboué and Bronoukro extension), in the north (subdivision of Begneri extension) and west of the city (subdivisions of Koumassi extension 2 and 3) towards Yaou. However, the planned industrial zone since the PUD of 1981 shows an early completion with the installation of some industrial units.

2.2.3 Assessment of Land Availability

2.2.3.1 Natural Constraints and Regulatory Easements

Natural constraints on the spatial development of the municipality of Bonoua are diverse. The Commune of Bonoua is naturally limited by the stream network that serves it. This network consists of two lagoons (Ono and Kodjoboué) respectively located to the north and south and Comoé River to the west.

The characteristics of the relatively rough relief of the town, consisting of plateaus with steep slopes and floodplains along the banks of streams are all natural constraints to consider in order to guide the development of the city. Indeed in the north of the city, the analysis of the general topographic area of the city helps in identifying and locating these topographical constraints particularly in the northern and southern parts. The topography is characterized by land with steep slopes while in the south; there are lowlands with low slopes which are subject to regular flooding during heavy rains.

These areas that are unsuitable for construction and urban development constitute some constraints to the spatial development of the city. And in accordance with the regulations in force, an easement of 25m must be observed in relation to the rivers. Furthermore, since the study area is traversed by a medium-voltage electricity line (MV), the easement to consider is 8m with a corridor reservation of 16m minimum.

2.2.3.2 Land Ownership and Land Availability

Today, Bonoua urban sprawl covers an area of 1,650.33ha or 22.45% of the communal surface area. Lands not yet urbanized are mainly farmland that could be rapidly urbanized in the long run, if topographic conditions allow it. It should be noted that the current development dynamic of the city goes a little against the extensions areas proposed by the previous urban master plan. In addition to the east, north and south extensions under the PUD, a new expansion area is being created westward from Yaou beyond the municipal boundary. The extension areas of the city are from east to west over a surface area of about 5,698.96ha.

2.2.3.3 Provision of Urban Plots and Level of Development

The production of urban plots is made through subdivisions operations. Most of subdivisions are undertaken by landowners with the technical assistance of the Municipality of Bonoua so that these developments remain consistent with the urban planning documents while providing a coherent development of the city.

However, the pressure on land and the ever-growing needs of the population for housing and socio-economic income force some landowners to initiate developments most of which are not subject to approval by the MCLAU or often sell off their land under the helpless gaze of administrative authorities. It is probably from these practices that emerge urban disorder and land disputes. But through the regularization of the subdivisions initiated by MCLAU, the Commune of Bonoua may experience a harmonious development and enable land purchasers to obtain definitive property titles.

The development of urban land is subject to obtaining building permits. Although this procedure is done at the local level and presents no particular difficulty, building permit files are not numerous. The evolution of applications for building permits for the last five years clearly attest this situation.

2.2.4 Summary of the SWOT Analysis

The table below summarizes the key points deriving from the SWOT analysis to consider in the development of the urban plan of Bonoua.

Table 2.5 SWOT Analysis

	Strength	Weakness
INTERNAL FACTORS	<ul style="list-style-type: none"> • Strong influence of tradition and social organization • Involvement of populations in the management of community development • Essentially young population • Strong commitment for city development by local authorities • Strong tourism potential through the hydrologic network and local traditions • A dynamic local economy based on agriculture, transport and trade • A dynamic transport sector through commuting and transportation of goods 	<ul style="list-style-type: none"> • Slow evolution of the population • Economy mainly based on agriculture particularly based on cash crops • Low provision of public utilities • The lack of job opportunities resulting in an increase in youth unemployment and movements towards Abidjan • No recent urban planning documents available • Low development of urban land • Physical constraints limiting urban sprawl • Inadequate housing offer • Low capacity of urban networks
	Opportunities	Threats
EXTERNAL FACTORS	<ul style="list-style-type: none"> • The city is served by the international route A100 part of the Abidjan-Lagos corridor • Strong demand for urban land and housing • The creation of an agro-industrial zone • The construction of the Abidjan Grand-Bassam highway contributes to significantly connect the city to the Megalopolis • The SDUGA project provides an opportunity for the city to become an important agricultural and road traffic platform and integrates the dynamic development of the Megalopolis 	<ul style="list-style-type: none"> • The proximity of the city to Abidjan may make it become a suburb • Development highly depends on the development of Abidjan • Uncontrolled urban expansion threatening agricultural development • Land speculation regarding urbanized land

Source: JICA Study Team

2.2.5 Development Orientations Following SDUGA 2030

2.2.5.1 Principles

Following the orientations provided by the Urban Master Plan of Greater Abidjan (SDUGA), the Commune of Bonoua which is comprised in the Urban Unit 9 is destined to become a secondary urban centre and a satellite city that will develop autonomously from Abidjan. The Commune of Bonoua will also be an important logistics centre for Greater Abidjan as well as an agribusiness platform of choice.

In the logic of a smart development of Greater Abidjan, the development of the Commune of Bonoua will also help:

- Avoiding costly and space consuming urban expansion by creating local employment opportunities for resident populations to avoid commuting towards the agglomeration of Abidjan
- Promoting TOD infrastructure
- Promoting health and quality of life of populations
- Preserving and enhancing natural and cultural resources

Thus, compact city initiatives will enable densifying the existing urban area by creating around transport infrastructure some residential, commerce and offices mixed uses areas. The creation of genuine mixed-use urban centres and the creation of local employment opportunities through the development of green industry area will guide the planning of the town.

The main principles of the city planning should take into account the maintenance of agricultural activities in the heart of the local economy as a key driver of the development of the city. This activity sector will also promote the development of employment opportunities through the light and food industries with low environmental impact.

2.2.5.2 Major Axes of Strategic Transport

The proposed SDUGA 2030 transport system also helps make the Commune of Bonoua a substantial "logistics centre" of the eastern part of Greater Abidjan. The logistics centre will avoid transiting heavy freight vehicles in residential or mixed-use areas to avoid traffic jams.

Thus, the strategic network of routes proposed by the master development plan of Greater Abidjan, contributes to this goal by providing an alternative route over the existing road to guide the heavy vehicles traffic in particular. The plan proposes the creation of a bypass from Bonoua through Bingerville to join the Y4 through Mitterrand Boulevard.

The other major structuring road of the city is the A100 road which crosses the city in its middle part. This road will be used primarily for intercity traffic of light vehicles and other means of public transport in the direction of Grand-Bassam and the city of Abidjan.

This strategic road network that connects the city to the agglomeration of Abidjan will help to consolidate the creation of the eastern logistics park of Greater Abidjan.

2.2.5.3 Land Uses and Urban Centres

Land use must meet the requirements to make the city a secondary urban centre and an agricultural platform relative to Greater Abidjan. Residential areas should be low and medium density with mixed-use urban centres built around mass transit infrastructure. These centres may be suitable for housings, offices, shops, etc. Opportunities should be extended to include services and shops in urban centres for a large servicing.

The Agro-industrial and light industry area will contribute to the total or partial on-site processing of agricultural products of the region. It will also include a major logistics park for the fragmentation of freight coming from Ghana as well as the agricultural products from rural areas of the East moving to the Port of Abidjan. The objective of this logistics park is to reduce movement of heavy goods vehicles through the city of Abidjan. This logistics centre must be located outside the city to allow direct access from the new bypass proposed by the master plan.

Tourist and recreational areas are also proposed along the Comoé river and Kodjoboué lagoon in addition to M'Ploussoué Botanic Park. Outside the urban area and its extensions, plantations, forests and natural areas in particular towards Grand-Bassam should be preserved and protected.

2.3 Master Plan of Bonoua Urban Planning Area

2.3.1 Objectives of the Master Plan for Bonoua Urban Planning Area

For achieving the vision and land use framework identified for Greater Abidjan and tackling the planning issues in Bonoua, the following objectives are set:

- Enhance the existing primary urban centre
- Define and encourage the neighbourhood urban centres
- Promote the development of regional industrial clusters
- Encourage residential densification in existing urban areas that are accessible to services and are efficiently served with utilities and infrastructure
- Promote the provision of new residential areas that are spacious and leafy, and can be adequately served with roads and utilities
- Protect natural environment and resources, and good agricultural land in rural areas
- Utilize the environment of lush greenery and water courses for people's lives
- Promote recreational and leisure activities for residents and visitors
- Organize the hierarchy of roads within the Commune of Bonoua and improve the road network including the A100 bypass
- Promote Transit Oriented Development (TOD) by strengthening the road network and public transport
- Development for multi-modal intersection

2.3.2 Spatial Development Framework and Structure Scheme

2.3.2.1 Future Population Distribution

According to the distribution result of the socio-economic framework for the Greater Abidjan to the cities/sub-prefectures, it is predicted that the Commune of Bonoua requires to newly absorb the population of about 89,000 people and 21,000 households equivalent to 1.6 times as many as the present ones. (See Table 2.4)

The current urban settlement is formed in five zones (Begneri, Bronoukro, Imperier, Koumassi and Mimbi) of the central part of the city, and southwest in Yao. The most densely-populated zone is Bronoukro (183.7 people per hectare), the next is Koumassi (86.3 people) followed by Imperier (23.7 people), and the average population density of the five zones is 27.6 people in 2013.

The increase in population mentioned above shall be first accommodated by the densification of the urban centre and the development of the underdeveloped areas in the five above-mentioned zones. The remaining increases in population that cannot be accommodated in those zones shall be accommodated by the development of the new urban area in the suburbs of the Commune of Bonoua.

The target of the population density in the current urban area of the city is set to 70 people per hectare, which is a minimum of the population density of a medium density residential area. In this way, it aims

at absorbing 70,000 people who are equivalent to 78% of the increase in population in the five zones, and 19,000 people equivalent to the remaining 22% in the suburbs, respectively.

Table 2.6 Estimation and Distribution of Future Population

		2013	2025	Difference
Bonoua Commune/sub-prefecture within the planning area	Population (persons)	102,537	196,752	94,215
	Households (households)	22,027	45,014	22,987
	Land Area (ha)	32,701.34	32,701.34	-
	Population Density (persons/ha)	3.1	6.0	-
Outside city in Bonoua Commune/sub-prefecture within the planning area	Population (persons)	46,556	51,324	4,768
	Households (households)	10,001	11,742	1,741
	Land Area (ha)	25,352.04	25,352.04	-
	Population Density (persons/ha)	1.8	2.0	-
City of Bonoua	Population (persons)	55,981	145,428	89,447
	Households (households)	12,026	33,272	21,246
	Land Area (ha)	7,349.30	7,349.30	-
	Population Density (persons/ha)	7.6	19.8	-
Central Five Zones in the City of Bonoua	Population (persons)	45,515	115,524	70,009
	Households (households)	9,778	26,430	16,652
	Land Area (ha)	1,650.34	1,650.34	-
	Population Density (persons/ha)	27.6	70.0	-
Expansion Urban Area in city of Bonoua	Population (persons)	10,466	29,904	19,438
	Households (households)	2,248	6,842	4,593
	Land Area (ha)	5,698.96	5,698.96	-
	Population Density (persons/ha)	1.8	5.2	-

Source: JICA Study Team

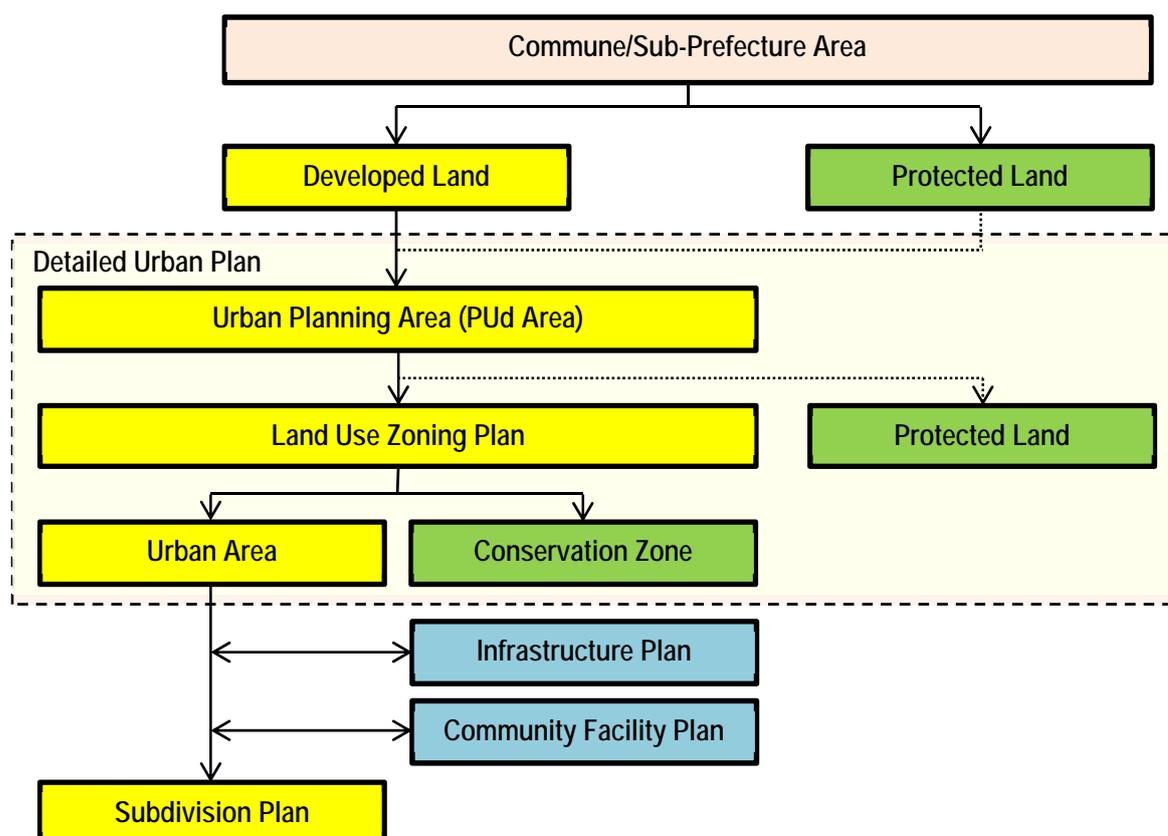
2.3.2.2 Urban Growth Management for Suburban Areas

It is necessary to manage urban growth in rural areas for the following objectives:

- Protect the natural environment and resources, and preserve agricultural land in protected land
- Create better and more attractive environments for residents and businesses in the industrial areas by providing appropriate basic infrastructure and services
- Make a compact conurbation area of commune/sub-prefecture Bonoua

Future urban area's boundaries should be set in order to manage urban growth in rural areas, specified in a detailed urban plan (PUD) on the 1:10,000 scale simplified digital base maps created by this project.

Outside the urban area's boundaries, rural-agricultural-natural environments should be conserved for rural life including agricultural production and natural environments. Therefore, as well as the preparation and approval of subdivision plans which should be strongly restricted, principally no urban development should be allowed. Within the urban area's boundaries, provision of urban infrastructures/services should be implemented with high priority. (See Figure 2.7)



Source: JICA Study Team

Figure 2.7 Basic Policy of Developable Land

In this study, the JICA Study Team set the tentative boundaries between developed land and protected land, and the urban area and the conservation zone in the urban planning area of Bonoua as shown in Figure 2.7.

2.3.2.3 Urban Centre Development

Bonoua Commune is defined as a centre with the following features in the Urban Master Plan for Greater Abidjan:

- satellite city with urban expansion areas
- secondary urban centre: TOD centre, public facilities serving 70,000 – 100,000 residents
- major urban and logistics centre
- agricultural hub

In order to advance toward the above centre, the urban functions shown below need to be strengthened. (See Figure 2.8)

(1) Urban centre

The existing urban centre along the A100 road should be enhanced and enlarged as the central commercial/business area of commune/sub-prefecture Bonoua. The following points are strategies for developing urban centre:

- Upgrade the physical capacity
- Promote intensive land use
- Increase the density of the various urban functions
- Improve infrastructure including the provision of a transfer station
- Produce the presence, the landscape and amenity appropriate for urban centre

(2) Sub centres

Some sub centres should be developed for accelerating the ordered suburbanization and for providing urban services to their surrounding areas. The existing town centres of Yao and Samo are sub centres which have been developed along the A100 road.

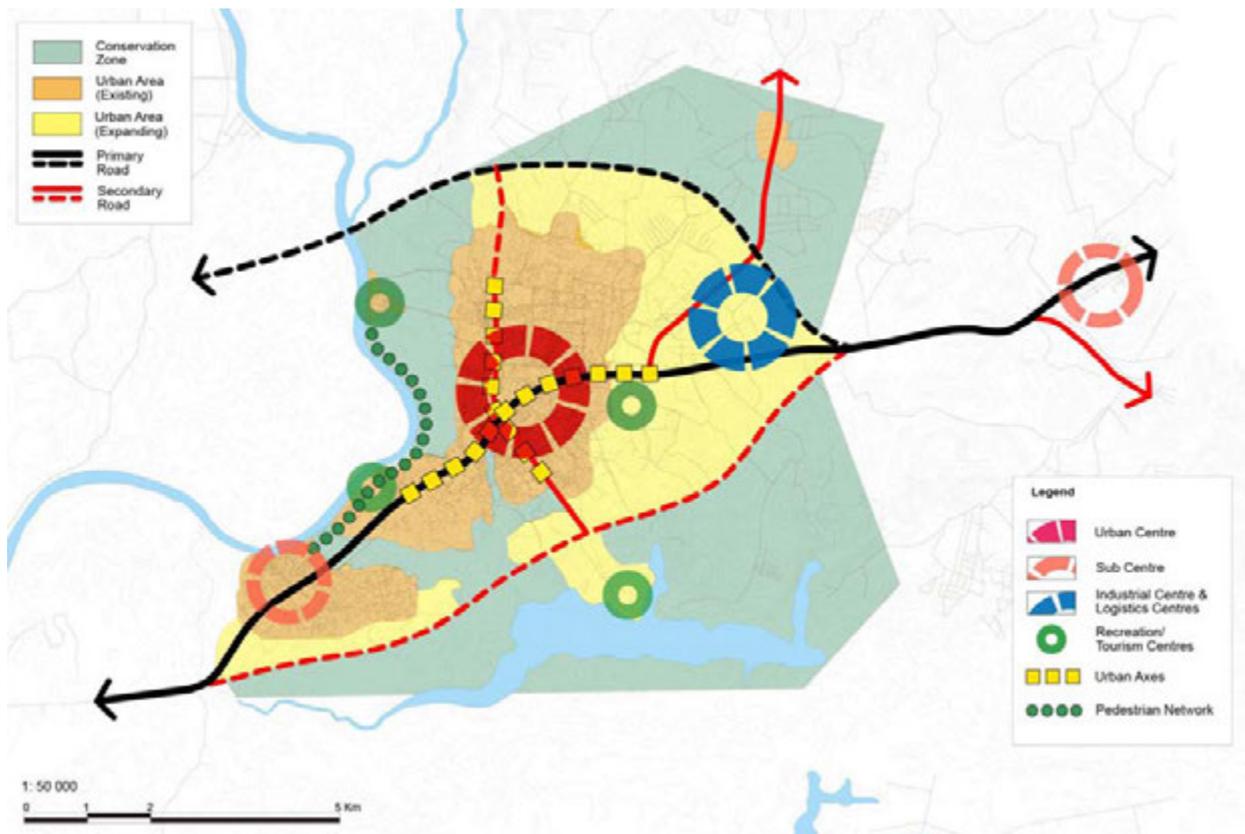
(3) Industrial centre and logistics centre

The functions of an industrial centre and a logistics centre should be facilitated so as to strengthen the employment centre, multi-modal interchange and agricultural hub as a self-supported satellite city. The following facilities are envisaged concretely:

- Industrial zone for food processing and light manufacturing
- Major logistics and lorry park areas to facilitate the bulk-breaking of items traveling from Ghana and the eastern rural areas
- Wholesale market for produce from the eastern rural areas

1) Recreation/tourism centres

It is important to identify potential tourism areas for the residents and tourists from home and abroad including Abidjan for conserving their resources and environment, as well as to secure proper access to them. The potential sites in this aspect are Lagoon Kodioboue and Comoé River including Edio Village. An open space and recreation centre for the residents should be developed along with the tourism centres.



Source: JICA Study Team

Figure 2.8 Diagram of Spatial Development Framework for Urban Planning Area of Bonoua

2.3.2.4 Transport Network

(1) Primary Roads

It is assumed that the A100 road which runs east-west through Bonoua will be upgraded to the expressway as a section of the Abidjan - Lagos coastal corridor. If the A100 road will be upgraded to the arterial high-standard highway which has controlled access, the urban centre of Bonoua will be divided into two parts, which will result in impaired convenient transportation.

It is proposed that the A100 road will branch off between Bonoua and Samo towards the northwest, and this northern bypass will make a detour to avoid the urban area of Bonoua and get to sub-prefecture Alépé and Oghlawapo. The master plan for Bonoua will be studied on the assumption that the northern bypass is constructed as the high-standard highway in this project.

The existing A100 road and its northern bypass are defined as the primary arterial roads in Bonoua Commune. (See Figure 2.9)

(2) Secondary Roads

However, the route from Aboisso, an eastern part, to the Abidjan autonomous port via Grand Bassam and Port Bouet will function as an important freight transport route, even if the northern bypass is developed. Therefore, in order to prevent the division of the urban centre by the existing A100 road, it is proposed that the southern bypass of the A100 road, which bypasses the urban area of Bonoua and is comparatively small, should be developed. Furthermore, the JICA Study Team proposes a road to connect the northern bypass and the southern bypass through the urban centre of Bonoua.

As well as the existing road to Tchintchebe, the A100 southern bypass and the road connecting the northern bypass with the southern bypass are defined as the secondary arterial roads in Bonoua Commune.

(3) Tertiary Roads

Based on the existing road condition, the important tertiary roads should be defined both in the existing urban area and in the urban expansion areas, which can be the routes for public transport such as minibuses.

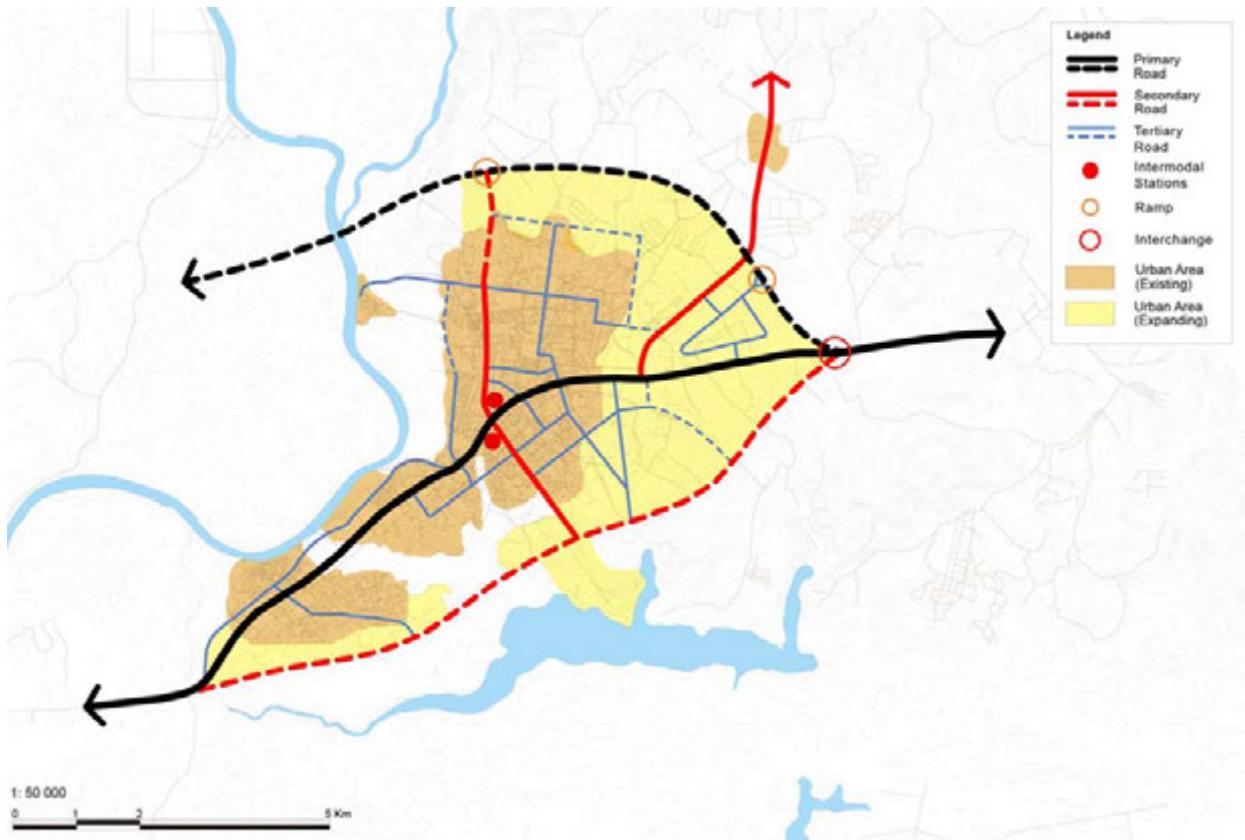
(4) Intermodal Stations

Intermodal stations should be developed for multimodal transportation including an intercity bus system, local buses, minibuses, taxis and private cars.

(5) Logistics Centre

Bonoua Commune has the potential for becoming a logistics centre as described earlier, where two major arterial roads will meet. The logistics centre consists of the logistics centres of individual enterprises, factories of distributive processing, wholesale markets, and lorry park areas to facilitate the bulk-breaking of goods from Ghana and produce from the eastern rural areas. One of the aims in locating the logistic/lorry park at Bonoua is to aid in the reduction of heavy goods vehicles trips into the Abidjan.

The proposed site of the new logistics centre should be located at the area which has direct access to the existing A100 road and A100 northern bypass on the east side of the urban area of Bonoua.



Source: JICA Study Team

Figure 2.9 Transport Network Plan for Urban Planning Area of Bonoua

2.3.3 Land Use Plan

The land use plan which is proposed in this master plan shows designated land use zoning so as to guide the development and redevelopment of land. It prescribes both private and public use of land within the urban area mentioned in 2.3.2.2. It also defines future development and land use patterns, the conservation of area and a primary transport network.

2.3.3.1 General Land Use Zoning

All land, at least within the urban area, should be divided into zones, of which the acceptable use and form are prescribed. The JICA Study Team proposes fourteen general classifications of land use zoning as listed below:

- Low density residential zone
- Medium density residential zone
- High density residential zone
- Mixed commercial and residential zone
- Commercial / office zone

- Light industrial zone
- Industrial zone
- Educational zone
- Health zone
- Government office zone
- Religious zone
- Utilities / transport / security / military zone
- Public open space / recreation / sports / tourism zone
- Conservation zone

The classifications of the above-stated land use zoning being minimum and general, it is desirable to be prescribed as universal zoning classification applicable to the whole country.

2.3.3.2 General Land Use Zoning Guidelines

The zoning guidelines of the above-stated land use zones are shown in Table 2.7 and Table 2.8.

Table 2.7 Proposal for General Land Use Zoning Guidelines (1)

Land Use Zones		Description
Residential zones	Low Density Residential zone	<ul style="list-style-type: none"> Major use : detached houses Population density : 69 people per hectare or less Housing density : 17 units per hectare or less In order to maintain the spacious living environment, the land uses permitted are limited extremely and the requirements for plot size or building height are set up strictly.
	Medium Density Residential zone	<ul style="list-style-type: none"> Major use : detached houses, low-rise collective houses Population density : 70-219 people per hectare Housing density : 18-56 units per hectare Since the land uses permitted are slightly expanded from the low density residential zone, facilities indispensable to the daily life of a local community can be built.
	High Density Residential zone	<ul style="list-style-type: none"> Major use : mid-to-high-rise flats or apartments Population density : 220 people per hectare and over Housing density : 57 units per hectare and over This zone requires adequate parking facilities, public transport facilities and public open spaces. The units at ground floor level only may be used for small-scale offices and shops, providing service for a local community.
Commercial zones	Mixed Commercial and Residential zone	<ul style="list-style-type: none"> Major use : mid-to-high-rise flats or apartments, shops, commercial offices The main activity in this zone is shopping for daily necessities by residents living in the vicinity. Some commercial uses are prohibited to protect minimal residential environment. The areas such as railway station vicinities, city centres in smaller cities, areas along a trunk road will be zoned as this land use zone.
	Commercial / Office zone	<ul style="list-style-type: none"> Major use : shops, shopping malls, markets, business offices, restaurants, banks, hotels, amusement facilities, mixed commercial and office The catchment area spreads through a wider area than that of mixed commercial and residential zones. According to the attraction of the city and the character of an urban centre, adequate breadth and density should be ensured. This zone requires adequate parking facilities, public transport facilities and public open spaces.
Industrial zones	Light Industrial zone	<ul style="list-style-type: none"> Major use : small-scale factories, low-pollution industries, facilities of service industries Hazardous industries and industries bringing about environmental deterioration should be strictly prohibited. The industries that have little environmental impact may be located abutting on residential or commercial zones
	Industrial zone	<ul style="list-style-type: none"> Major use : general industries, warehousing facilities, lorry parks Any industry can locate in this zone. Access and egress are strictly controlled and a green buffer zone should be set up adjacent to other zones
Educational zone		<ul style="list-style-type: none"> Land in this zone is intended to be used for the teaching or training of persons to improve their knowledge and develop their skills, and research into specialized fields. Educational facilities to be located in this zone range from Nursery, Primary and Junior High schools, Senior High Schools, Vocational/Technical Schools and Colleges to Polytechnics and Universities. Permitted uses and prohibited uses vary by the types of educational facilities.
Health zone		<ul style="list-style-type: none"> Land in this zone is intended to be used to provide facilities for health services at all levels of health care ranging from clinics to hospitals. Permitted uses and prohibited uses vary by the types of health facilities.

Source: JICA Study Team

Table 2.8 Proposal for General Land Use Zoning Guidelines (2)

Land Use Zones	Description
Government office zone	<ul style="list-style-type: none"> Government offices and related business of the executive, legislature, Judiciary and all other organization and agencies of government, operating at national, regional and city level
Religious zone	<ul style="list-style-type: none"> Religious facilities such as places of worship, churches, mosques and facilities for other religious beliefs
Utilities/transport/ security/military zone	<ul style="list-style-type: none"> Utilities : utility sites (water and sewerage, gas, telephone), power plants and substations, solid waste disposal sites, cemeteries, areas of mining activities Transport : airports, sea ports, railway stations, bus stations, water bus stations, logistics centres, warehouses, lorry parks Security/Military : police service, fire service, emergency service, prisons and correctional service, and military facilities including barracks
Public open space / recreation / sports / tourism zone	<ul style="list-style-type: none"> Public open space : parks and gardens, play areas for children, and open areas for buffers between industrial and other land use activities Recreation : recreational, leisure, entertainment and culture facilities for residents of the area Sports : sports grounds, stadium, golf course, sports clubs, camping grounds, etc. Tourism : historic and cultural sites, recreational, leisure and entertainment facilities and accommodation for tourists and visitors
Conservation zone	<ul style="list-style-type: none"> Land in the conservation zone is intended to be retained in its natural or modified state for conservation purposes. It includes forest land, land within the immediate vicinity of water bodies such as the seas, lagoons, lakes and rivers, main drainage system including rivers, streams and canals, and land reserved for flood protection, such as spill areas, watershed protection areas, and riparian area including marsh and swamp. Development in conformity with the intent of the zone will be permitted.

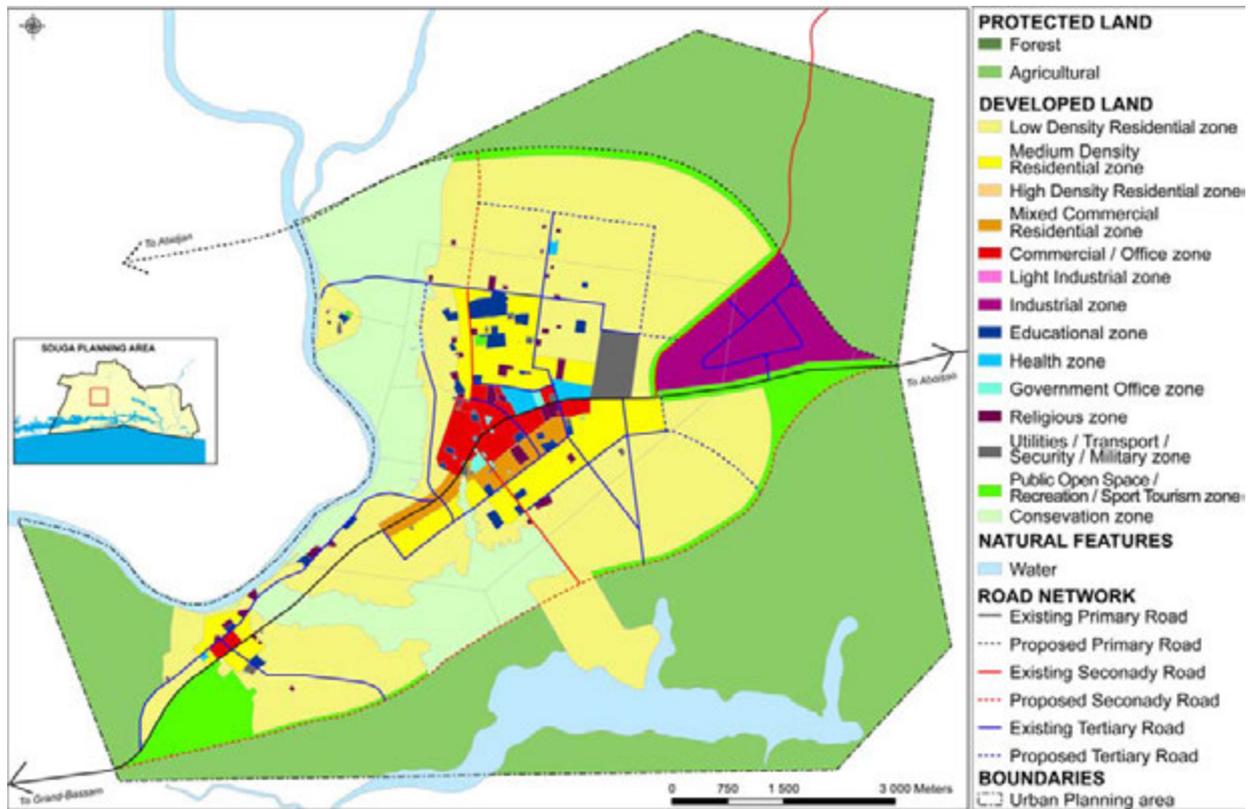
Source: JICA Study Team

2.3.3.3 Land Use Plan for Urban Area in Bonoua

In accordance with the following policies, a land use zoning plan covering urban areas in Bonoua is prepared as shown in Figure 2.10.

- Existing urban centre areas will be allocated for commercial/office zones.
- Land adjacent to the commercial/office zones and along the A100 road will be allocated for mixed commercial and residential zones. The existing town centre of Yao and a new sub centre in the northern expansion area will be also allocated for mixed commercial and residential zones.
- The rest of the existing urbanized area will be allocated for a medium density residential zone.
- Suburban areas in the existing urban area and urban expansion areas will be zoned to a low density residential zone.
- The existing institutional land use including education, health, government offices, and religious facilities should be maintained in principle without any change. The same applies to land to be used for utilities/transport/security/military.
- Land near the intersection of the existing A100 road with its northern bypass will be allocated for the industrial zone, and a green buffer zone will be set up between industrial and other land use zones. Land along the A100 road will be allocated for light industrial zone.

The areas of each land use zone are measured as shown in Table 2.9.



Source: JICA Study Team

Figure 2.10 Land Use Zoning Plan for Urban Area of Bonoua

Table 2.9 Areas by Land Use Zone

Land Use Zones		Land Areas (ha)		
Developed Land	Residential Zones	Low-Density Residential Zone	2,174	26.5%
		Medium-Density Residential Zone	337	4.1%
		High-Density Residential Zone	0	0.0%
	Commercial Zones	Mixed Commercial and Residential Zone	72	0.9%
		Commercial / Office Zone	108	1.3%
	Industrial Zones	Light Industrial Zone	0	0.0%
		Industrial Zone	253	3.1%
	Educational Zone	57	0.7%	
	Health Zone	27	0.3%	
	Government Office Zone	9	0.1%	
	Religious Zone	41	0.5%	
	Utilities / Transport / Security / Military Zone	59	0.7%	
	Public Open Space / Recreation / Sports / Tourism Zone	336	4.1%	
Conservation Zone	836	10.2%		
Sub-total	4,307	52.5%		
Protected Land	Forest/ Agriculture	3,397	41.4%	
	Water	504	6.1%	
	Sub-total	3,901	47.5%	
Total	8,208	100.0%		

Source: JICA Study Team

Table 2.10 Areas by Land Use Zone

Land Use Zones		Land Areas (ha)							
		Begneri	Bronoukro	Imperier	Koumassi	Mimbi	Bonoua West	Bonoua East	Outside City
Developed Land	Low-Density Residential	372	0	62	30	200	403	1,107	0
	Medium-Density Residential	131	0	0	0	169	37	0	0
	Mixed Commercial and Residential	0	0	14	0	58	0	0	0
	Commercial / Office	0	26	0	33	40	9	0	0
	Industrial	78	0	0	0	0	0	172	3
	Institutional (Educational/Health/Government Office/Religious)	59	19	6	4	31	11	3	0
	Utilities/Transport/Security/Military	50	2	0	1	3	3	0	0
	Public Open Space/Recreation/Sports/Tourism	26	0	0	0	6	134	157	13
	Conservation	50	0	59	59	63	291	314	0
	Sub-total	766	46	140	127	571	887	1,754	16
Protected Land	Forest/ Agriculture	0	0	0	0	0	667	2,391	339
	Water	0	0	14	2	0	144	344	0
	Sub-total	0	0	14	2	0	810	2,735	339
Total	766	46	154	129	571	1,698	4,489	355	

Source: JICA Study Team

Table 2.11 Population Density of the Residential Zones in Bonoua City

			Land Areas (ha)	2025 Population (persons)
Central Five Zones in the City of Bonoua	Begneri	Low-Density Residential (35 people/ha)	372	13,057
		Medium-Density Residential (120 people/ha)	131	15,737
	Bronoukro	Commercial / Office (120 people/ha)	26	3,072
	Imperier	Low-Density Residential (35 people/ha)	62	2,173
		Mixed Commercial and Residential (220 people/ha)	14	3,015
	Koumassi	Low-Density Residential (35 people/ha)	30	1,044
		Commercial / Office (120 people/ha)	33	3,952
	Mimbi	Low-Density Residential (35 people/ha)	200	7,024
		Medium-Density Residential (120 people/ha)	169	20,258
		Mixed Commercial and Residential (220 people/ha)	58	12,721
		Commercial / Office (120 people/ha)	40	4,859
	Expansion Urban Area in city of Bonoua	Bonoua West	Low-Density Residential (35 people/ha)	403
Medium-Density Residential (120 people/ha)			37	4,401
Commercial / Office (120 people/ha)			9	1,025
Bonoua East		Low-Density Residential (35 people/ha)	1107	38,914
Total	Low-Density Residential (35 people/ha)		2,174	76,388
	Medium-Density Residential (120 people/ha)		337	40,396
	Mixed Commercial and Residential (220 people/ha)		72	15,736
	Commercial / Office (120 people/ha)		108	12,909
	Total		2,689	145,428

Source: JICA Study Team

2.3.4 Action Programme

In order to implement the master plan for the Bonoua extended area, the necessary actions are listed and programmed as shown in Table 2.11 and 2.12. The actions approaching from four dimensions below are proposed in concert with the implementation scenarios of spatial development of SDUGA 2030:

- Preparation of the PUd
- Development of the diverse centres
- Development of residential land
- Provision of infrastructure such as transport infrastructure, community facilities, and utilities

Table 2.12 Action Programme – Realization of Land Use Plan

Actions	Present & Short Term (2014-2020)	Middle Term (2020-2025)	Long Term (2025-)
Programme of Implementation of SDUGA 2030	–	<ul style="list-style-type: none"> - Expansion of the urban areas - Industrial zone in Bonoua - New Bingerville by-pass to Bonoua 	<ul style="list-style-type: none"> - The provision of public transit: BRT's Bingerville – Bonoua
Preparation of PUD	<ul style="list-style-type: none"> - Establish working group - Prepare the PUD by reference to this Master Plan - Coordinate with bodies concerned - Get approval from MCLAU 	<ul style="list-style-type: none"> - Monitor and evaluate the PUD 	<ul style="list-style-type: none"> - Review & revise the PUD
Redevelopment of Urban Centre Development/redevelopment of Sub Centres	<ul style="list-style-type: none"> - Establish working group - Discuss strategies/schemes - Prepare development plan - Design pilot projects - Coordinate with bodies concerned - Encourage involvement of private real estate developers 	<ul style="list-style-type: none"> - Implement the development plan and the pilot projects 	
Development of Industrial Centre & Logistics Centre	<ul style="list-style-type: none"> - Establish working group - Discuss strategies/schemes - Prepare development plan including infrastructure - Coordinate with bodies concerned 	<ul style="list-style-type: none"> - Prepare the sites and necessary infrastructure - Implement investment promotion activities 	<ul style="list-style-type: none"> - Implement investment promotion activities
Development of Recreation/Tourism Centres	<ul style="list-style-type: none"> - Establish working group - Discuss strategies/schemes - Design pilot projects - Coordinate with bodies concerned - Encourage involvement of private tourism developers 	<ul style="list-style-type: none"> - Implement the pilot projects - Utilize existing resources 	<ul style="list-style-type: none"> - Develop a communal park
Development of Residential Land	<ul style="list-style-type: none"> - Establish working group - Discuss strategies/schemes - Prepare development plan including infrastructure - Coordinate with bodies concerned - Review existing subdivision plans 	<ul style="list-style-type: none"> - Encourage involvement of private real estate developers - Prepare subdivision plans for expanded urban areas - Provide necessary infrastructure (community facilities and utility facilities) 	<ul style="list-style-type: none"> - Provide necessary infrastructure (community facilities and utility facilities)

Source: JICA Study Team

Table 2.13 Action Programme – Provision of Infrastructure

Actions	Present & Short Term (2014-2020)	Middle Term (2020-2025)	Long Term (2025-)
Programme of Implementation of SDUGA 2030	–	<ul style="list-style-type: none"> - Expansion of the urban areas - Industrial zone in Bonoua - New Bingerville by-pass to Bonoua 	<ul style="list-style-type: none"> - The provision of public transit: BRT's Bingerville – Bonoua
Implementation Programme of Transport Infrastructure	<ul style="list-style-type: none"> - Renew existing intermodal station (south side) - Improve/widen existing roads (existing tertiary roads) 	<ul style="list-style-type: none"> - Develop northern bypass - Develop southern bypass - Improve/widen existing roads (A100, the road to Tchintchebe, and existing tertiary roads) - Develop new tertiary roads - Expand intermodal station (north side) - Introduce minibus network 	<ul style="list-style-type: none"> - Develop northern bypass - Develop southern bypass - Introduce BRT system - Develop BRT stations
Overall Actions for Transport Infrastructure	<ul style="list-style-type: none"> - Establish working group - Discuss strategies/schemes - Prepare road network plan - Coordinate with bodies concerned - Define the ROW 	<ul style="list-style-type: none"> - Reserve land for the ROW - Prepare minibus network plan 	
Overall Actions for Community Facilities	<ul style="list-style-type: none"> - Establish working group - Discuss strategies/schemes - Interface with Master Plans for various sectors - Coordinate with bodies concerned - Reserve land for the required community facilities 	<ul style="list-style-type: none"> - Reserve land for the required community facilities 	
Overall Actions for Utility Facilities	<ul style="list-style-type: none"> - Establish working group - Discuss strategies/schemes - Interface with Master Plans for various sectors - Coordinate with bodies concerned - Reserve land for the required utility facilities 	<ul style="list-style-type: none"> - Reserve land for the required utility facilities 	

Source: JICA Study Team

3.0 Attinguié Extended Area

3.1 Current State of Attinguié

3.1.1 Location and Limit of the Study Area

Located in southeastern Côte d'Ivoire, in the northwest part of greater Abidjan, the study area is located approximately 24km from Abidjan on the northern motorway. Although the study area has the name of the village of Attinguié, it actually encompasses three neighbouring village centres that are Attinguié, Akoupé-Zeudji and Allokoi. It is bordered to the south and west by the classified forest of Anguélédou and Northern Highway, and to the North by the classified forest M'Brago.

The study area is located halfway between the sub-prefectures of Anyama and the Songon, and covers an area of 14,800ha, approximately 4% of the area of the Greater Abidjan.



Source: JICA Study Team

Figure 3.1 Location and Roads Map of Attinguié

3.1.2 Physical Features

3.1.2.1 Topography and Soil Characteristics

The site has a relatively rough relief, characterized by alternating hills and depressions marked by large thalwegs. The hills altitude average is around 35m. The slopes are low throughout ranging from 5-10%.

The conditions of the soils in the study area have no major constraints and are compatible with urban development. However, the areas near troughs could be subject to erosion.

3.1.2.2 Vegetation, Climate and Hydrology

The Attinguié area has a large river system, the Anin River to the east, the Gobouet River to the south, the Alô-Bien and Cotohou-Sô Rivers to the west and the Nieky and Gnintchi Rivers to north, which all feed into the Agneby River.

The region is under the influence of an equatorial climate marked by four seasons:

- A long dry season from December to April
- A long rainy season from May to July, with a peak in May and June
- A short dry season from August to September
- A short rainy season from October to November

The months of May, June and July are the wettest, with an average of 316mm, 553mm and 198mm, respectively. However, with the worldwide recognized climate change, disturbances are also recorded in the local climate.

Formerly characterized by a relatively significant forest cover, vegetation is now dominated by large plantations of rubber and oil palm, scattered among forest reserves. The area contains two forest reserves that are the classified forest of Anguélédou and the classified forest M'Brago.

3.1.3 Demographic Change

3.1.3.1 Current Population and Density

According to the general population and housing census of 2014, the demographic data obtained cover the entire Sub-Prefecture of Anyama and Brofodoume which population is 164,804 persons spread over a surface area of 68,433.08 ha with an average density of 2.4 persons/ha. (See Table 3.1)

Table 3.1 Population and Density of Sub-Prefecture of Anyama and Brofodoume

Years	2014	2020	2025	2030
Population (persons)	164,804	189,881	213,016	238,288
Density (persons/ha)	2.4	2.8	3.1	3.5
Annual Growth Rate (%)	2.3%			

Source: INS 1998 Census, JICA Study Team

Based on the reference data provided by the sub-prefecture of Anyama, the JICA Study Team has estimated the population in 2014 to be 44,000 residents, according to the following breakdown:

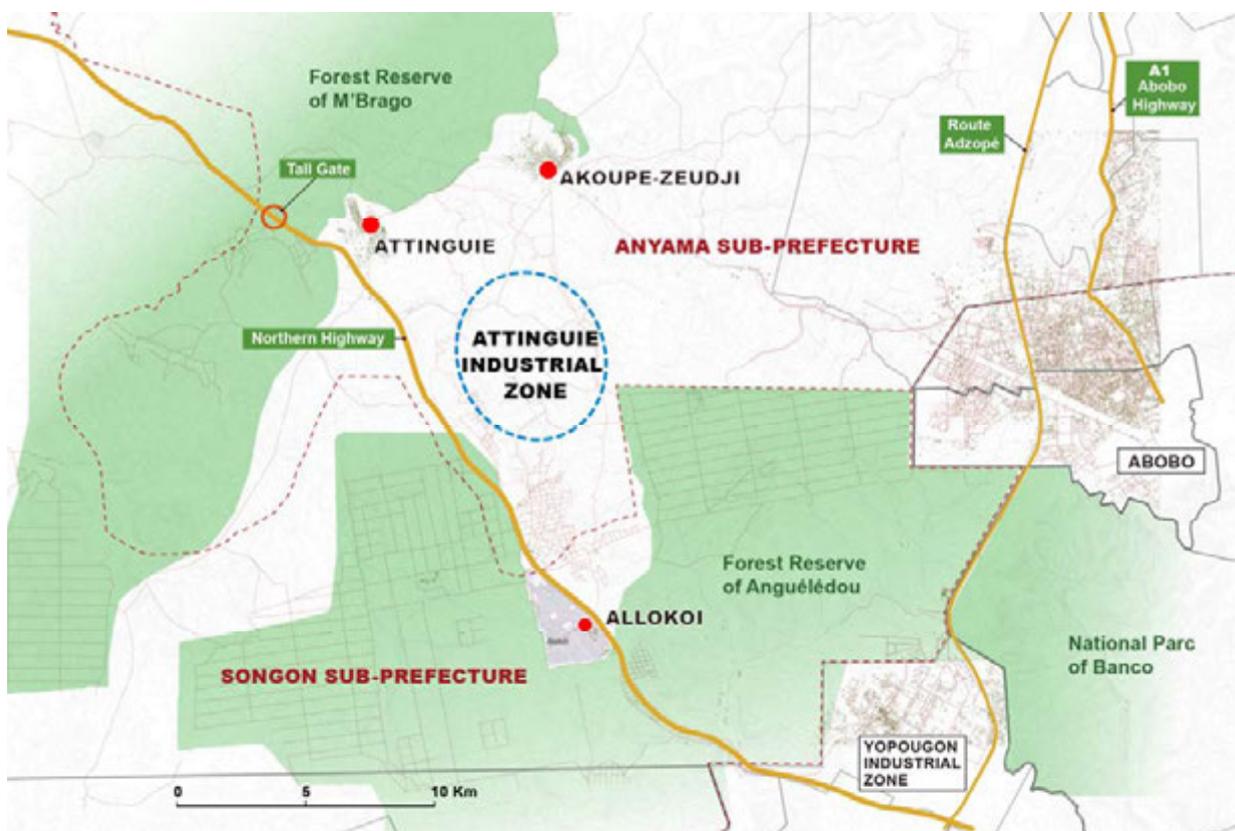
- Attinguié (17,000 persons)
- Akoupé-Zeudji (22,000 persons)
- Allokoi (5,000 persons)

As for Attinguié and Akoupé-Zeudji, with a growth rate average of 4.8%, there was a sharp increase in the population over the last 16 years. It also appears that the localities Akoupé-Zeudji have a much higher growth rate than that of Attinguié. (See Table 3.2)

Table 3.2 Population and Density of the Villages in the Study Area

Villages	1998	2014	Annual Growth Rate
Attinguié	9,152	17,000	3.9%
Akoupé-Zeudji	9,256	22,000	5.6%
Allokoi	5,025	5,000	0.0%
Total	23,433	44,000	4.0%

Source: INS 1998 Census, Sub-prefecture of Anyama



Source: JICA Study Team

Figure 3.2 Neighbourhoods in Attinguié

3.1.4 Urban Context

The study area is a rural area composed by three major villages. These villages have a relatively rapid development due to their location close to the Abidjan agglomeration and thanks to income from agriculture.

With the proposed industrial zone and a logistics park, there is a renewed interest in the area and that creates many housing estates. However, note that land pressure in the Abidjan level had already begun to be felt in the village Allokoi located just three km from the checkpoint of Gesco. Although the village of Allokoi is closer to Abidjan, it seems less developed and has a strong rural character. On the other hand, the villages of Attinguié and Akoupé-Zeudji seem to be more modern and dynamic.

3.1.4.1 Description of the Quality of the Urban Landscape

3.1.4.1.1 Urban Framework

The urban structure of the study area is dominated by the northern highway that runs through the area longitudinally and two interchanges that provide access to the three village centres. The average distance between these three villages is about 4km.

The existing village of Allokoi is organized along two perpendicular roads that connect the subdivision with some community facilities. In Attinguié, the urban structure is organized along the main road where major facilities are found. A path perpendicular allows access to the village of Akoupé-Zeudji. In Akoupé-Zeudji, the urban structure is also organized along the main road where major facilities are found.

3.1.4.1.2 Housing Typology

The habitat in the study area is characterized by modern buildings of low density. The buildings are in good condition. There are some dwellings whose structures range from one to three levels. Essentially they are individual habitats characterized by low density of land use. However, it is not uncommon to see buildings with two or three levels in the localities or in Attinguié Akoupé-Zeudji.

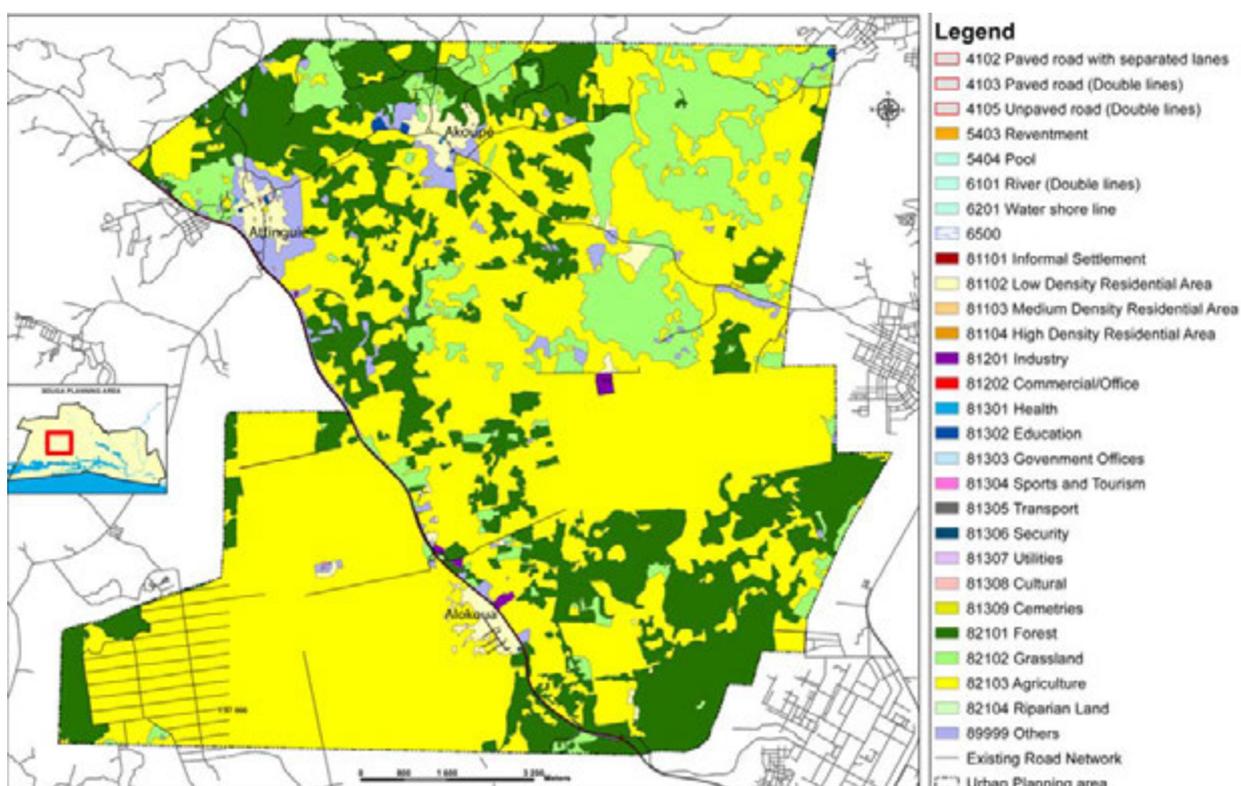
3.1.4.1.3 Land Use

Land use is essentially characterized by a large proportion of plantations and forests in particular all around the village centres. There are also residential areas of low density within which some educational and health facilities, as well as agricultural equipment can be found.

Table 3.3 Land Use in Attinguié

Categories	Surface area (ha)	Categories	Surface area (ha)
Low density Housing area	282	Infrastructure	0
Medium density Housing area	0	Cultural	2
Industry	25	Cemeteries	5
Commerce/Offices	0	Forests	3,608
Health	2	Bush	1,706
Education	16	Agriculture	8,786
Administrative Services	0	Others	338
Sport et Tourism	1	Paved roads (Double roads)	39
Transport	0	Unknown	24
Security	0	TOTAL	14,834

Source: JICA Study Team, Land Use survey, August 2013



Source: JICA Study Team, Land Use survey, August 2013

Figure 3.3 Current Land Use Map of Attinguié

3.1.4.2 Local Economic Context

3.1.4.2.1 Economic Activities

Within the three villages of the study area, the main activity is agriculture dominated by the culture of annuity products such as rubber, oil palm and cocoa. It also produces food and market gardening crops such as kassava, yam or plantain, mainly for local consumption and to supply the Abidjan markets.

Some years ago, the secondary sector was non-existent in the area and was characterized by some rubber weighing centres. During the site visit, the JICA Study Team noted some existing factories and a weighing centre for heavy vehicles.

The tertiary sector is dominated by numerous informal activities carried out by women and youth. These activities range from simple retail trade to various services. Attinguié has markets, such as Akoupé-Zeudji, where commercial activities are practiced. These markets are very active and bring many traders.

3.1.4.2.2 Employment

With the proximity of Abidjan, the employment opportunities for young people on site are almost nonexistent. Unemployed young graduates are obliged to have informal occupations or commercial service.

Many local workers regularly commute between the study area and Abidjan to get to their workplace.

3.1.4.3 Living Environment and Urban Services

3.1.4.3.1 Road Network and Existing Transportation System

The road network of the study area comprises the northern motorway which crosses it and service roads that provide access to different villages. These pathways are partially paved and are in relatively good condition. The internal avenues in different localities are not paved and relatively feasible in flat areas. Nevertheless, several routes included in the plans for the subdivisions are not yet open because of the poor development of the land in those areas.

There is no local transport system within the villages. However, minibuses provide a link between these villages and Abidjan from Attinguié. There are also vehicles transporting agricultural products from the area to Abidjan.

3.1.4.3.2 Utilities

(1) Distribution of Electricity and Public Lighting

All of the villages that make up the study area have an electricity network. The majority of households in these villages are connected to the electricity network and the supply capacity is sufficient to meet demand. Street lighting exists and is made using lamps. The facilities are functional, however voltage reduction occur regularly in Attinguié.

(2) Drinking Water

All of the villages do not have of a network of a drinking water supply, even if well fields that capture the distribution of groundwater are nearby. The village of Allokoï in particular has suffered from this

situation that forces households to obtain water from wells. Now the village is supplied with drinking water through standpipes connected to an industrial unit installed in the village. Soon, when the water tank of the weighing station will start working, the village will be provided with potable water.

(3) Sanitation and Drainage

There is no collective sewerage for wastewater in three villages of the study area. Most households use individual or autonomous sanitation system. Similarly, there is no rainwater drainage system. Storm water is naturally drained by runoff into troughs that feed the water system of the area.

3.1.4.3.3 Public Facilities

The equipment level of the study area is low because of its rural character. The table below gives the socio-community facilities available in each village.

Table 3.4 Socio-Community Facilities

	Allokoi	Attinguié	Akoupé-Zeudji
Nursery school	0	1	2
Primary school	2	5	5
Secondary school	0	1	2
Professional centre	0	0	1
Health Centre	0	1	1
Maternity	0	1	1
Social centre	0	0	1
Market	0	1	1
Bus station	0	0	0
Sport field	0	0	0
Youth centre	0	0	0

Source: Sub-Prefecture of Anyama

Regarding the school facilities, there is a lack of nursery schools especially in Allokoi and a deficiency in public primary school classrooms at Attinguié and Akoupé-zeudji. Indeed, although the average number per classes is around 50 students in Attinguié and Akoupé-Zeudji, there are also private and religious schools. In addition, secondary school is not available in Allokoi, forcing students to travel to Abidjan for studies. In the other two areas, once again the private sector fills the gap found in this area.

About health facilities, there is no health centre in Allokoi, although there is one in Attinguié and one in Akoupé-Zeudji. People living in Allokoi are obliged to go to Abidjan for health care.

On the security level, there is no security facility in the study area. The closest gendarmerie brigade is located at Gesco in Yopougon. However, it is very important to provide one due to the level of insecurity.

3.1.4.3.4 Environment Protection

There is no garbage collection system. Households dump their garbage in nature or in wild dumps. Despite the proximity to the city of Abidjan, the garbage collection service does not cover these rural communities.

The real threats to the environment are related to human activities in the area. The land pressure that happens in Abidjan's agglomeration causes the extension of surrounding villages that threaten nearby classified forests.

Agriculture is also a threat to environmental protection in the area. Indeed, a number of plantations operate illegally within the perimeter of the protected forests, and no action is undertaken by relevant authorities.

Finally, there is uncontrolled installation of many industrial units in the area, which undoubtedly creates a threat to the balance of the surrounding ecosystem, with toxic risks of waste going directly into the environment that may cause the pollution of groundwater.

3.1.4.4 Ongoing or Planned Projects

- Project of an industrial zone in Attinguié
- Project of a logistic park by OIC
- Real estate project by SICOGI

3.2 Analysis

3.2.1 Demographic Change and Trends of the Spatial Growth

3.2.1.1 Demographic Change

According to the distribution result of the socio-economic framework for Greater Abidjan to the cities/sub-prefectures, it is predicted that the Commune/Sub-prefecture of Anyama will be required to newly absorb the population of about 283,000 people and 72,000 households equivalent to 2.3 times as many as the ones present today. (See Table 3.5)

Table 3.5 Estimation and Distribution of Future Population

		2013	2025	Difference
Commune/sub-prefecture Anyama	Population (people)	214,336	497,115	282,779
	Households (households)	42,814	115,277	72,464
	Land Area (ha)	68,433.08	68,433.08	-
	Population Density (people/ha)	3.1	7.3	-
Outside city of Anyama in sub-prefecture Anyama (west side)	Population (people)	34,676	75,036	40,360
	Households (households)	6,927	15,963	9,037
	Land Area (ha)	26,521.18	26,521.18	-
	Population Density (people/ha)	1.3	2.8	-

Source: JICA Study Team

The following three cases of population projection of the study area are assumed:

- Case I: The population of the area will increase at the same rate as from 1998 to 2014.
- Case II: The area will have all of the population outside of the commune of Anyama in sub-prefecture Anyama (west side).
- Case III: The population of the area will increase at the same rate as 2013-2025 such as the whole of Anyama commune/sub-prefecture.

The future population of the study area is forecast as shown in Table 3.6. Because developable land is limited in the study area located outside the agglomerated developed land, it is unreasonable to anticipate the population exceeding the socio-economic framework for Greater Abidjan, while the area has the potential for remarkable growth due to the development of the industrial and logistic parks. The JICA Study Team sets the future population based on case II.

Table 3.6 Population Projection of the study area

	2014	2025	Annual Growth Rate
Case I	44,000	67,736	4.0%
Case II		75,036	5.0%
Case III		95,510	7.3%

Source: JICA Study Team

3.2.1.2 Trends of the Spatial Growth

Now the three villages have to face the urban pressure that is caused by the Abidjan conurbation. These villages are closer to Abidjan and they are now under its influence. In addition, since the government decided to create an industrial and logistics park, land owners of these villages decided to convert their agriculture land to urban by subdividing land for sale, because of the lower cost of agricultural products.

Now the people of Allokoi want to extend their village to the other side of the northern highway to meet the increasing demand of plots. The same phenomenon is occurring in the other villages since the industrial units started to settle. The extension area of Attinguié is at the south side of the village and for Akoupé-Zeudji, expansion occurs at the southeastern side of the village.

However, spatial growth of these villages is constrained by the surrounding protected forests and thalwegs which can be considered to stop uncontrolled spatial growth.

3.2.2 Analysis of the Implementation of the Previous Urban Master Plan

The former master plan, even if it covers the study area, doesn't give any guidelines for development in this area. Normally, according to the master plan, this area has to be kept as a non-developed area. But since the political will decided to create a new industrial and logistics park in this area which was not planned by the Master Plan 2000. Only the ring road Y4 was planned as a long term strategic road in this area.

In term of implementation, nothing has been done since the approval of the Master Plan 2000. And the development which is occurring now in the three villages doesn't follow the Master Plan 2000.

3.2.3 Assessment of Land Availability

3.2.3.1 Natural Constraints and Regulatory Easements

The physical features together with the protected forests of the study area are the main natural constraints of the development. The study area is surrounded by large protected forests where development is not allowed. In addition, the area has many river valleys that make a dense network for water catchment.

Recently, the government decided to set up an easement along the northern highway. So the new decree N°2014-28 of 22 January 2014 defines an easement of 500m on both sides of the road in peri-urban area such as the study area and doesn't allow construction within the easement.

3.2.3.2 Land Ownership and Land Availability

The land is owned by tribes and it is given to the family members of the tribes. But the traditional owners don't get any individually legal documents to prove their rights to the land. Only some industrial plantations have titles on their land. One private person also has a title on his land.

There is a large proportion of land available for development, which is not under easement or physical constraints. These lands are mainly used for plantations at this moment and are potentially adequate for urban development.

Actually, the development of the industrial zone should occupy around 900ha and the logistic park should use about 100ha. These two sites have been dedicated for public interest, so that no construction can be developed there.

3.2.3.3 Provision of Urban Plots and Level of Development

Urban plots are produced by the land owners in accordance with the traditional chiefs. The first subdivision plans of the villages were made in 1985 and now new subdivisions projects are made to meet the increasing demand from Abidjan. In this way, production of urban plots has become a source of income for owners, so that they have changed the land from agricultural to urban land.

Less than 30% of existing plots are already built and no action is taken to encourage people to develop their plots. Many of those plots are for the tribe members so that it not possible to return the plot. But the main reason why plots are not developed is because of the provision of utilities. In fact, the lack of potable water in Allokoi or bad conditions of the road in Attinguié and Akoupé-Zeudji can explain why plots are not developed.

Another reason can be the lack of some public facilities such as schools, especially secondary schools, that oblige pupils to commute to Abidjan in order to go to school.

3.2.4 Summary of the SWOT Analysis

The table below summarizes the key points deriving from the SWOT analysis to consider in the development of the urban plan of the study area.

Table 3.7 SWOT Analysis

	Strength	Weakness
INTERNAL FACTORS	<ul style="list-style-type: none"> • Population essentially young • Fort potentiel touristique grâce au réseau hydrologique et aux traditions locales • A dynamic local economy based on agriculture and retail • A large Forest cover which can be useful for tourism activities 	<ul style="list-style-type: none"> • Low population evolution • Absence of industry • Low provision of public facilities • Lack of employment opportunities • Low development of urban land • Physical constraints that limited urban expansion • Inadequate housing offer • Weak capacity of utilities
	Opportunities	Threats
EXTERNAL FACTORS	<ul style="list-style-type: none"> • The study area is crossed by the northern highway • High demand for urban land and housing • Creation of industrial and logistic parks 	<ul style="list-style-type: none"> • The proximity of Abidjan city can force the area to become a suburb • The development is strongly dependent on the development of Abidjan • Uncontrolled urban expansion that is threatening agriculture development and protected area • Land Speculation on urbanized plots

Source: JICA Study Team

3.2.5 Development Orientations Following SDUGA 2030

3.2.5.1 Principles

Compact city initiatives, proposed by the 2030 Master Plan essentially aims to densify the existing urban area and allowed the autonomous development of satellite cities by creating green buffer zones and local employment opportunities. The study area stretching over the Urban Unit 3 and 5 is not considered as a satellite town, but with the new industry and logistic park, this area is going to experience a rapid development.

The urban planning of this area must follow this principle and as far as possible should constrain the development the area by the provision of facilities and employment opportunities. The existing protected forest defines a green buffer zone between the study area and the Abidjan conurbation.

3.2.5.2 Major Axes of Strategic Transport

The transport system proposed by the SDUGA 2030, aims to enforce the logistic park. The road network is composed by the northern highway and the projected Y4. Secondary roads will serve the villages in the study area and link to each other. The logistic centre will prevent trucks from parking in the street and reduce their access to the city centre.

3.2.5.3 Land Uses and Urban Centres

The land uses in the study area should be a low density area and around the urban centres, have mid density housing. Plantations and forests must be kept to create a green buffer zone. The main development should be the industrial zone.

3.3 Master Plan of Attinguié Urban Planning Area

3.3.1 Objectives of the Master Plan for Attinguié Urban Planning Area

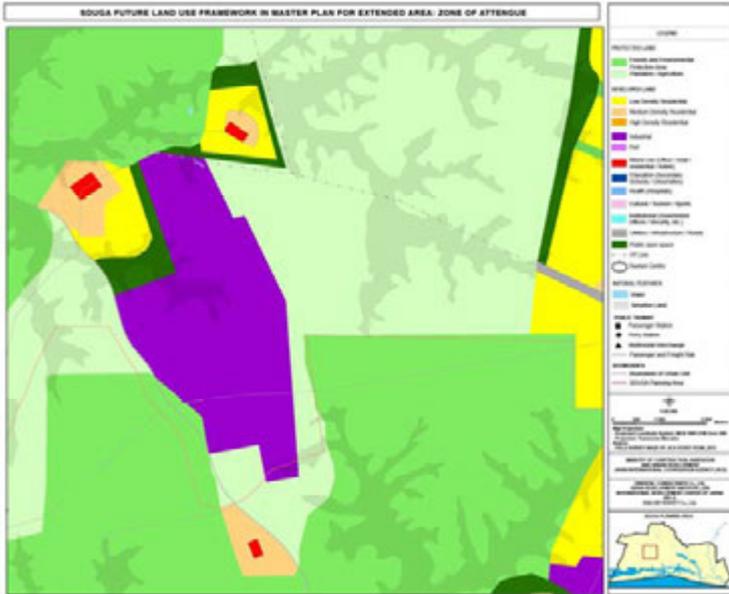
For achieving the vision and land use framework identified for Greater Abidjan and tackling the planning issues in Attinguié, the following objectives are set:

- In order to protect the natural environment and resources, and preserve agricultural land in protected land, control development in developed land should be isolated from agglomerated developed land and centred on the massive industrial zone
- Guide well-ordered effective development of the Attinguié industrial zone and the logistics centre coupled with the interchange of the northern highway and Y4 ring road as a major employment cluster
- Provide the industrial zone with adequate transportation and utility infrastructure, appropriate accommodations and housing, and community facilities
- Protect three traditional villages adjacent to the industrial zone - Attinguié, Akoupé-Zeudji and Allokoi - and their sites of religious, cultural and historic significance
- Promote valid allocation of land resources and rational land use by readjusting the village subdivision plans based on the estimate of the future population, sustaining a sound harmony with the natural environment and agriculture which is a chief industry of the villages
- Promote the provision of new residential areas within the villages that are spacious and leafy, and can be adequately served with roads and utilities
- Upgrade the social infrastructure to ensure that adequate community facilities are available to all residents in rural villages
- Locate a site for public housing with adequate utility provision and community facilities, including education and health, for the proposed population and with convenient living environments

3.3.2 Spatial Development Framework and Structure Scheme

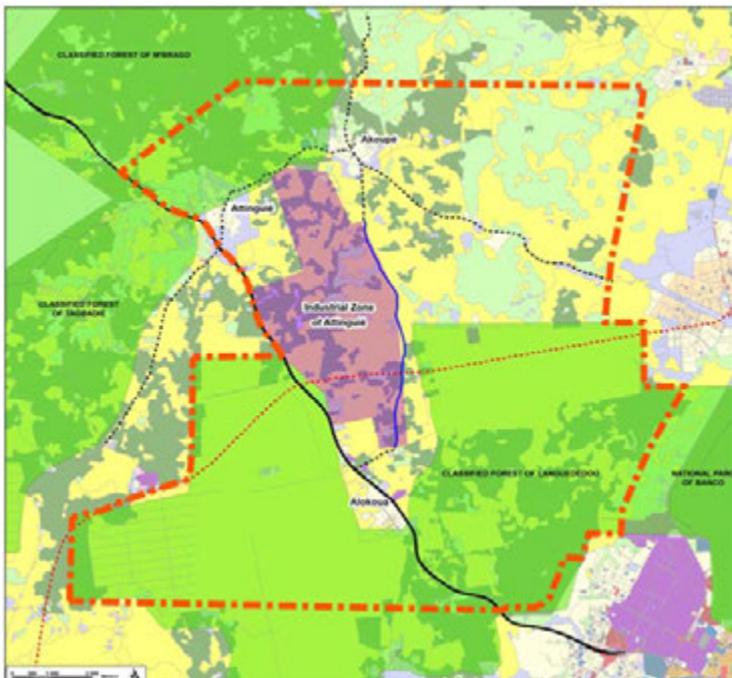
3.3.2.1 Urban Planning Area

To reach the first objective as described above, the urban planning area of Attinguié will include not only the Attinguié Industrial Zone and three villages adjacent to the industrial zone, Attinguié, Akoupé-Zeudji and Allokoi, but the vast protected land between the industrial zone and the west end of the developed land, close around the Anyama urban area, including a part of the existing gazetted forest of Anguéledou on the south side of the industrial zone. (See Figure 3.4) The exact boundary of the urban planning area of Attinguié is shown on Figure 3.5.



Source: JICA Study Team

Figure 3.4 Part of Greater Abidjan Urban Development Land Use Framework 2030



Source: JICA Study Team

Figure 3.5 Urban Planning Area of Attinguié

3.3.2.2 Urban Centre Development

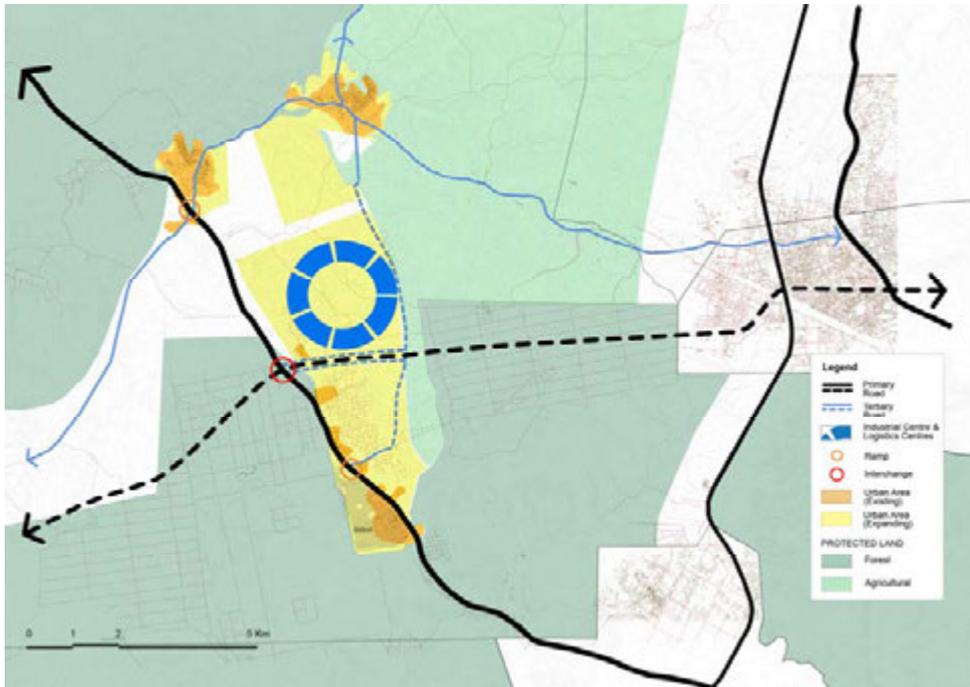
There are no urban centres in the urban planning area of Attinguié, being set out in the Greater Abidjan Urban Development Spatial Strategy 2030. The three villages therefore should be developed as a core of the village's territory, having the functions of housing, community, commercial/service, agro-industrial and other light industry. Additionally, Attinguié where it is continuous with the northern highway has the potential for being the location for the various service facilities.

3.3.2.3 Employment Cluster Development

The Attinguié Industrial Zone, including the logistics centre, is positioned as part of the industrial clusters in the outer city zone, which will be the primary manufacturing based target to capture the economic development potential that will arise with the completion of the strategic road and rail networks, port expansion and new industrial zones. The development of the industrial zone is being undertaken by the government.

3.3.2.4 Urban Growth Management for Rural Areas

In this study, the JICA Study Team set the tentative boundaries between developed land and protected land, and the urban area and the conservation zone in the urban planning area of Attinguié as shown in Figure 3.6.



Source: JICA Study Team

Figure 3.6 Diagram of Spatial Development Framework for Urban Planning Area of Attinguié

3.3.2.5 Transport Network

(1) Primary Roads

The existing Northern Highway and the planned Y4 Ring Road are defined as the primary arterial roads in the urban planning area of Attinguié. In order to secure safe traffic of heavy-duty trucks, it is assumed that the large-scale interchange is built at the intersection of these two primary arterial roads. (See Figure 3.6)

(2) Secondary Roads

There are no secondary arterial roads in the urban planning area of Attinguié being set out in the Urban Transport Master Plan.

(3) Tertiary Roads

Because it is expected that a lot of cars will concentrate on the Attinguié industrial zone and the logistics centre through the Northern Highway or Y4 Ring Road, it is necessary to prepare a road network for disposing those traffic appropriately. Based on the existing road network and condition, the important tertiary roads should be defined and the network should be strengthened by methods such as the followings:

- Prepare the service road which accesses the industrial zone along with Y4 Ring Road from the above-mentioned interchange
- Develop the road which goes to Akoupé-Zeudji through the eastern end of the industrial zone from the existing interchange near Allokoi as the tertiary arterial road and the service road to access the industrial zone
- Improve the road which goes in the direction of Songon via Attinguié and Akoupé-Zeudji from the direction of Anyama as the tertiary arterial road

(4) Intermodal Stations

Intermodal stations should be developed for multimodal transportation including an intercity bus system, local buses, minibuses, taxis and private cars in the Attinguié industrial zone and each village.

Moreover, for passengers who will commute or visit the Attinguié industrial zone using the buses which pass the Northern Highway or Y4 Ring Road, we propose installing bus stops on those highways.

3.3.3 Land Use Plan

The land use plan that is proposed in this master plan shows designated land use zoning so as to guide the development and redevelopment of land. It prescribes both private and public uses of land within the developed land mentioned in 3.3.2.5. It also defines future development and land use patterns, the conservation of land and a primary transport network.

3.3.3.1 General Land Use Zoning

The general classifications of land use zoning that the JICA Study Team proposes are described in 2.3.3.1.

3.3.3.2 General Land Use Zoning Guidelines

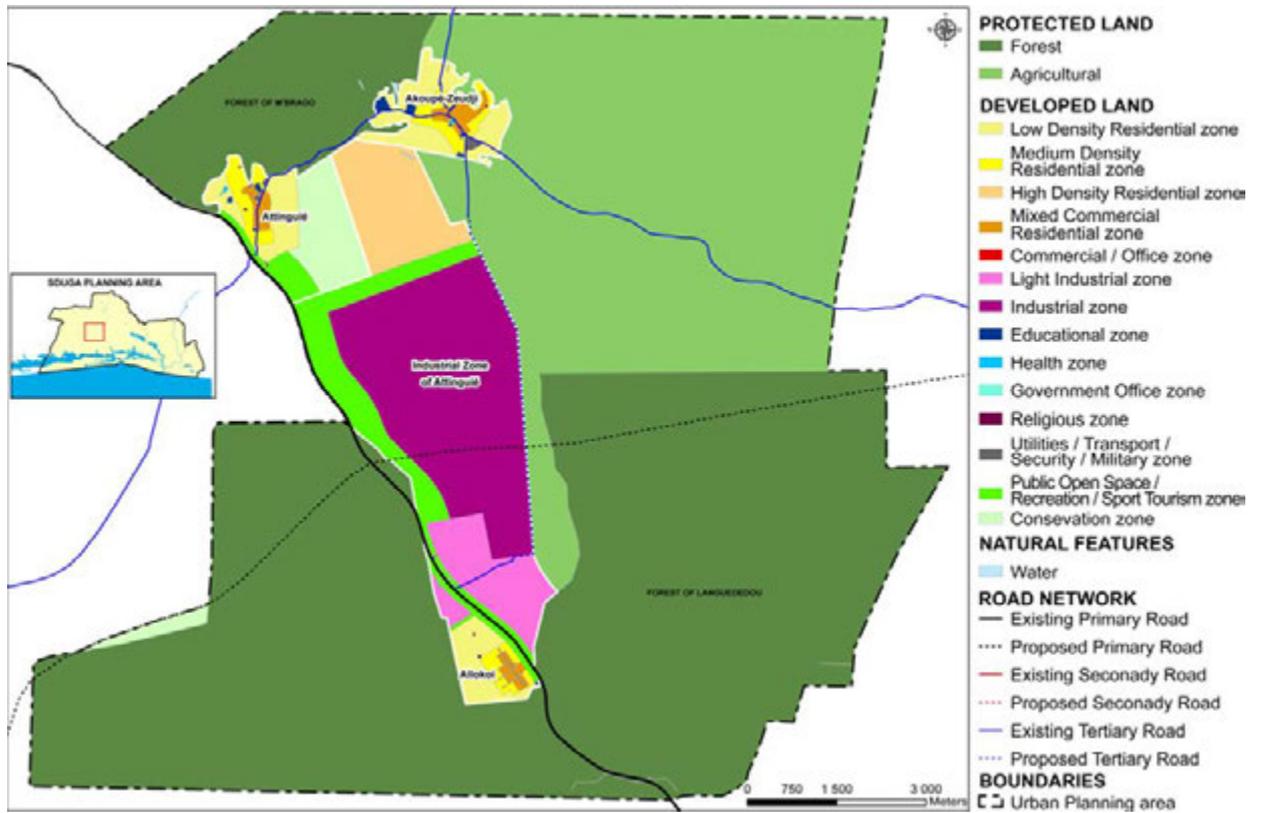
The zoning guidelines of the land use zones are shown in Table 2.7 and Table 2.8.

3.3.3.3 Land Use Plan for Urban Area in Attinguié

In accordance with the following policies, a land use zoning plan covering the developed land in Attinguié is prepared, as shown in Figure 3.7.

- An Attinguié industrial zone and logistics centre will be allocated for the industrial zone so that various kinds of industrial activities can be carried out.
- Green buffer zones should be set up between industrial and other land use zones as public open space/recreation/sports/tourism zones in order to clearly separate the industrial zone from its surrounding area.
- Land along the Northern Highway in Attinguié Village and Allokoi Village should be allocated as public open space 100-meters wide.
- Land along the Northern Highway, adjacent to the industrial zone, will be allocated as light industrial zone, which is already partially used for industrial/transport/utilities use.
- Establishment of a residential township that should include social housing, located on the north side of the industrial zone, will be proposed.
- The existing institutional land use, including education, health, government offices, and religious facilities, should be maintained, in principle, without any change. The same applies to land to be used for utilities/transport/security/military.
- The existing centre area of the villages will be allocated as a mixed commercial and residential zone.
- The rest of the existing urban areas will be allocated as a medium-density residential zone or a low-density residential zone.
- Urban areas in the villages should be expanded in the opposite direction from the forests and environmental protected area, and zoned as a low-density residential zone or a light industrial zone.

The areas of each land use zone are measured as shown in Table 3.8.



Source: JICA Study Team

Figure 3.7 Land Use Zoning Plan for Urban Area of Attinguié

Table 3.8 Areas by Land Use Zone of Urban Planning Area of Attinguie

Land Use Zones		Land Areas (ha)		
Developed Land	Residential Zones	Low-Density Residential Zone	347	2.3%
		Medium-Density Residential Zone	126	0.8%
		High-Density Residential Zone	314	2.1%
	Commercial Zones	Mixed Commercial and Residential Zone	64	0.4%
		Commercial / Office Zone	0	0.0%
	Industrial Zones	Light Industrial Zone	244	1.6%
		Industrial Zone	1,015	6.8%
	Educational Zone	13	0.1%	
	Health Zone	1	0.0%	
	Government Office Zone	0	0.0%	
	Religious Zone	2	0.0%	
	Utilities / Transport / Security / Military Zone	59	0.4%	
	Public Open Space / Recreation / Sports / Tourism Zone	391	2.6%	
	Conservation Zone	231	1.6%	
	Water	3	0.0%	
Sub-total	2,811	18.9%		
Protected Land	Forest	7,980	53.8%	
	Agriculture	4,044	27.3%	
	Sub-total	12,023	81.1%	
Total		14,834	100.0%	

Source: JICA Study Team

Table 3.9 Population Density of the Residential Zones in Attinguie

		Land Areas (ha)	2025 Population (persons)
Attinguie Village	Low-Density Residential (70 people/ha)	96	6,699
	Medium-Density Residential (220 people/ha)	47	10,337
	Mixed Commercial and Residential (360 people/ha)	21	7,622
Akoupé-Zeudji Village	Low-Density Residential (70 people/ha)	161	11,266
	Medium-Density Residential (220 people/ha)	52	11,511
	Mixed Commercial and Residential (360 people/ha)	27	9,777
Allokoi Village	Low-Density Residential (70 people/ha)	91	6,352
	Medium-Density Residential (220 people/ha)	27	5,864
	Mixed Commercial and Residential (360 people/ha)	16	5,608
New Township	High-Density Residential (360 people/ha)	314	113,156
Total	Low-Density Residential (70 people/ha)	348	24,317
	Medium-Density Residential (220 people/ha)	125	27,712
	High-Density Residential (360 people/ha)	314	113,156
	Mixed Commercial and Residential (360 people/ha)	64	23,007
	Total	852	188,045

Source: JICA Study Team

3.3.4 Action Programme

In order to implement the master plan for the Attinguié extended area, the necessary actions are listed and programmed as shown in Table 3.10 and 3.11. The actions approaching from four priorities below are proposed in concert with the implementation scenarios of spatial development of SDUGA 2030:

- Preparation of the PUd
- Development of the diverse centres
- Development of residential land
- Provision of infrastructure such as transport infrastructure, community facilities, and utilities

Table 3.10 Action Programme – Realization of Land Use Plan and Provision of Infrastructure

Actions	Present & Short Term (2014-2020)	Middle Term (2020-2025)	Long Term (2025-)
Programme of Implementation of SDUGA 2030	- Developing Industrial zones in Attinguié	- Developing a new town at Attinguié	- Completion of the Y4 ring road west from Abobo to Vridi - Road widening of western Banco Forest by-pass
Preparation of PUd	- Establish working group - Prepare the PUd by reference to this Master Plan - Coordinate with bodies concerned - Get approval from MCLAU	- Monitor and evaluate the PUd	- Review & revise the PUd
Development of Industrial Centre & Logistics Centre	- Prepare the sites and necessary infrastructure - Implement investment promotion activities	- Implement investment promotion activities	
Development of Residential Land	- Discuss strategies/schemes - Prepare development plan including infrastructure - Coordinate with bodies concerned - Review existing subdivision plans - Reserve land for the housing project by SICOI	- Encourage involvement of private real estate developers - Prepare subdivision plans for expanded urban areas - Provide necessary infrastructure (community facilities and utility facilities)	- Provide necessary infrastructure (community facilities and utility facilities)
Implementation Programme of Transport Infrastructure	- Precede development of Y4 ring road by a section adjacent to Attinguié industrial zone - Develop new tertiary roads adjacent to the industrial zone - Develop intermodal stations in the industrial zone	- Improve/widen other existing tertiary roads - Develop intermodal stations in three villages	- Develop the rest of Y4 ring road - Develop new tertiary roads
Overall Actions for Transport Infrastructure	- Discuss strategies/schemes - Coordinate with bodies concerned - Reserve land for the ROW & I/C of Y4 ring road	- Reserve land for the ROW & I/C of Y4 ring road	
Overall Actions for Community Facilities	- Discuss strategies/schemes - Interface with Master Plans for various sectors	- upgrade/improve the existing community facilities - Reserve land for the required community facilities	
Overall Actions for Utility Facilities	- Discuss strategies/schemes - Interface with Master Plans for various sectors	- upgrade/improve the existing utility facilities - Reserve land for the required utility facilities	

Source: JICA Study Team

4.0 | Recommendations

In this part, the JICA Study Team proposes land use zoning plans and action programmes for two areas as a reference for elaborating a Detailed Urban Plan (PUD). The following procedures are recommended as the next step.

In order to elaborate the PUDs by reference to the land use zoning plans, the classification of land use zones with planning requirements needs to be laid down as a statutory framework, after studying the planning requirements in each land use zone such as minimum area of building lot, maximum area for housing block, setback distance from road, neighbouring sites, maximum building height, maximum FAR (Floor area ratio), fences (walls), building distance, length of eaves, etc.

These planning requirements in each land use zone should be proposed and authorized not by each city individually nor in the next subdivision plans but by the Ministry of Construction, Housing, Sanitation and Urban Planning as a national common standard or a standard for the metropolitan areas because it can be efficient and increase the fairness and transparency of authorization.

As for the principal body for preparation of the PUDs, the JICA Study Team recommends as follows.

Since Bonoua extended area includes the entire area of Bonoua Commune, the city should become the principal body for preparation of the PUD in cooperation with the traditional chiefs, the sub-prefecture of Bonoua and other bodies concerned. On the other hand, since Attinguié extended area stretches over the two sub-prefectures of Anyama and Songon and there are ongoing projects including an industrial zone and a logistics park and a real estate project being undertaken by national level agencies in the area, it's preferable that the Autonomous District of Abidjan leads the preparation of the PUD.

Japan International Cooperation Agency (JICA)

Ministry of Construction, Housing, Sanitation and Urban Development (MCLAU)

The Project for the Development of
the Urban Master Plan in Greater Abidjan
in the Republic of Côte d'Ivoire (SDUGA)

Final Report

March 2015

Volume II

Urban Master Plan for Greater Abidjan and
Other Project Related Tasks

Part 4

Other Project Related Tasks

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1.0 Stakeholder Coordination

1.1 General

A Stakeholder Coordination task is defined along two different levels. One is the Upper-level Coordination with the Project Implementation Organization, which includes key ministries and agencies, Abidjan Autonomous District, the communes within Greater Abidjan, and also the International Donor Community who should be well informed about the Project for future technical and financial assistance for the execution of the projects identified, in particular, by the proposed transport master plan.

The other is the coordination with a much wider range of people concerned about the Project and participating in the Stakeholder Meetings.

The stakeholder coordination aims, i) to disseminate the Study objectives, contents and progress, ii) to collect information on the on-going and new plans and projects and iii) to receive comments and exchange views on either the process or products accrued from the Project implementation.

The Study Team pays due attention to the urban planning and urban transport planning, related plans regarding the development plans by municipalities, the investment plans by the private sector and the assistance projects by other donors. Those plans and projects are considered to formulate the strategy for setting up the development vision in this Study, which is to be fully considered. The priority projects as proposed in this Study will not duplicate, compete against or conflict with those plans and projects. The international donors have also been reviewing and developing new projects related to Abidjan on new urban transport systems. In order to get the greatest benefit out of the information from the international donors on policies and direction of assistance and projects under deliberation, the Study Team has continued its utmost efforts to exchange information with those stakeholders.

It is intended, through the Stakeholder Coordination, to optimize the benefits and minimize the negative impacts derived from the actual project execution in the future.

1.2 Upper-level Coordination

1.2.1 Coordination with Project Implementation Organization

The coordination works are implemented mainly through the group meetings with JCC, Counterparts and also through individual meetings with the key ministries and agencies. For the coordination among the members of JCC or Counterparts, each group alone holds member meetings as required by the initiative of MCLAU.

Key Stakeholder Ministries and Agencies of Cote d'Ivoire are as follows:

- Presidential/Prime Minister Office (Présidence/Primature)
- Ministry of Construction, Housing, Sanitation and Urban Planning (MCLAU)
- Ministry of Economic Infrastructure (MIE)
- Ministry of Transport (MT)
- Ministry of Planning and Development (MEMPD)
- Ministry of Interior and Security (MEMIS)
- Ministry of the Environment, Urban Safety and Sustainable Development (MINESUDD)
- Agency of Urban Transport Management (AGETU)
- Agency of Road Management (AGEROUTE)
- National Environmental Agency (ANDE)
- National Bureau of Technical Studies and Development (BNETD)
- Abidjan Autonomous District (DAA)
- Communes in DAA(13 nos.) and Greater Abidjan (6 nos. outside DAA)
- Regions (4 Regions outside DAA but relevant to Greater Abidjan)

Note: Abbreviation in () is French

The Study Team participated, explained and received feedback through JCC and Counterpart meetings on related policies and strategies, laws and regulations, organizational structure, institutional capacity, and existing plans and projects.

Knowledge Sharing meetings that may also be considered as a variation form of the stakeholder meetings focusing more on specific technical issues, have also been held from time to time to disseminate and assist knowledge and capacity building by inviting representatives of those stakeholders. The Study Team has kept in contact with each of the individual stakeholders as often as possible to deepen their knowledge and understanding.

1.2.2 International Donor Coordination

(1) Introduction

The SDUGA study outcomes are expected to be implemented not only by Ivoirian governments and other domestic stakeholders but also by the international development community stakeholders such as development assistance agencies that have been offering assistance to the country.

This section focuses on those international development stakeholders with whom this Study shall closely coordinate while elaborating it, by identifying active players, understanding their strategies and projects in Abidjan, considering possible implications to/from SDUGA, and be ready to interface in line with SDUGA activity development.

The JICA Study Team has made contacts with them since the study was launched in March 2013. Presenting its concepts and strategy at its first Stakeholders' Meeting inviting both domestic and international stakeholders on October 31, 2013. Since then the JICA Study Team has conducted a series of individual and strategic interface meetings with the international development agencies

accompanying JICA with a view to disseminate the JICA Study Team's concept, to receive comments from the international stakeholders, and to develop possible interfaces to learn how SDUGA's urban master plan and its urban transport plans and feasibility studies could be further developed and implemented in the years to come.

(2) Target Institutions

After the Ivorian crisis was over in 2010, the international development agencies have substantially resumed their activities and have been accelerating their assistance for Cote d'Ivoire.

The major institutions identified are;

- WB/BM - World Bank
- AfDB/BAD - African Development Bank
- EU/UE – The European Union
- AFD - Agence Française de Développement
- IDB - Islamic Development Bank
- ECOWAS/CEDEAO – Economic Community of West African States
- BOAD – Banque Ouest Africaine de Développement

(3) Overall View

International development agencies have been quite active starting with AFD, EU, WB, AfDB and others. However, Cote d'Ivoire has just recently completed its HIPC (Highly Indebted Poor States)/PPTE Debt Relief agreement, which was signed in June 2012. As a result, the country has freed-up resources particularly for social and welfare development such as health, education, and other social services. This focus on the social agenda is also supportive in responding to urgent needs for rehabilitation of infrastructure and restoring social cohesion after the 10 years of internal crisis of the country.

AfDB adopted its new Country Partnership Strategy in December 2013 and WB has already launched its CAS process cycle. Both agencies seem to highlight urban and infrastructure issues.

It should also be noted that a few regional initiatives have also been undertaken during the last few years at AfDB, ECOWAS, UEMOA. PIDA - Programme for Infrastructure Development in Africa and RISP - Regional Integration Strategy Paper for West Africa are representative ones. Both IDB and BOAD have also been active in their lending activities on infrastructure projects in Cote d'Ivoire in recent years.

(4) WB/BM - World Bank

The current Country Assistance Strategy 2010-2013 specifies the four following pillars as the key areas of its interventions;

Pillar 1: Strengthening Governance and Institutions

Pillar 2: Improving the Performance of the Agricultural Sector

Pillar 3: Strengthening the Private Sector

Pillar 4: Infrastructure Renewal and Basic Services

According to the resident officials, new CAS 2014-2018 consultations would start from November 2013 and the infrastructure assistance for the urban, social and transport sectors are likely to be focused on.

Their current portfolio supports ongoing reforms aimed at strengthening governance in key economic sectors, improving public expenditure management, and speeding up the reintegration of ex-combatants.

- PUIUR - Projet d'urgence d'infrastructures urbaines (2010-2013)
The Emergency Urban Infrastructure Project with components on the urban water services in Abidjan and Bonoua, sanitation at Indénié and Cocody bays, urban road rehabilitation in Abobo, Yopougon and Cocody have been carried out.
- PRI – Project de Renaissance des Infrastructures (2013-)
Infrastructure Renaissance Project addressing both urban and rural development for social infrastructure of large cities, e.g. Abidjan, Yamousskro in rehabilitation of urban roads, schools, public health centres, water supply facilities, solid waste, and electricity supply in Abidjan.

WB is now preparing a Systematic Country Diagnostic to be completed before the end of 2014. WB efforts to sustain peace and stability in Côte d'Ivoire will be in the form of primarily analytical and advisory assistance and focus on three new areas of engagement: a) land administration and land rights, b) local governance and government, and c) improved public expenditure in the security sector. A new Country Partnership Framework will also be prepared. WBG expects to accelerate the transition of its support from emergency to emerging country status by the year 2020.

WB works closely with other multilateral and bilateral partners in Côte d'Ivoire, including inter alia, AfDB, EU, AFD, IMF, UN, Germany, Japan, and USAID. The Bank also participates in donor meetings at both the policy and technical levels. The Ministry of Economy and Finance launched the preparation of an aid management framework that includes a donor coordination mechanism.

(5) AfDB/BAD – African Development Bank

AfDB has been currently undergoing its return to an Abidjan program of its own. After 10 years of absence since the country's crisis, AfDB headquarters will be physically back in Abidjan. AfDB originally announced in June 2013 the first group of staff would begin returning to Abidjan by the end of the year 2013 and AfDB would celebrate its 50th anniversary in November 2014 in Abidjan. This was confirmed during the Bank's annual meeting in June 2014.

A new Country Strategy Paper (CSP) for Cote d'Ivoire 2013-2017 was approved in December 2013. The CSP derived inputs from the portfolio review, while taking into account the central objective of the AfDB's 2013-2022 Ten Year Strategy, particularly the Fragile States component, which include the expected outcomes of the 2012-2015 National Development Plan (NDP), the analysis of challenges and opportunities for Côte d'Ivoire as well as the Bank's experience in the country.

The Bank focuses on two fields, namely: (i) strengthening of governance and accountability; (ii) and infrastructure development in support of economic recovery. The first pillar, in support of NDP Strategic Objectives 1 and 3, aims to help the Government to address the need for inclusion, enhanced governance and improved provision of services to the population through economic and social programs that will minimize the risk of conflict.

The Second Pillar, the infrastructure development in support of NDP Strategic Objective 2, aims to support the Government's efforts to improve infrastructure with a view to creating the necessary conditions for long-term growth. In this regard, the Bank will support the rehabilitation and promotion of lasting, environmentally-friendly agriculture, transport and energy infrastructure.

These interventions will support the agricultural value chain and improve food security by opting for a PPP-based approach and regional integration. It will help to translate the operational priorities of the Bank's Ten Year Strategy on strengthening the quality and sustainability of growth on the ground, to facilitate the smooth transition to a green economy. It will also contribute to the promotion of regional integration to restore Côte d'Ivoire's regional leadership and make it into a key intra-regional trade hub.

Under the second Pillar, the Outcome 5: The movement of goods and persons has improved and Côte d'Ivoire is dynamic on the regional scene. As an On-going project, Henri Konan Bédié Toll Bridge is cited as a case. The project is to design, construct, operate and maintain a 1.5 km toll bridge including 6.6 km of access roads in Abidjan. The Henri Konan Bédié Bridge ("HKB Bridge"), formerly the Riveria-Marcory Bridge, will span the Ebrié lagoon, with access roads to the north Abidjan residential area of Riviera in the commune of Cocody, and to the south Abidjan mixed use commercial/residential area of the commune of Marcory (the "Project"). To the north, construction will consist of a dual carriageway that will connect with the junction of the Boulevard Mitterrand and Est-Ouest roads. To the south, construction will consist of a dual carriageway with lateral access roads connecting to Boulevard Valéry Giscard d'Estaing via an interchange.

Regarding the transportation and energy infrastructure, the Bank envisages its assistance in rehabilitation and promotion of sustainable infrastructure. Public-Private Partnership approaches as well as regional integration by making Cote d'Ivoire again the leading country and the principal hub in the West African trade and economy.

The current AfDB projects related to Abidjan include;

- Gourou Integrated Watershed Management Project (2010-2013)
Offering better regulation of drainage water by improved environmental management and treatment of solid waste in Gourou,
- PURSSAB - Emergency Programme to Restore Basic Social and Administrative Services (2011-)
Providing necessary resources to restore basic social and administrative services, and contributing to promoting social cohesion and reconciliation.

PIDA - Programme for Infrastructure Development in Africa

AfDB, as its executing agency, has also been taking part in this regional initiative activity.

PIDA is a continent-wide program to develop a vision, policies, strategies and a program of priority regional and continental infrastructure commenced in 2010-2011 with a view to promote socio-economic development and poverty reduction in Africa through improved access. In its sector study, PIDA made its forecast up to 2030 with priority action plans till 2020 in transport, energy, trans-boundary water and ICT.

The road project between Cote d'Ivoire and neighboring countries (Mali, Guinea, Liberia, Burkina Faso, etc.) is inclusive of such cross boundary road projects as Danane (CI side) to the Guinea boundary and Bloléquin and Tabou (both on the CI side) to Liberia boundary.

The Priority Action Plans for Cote d'Ivoire states a few more related to the country as follows:

- Abidjan – Lagos Coastal Corridor
- Praia (Cape Verde) – Dakar (Senegal) – Abidjan Multimodal Corridor
- Abidjan – Ouagadougou (Burkina Faso)/Bamako (Mali) Multimodal Corridor

The connection of Abidjan City with the Abidjan –Lagos Corridor is planned to be along the Y4 (ring) road, so that part of it is to be given a high priority for implementation.

Other projects related to Abidjan are the improvement of transport and the environment in the city and the Bank would like to improve the following roads including intersections, which have been requested by the government.

- La Corniche road to be widened from 2x3 lanes to 2x4 lanes,
- Le Boulevard Latrille to be widened to 2x3 lanes,
- La Rue du Jardin to be widened to 2x2 lanes, and
- La Voi Triomphale

The road projects also included the Abidjan lagoon transport station project but the Ministry of Transport of Cote d'Ivoire informed the Bank that they had opened the market for lagoon transport to the private sector. As a result, the Bank has withdrawn this project from their list.

(6) EU/UE - The European Union

EU's strategy for Cote d'Ivoire covering the years including 2014 and onwards has not been issued yet, but their CSP 2008-2013 has two areas of focus, namely, the consolidation of the peace and providing good governance, and the social cohesion, and economic and social infrastructure rehabilitation.

EU envisages delivering a €125 million package, funded by EDF – European Development Fund, to support reconciliation and economic and social development. The package includes:

- Transport: maintaining the road network and rehabilitating the most disrupted roads between Cote d'Ivoire and Ghana,
- Professional training: particularly helping young people to get back into the job market,
- Health: helping to improve healthcare, and
- Financial and institutional support: to improve the national statistics

(7) AFD - Agence Française de Développement

AFD has concluded with the government of Cote d'Ivoire contract called C2D - Contrat de Désendettement et de Développement. This is a specific debt relief activity by French government offering HIPC countries new development projects.

Under C2D, AFD has been focusing its interventions on agriculture, urban development, education, transport infrastructure, justice and health.

- Urban Development – Access to Drinking Water and Waste (2013-)

Focusing on drinking water supply capacity improvement in Abidjan as well as waste management study

(8) IDB - Islamic Development Bank

IDB, a regional development bank established in 1973 and headquartered in Jeddah with 56 member countries including Cote d'Ivoire, has been quite active in providing lending on infrastructure projects. They do not have their local representation in Cote d'Ivoire but have started their cooperation with the country since 2003. No country assistance strategy has been made yet. No representation in Cote d'Ivoire but Ministry of Planning is their key counterpart ministry.

13 projects totaling US\$403 billion till 2012 have been financed by IDB.

- Transport infrastructure improvement
Abidjan – Yamoussoukro Highway (for Singrobo - Yamoussoukro (86 km) since 2007 financed by IDB
- Agriculture
Waste management infrastructure
- Measures for Vulnerable population
Public administration capacity development

(9) ECOWAS/CEDEAO – Economic Community of West African States

ECOWAS is a regional organization with a view to promote economic integration in all fields of economic activity, established in 1975 and headquartered in Abuja, Nigeria. 15 states from the region are the members.

Its overall strategy is to create an African economic community in the region, to achieve collective self-sufficiency for its member states, by creating a single large trading bloc through an economic and trading union.

Within this context, the RISP - Regional Integration Strategy Paper for West Africa was prepared. Its objectives are to support regional integration efforts in West Africa over the period 2011-2015 under ECOWAS Vision 2020, to link regional markets and investments by transport infrastructure, transport and trade facilitation measures and energy production and markets integration.

(10) BOAD – Banque Ouest Africaine de Développement

BOAD or WADB – West African Development Bank is the financing arm of UEMOA - *Union Economique et Monétaire Ouest-Africaine* or WAEMU - West African Economic and Monetary Union. It was established in 1973 and headquartered in Lomé, Togo to promote balanced economic development of member states through its lending to rural development, infrastructure, telecommunication, industry, transport and tourism.

A full lending portfolio is not yet known to SDUGA but BOAD has recently committed to the following projects related to Abidjan during the 2011 and 2012 period.

- Hotel construction Project in Abidjan
- Interchange Construction project at Pont Riviera-Marcory

- Construction of Bridge Azito between Yopougon and Ile Boulay (4th Bridge)
- Improvement of Abobo-Anyama road
- Abidjan Airport Improvement – AERIA
- Investment in a Brasserie in Abidjan
- Construction of a Bridge at Jacquville

According to the current information, there is a project package which BOAD is to partially finance amounting to 24 billion FCFA for the port development. The project package includes the improvement of Vridi Canal which is one component of the second container terminal and Vridi (Bietri) Bay reclamation.

BOAD is also involved in the proposal for the 5th Bridge construction but details are not known yet.

(11) Public-Private Partnership (PPP)

PPP is one of the ways to plan, implement and operate infrastructure projects such as power, transport infrastructure or utility. Not as the stakeholder itself but as a structure for infrastructure projects, a few initiatives have been taken by the Ivorian government in association with World Bank and African Development Bank in February 2013. A National Committee of PPP was established at the Ministry of Economy and Finance. The Study Team considers possibilities of some projects to be implemented by PPP scheme and shall develop dialog with the Committee on the ways to raise sufficient interest and attraction for the private sector as well as to develop the adequate capacity as the regulator and supervisor by the public sector.

(12) Concluding Summary

International donor coordination had been suspended due to the crisis that ended in 2012, but with JICA's initiatives in line with this Study, coordination work has resumed since the spring of 2013 in the infrastructure development field. During the year 2013, the Study Team was informed that each major international donor has gradually changed gears to be more into development projects. The initial presentation and the Stakeholder Meeting held in October 2013 and the subsequent meetings successfully raised interest among the international donor community as one of the major forms of development assistance initiated by JICA is in the development mode.

In this context, through the interactions of the Study Team with other donors, and sometimes, via Ivorian counterparts, the Study Team has incorporated their considerations while elaborating both the Urban Master Plan and the Transport Master Plan. All the donor agencies such as the World Bank, African Development Bank, the West African Development Bank and further the Islamic Development Bank hold infrastructure as one of their pillars. The Study Team has been given information on plans not only for the traffic improvements but also for transport infrastructure projects going through Abidjan. Thus the basic foundation for JICA to develop closer coordination with the international donor community through this SDUGA project has been well laid out.

1.3 Stakeholder Meetings

1.3.1 First Stakeholder Meeting in October, 2013

The first stakeholder meeting was held on the 31st of October, 2013 with nearly 200 participants from central and local government agencies, international donors, universities, semi-governmental organizations, local experts, and journalists.

The meeting was divided into two sessions, one was the plenary session in the morning to present an overview of the SDUGA project and practice of the digital topographic mapping, and the other was the group discussion in the afternoon to present the progress on the Greater Abidjan urban master plan and the transport master plan separately.

This stakeholder meeting was the first opportunity for the JICA Study Team to present and discuss, among the various stakeholders, the SDUGA project. However, no conclusive outputs could be shown at this moment because the Progress Report was still under preparation. Therefore, remarks from the floor came to focus mainly on their (1) expectations regarding the SDUGA project, such as appropriate plans for water supply, drainage, sanitation, electricity development, and (2) concerning issues in planning, such as public financing, illegal land occupation, land acquisition, and protection of the air, water and forests. The floor also raised suggestions, such as (3) priority development of an industrial area, land reservation for power facilities, port extension and open space for public facilities and social housing.

In addition, the floor proposed or drew attention to (4) appropriate transport planning, such as the importance of traffic control/management, a freight transport system with ring road, a mass transit system to incorporate satellite cities into the Greater Abidjan and that was to be supplemented by BRT development.

All those remarks that were provided by various stakeholders formed a common platform for the JICA Study Team to share the existing problems and issues, and consequently to elaborate urban and transport master plans for the Greater Abidjan as presented.

At the conclusion of the meeting, the discussions led to the following recommendations:

(1) Urban Planning

- Take into account, other than transport, different sector projects planned or in progress
- Protect the water resources in Greater Abidjan
- Involve local experts in the process of the master planning
- Secure land for the infrastructure development projects based on the master plan
- Review laws and regulations relating to urban planning and urban facility development in order to conform to current and future realities
- Strengthen the Public Private Partnership (PPP) for the implementation of development projects
- Bring the public and the private sectors to respect and take ownership of SDUGA
- Develop a coherent and effective mechanism that will monitor and implement SDUGA 2030.

(2) Urban Transport Planning

- Take into account the satellite zones for the urban transport planning
- Weigh future challenges from the informal transport (Gbaka, Woro-Woro) against the fact of developing a new type of mass transport (BRT, urban train, etc.)
- Consider the existing outdated transport infrastructures for a better function of a public transport system
- Consider the insufficient parking facilities that often lead to road congestion, especially in the Plateau area
- Consider freight transport
- Provide a modern solid waste dumping facilities at passenger terminals (bus stations, parking)
- Consider the environmental impact of new model of transport
- Provide the best possible method of financing the infrastructure and project development in the transport planning
- Adequately involve the stakeholders (technical agencies, the inhabitants in the study zones, etc.) in the elaboration of urban transport master plan
- Appropriately adapt the urban transport plan for Greater Abidjan, support its implementation in order for the poorest population to have access to public transport.

The outline of the first stakeholder meeting is set out in Appendix H.

1.3.2 Second Stakeholder Meeting in June, 2014

The second stakeholder meeting was held on the 24th of June, 2014 having more than 200 participants from various organizations and individuals similar to those in the previous stakeholder meeting in October 2013.

The meeting was composed of three sessions, namely the plenary session, Group Discussion session and Closing session. The plenary session consisted of Speeches, General Presentation of the Project and Questions/Answers. The General Presentation included such major subjects as “Overview of the Project”, “Socio-Economic Framework”, “Urban Master Plan for Greater Abidjan”, and “Transport Master Plan for Greater Abidjan”.

The Group Discussion was divided into three groups, which included Group A: Urban Planning, Group B: Urban Transport Planning and Group C: Transport Demand Analysis and Modelling. At the closing session, moderators/recorders of the respective discussion groups presented their summary reports to the audience of the plenary meeting.

Group discussions followed after the plenary session that deepened the understanding of the JST proposed urban master plan and the transport master plan for Greater Abidjan. Comments and remarks made at the respective groups were duly taken into account for the preparation of this Draft Final Report of which major outputs should be the draft final proposal by the JST for the said master plans. The discussion in the transport master plan group extended to the high priority projects selected by the JST for the subsequent feasibility study.

Discussion results at the respective groups are summarized below:

(1) Group A: Urban Master Plan

Major issues and concerns raised by the participants are as follows:

- Development of areas for business activities
- Sanitation and public services, especially sewage treatment plants
- Development of the Attinguie industrial zone
- Sustainable supply of drinking water for Abidjan area
- Living conditions of local residents affected by the projects

Suggestions and/or Recommendations made at the meeting are:

- Following the Urban Master Plan (SDUGA), detailed master plans will have to be developed. At this level of planning, the documents will take into account the location of business and commercial facilities, reserves for sewage treatment plants, power plants and telephone stations.
- Regarding the government structure, a meeting between the counterparts should be initiated by various ministries under the coordination of the prime minister's office.
- With regard to local communities affected by the projects, consultations will be initiated to address their concerns.
- On the resettlement of residents in order to clear out informal settlements, arrangements are being made by the Ministry of Construction, Sanitation and Urban Development (MCLAU) to resettle each case near the location of their business activities; this is in the spirit of preserving their community.
- Concerning the logistics and industrial zone in Attinguie, it was recommended that the Development Strategy should take into account the specific environment of the area (i.e. classified forest, water catchment areas, etc.)

(2) Group B: Transport Master Plan

After the presentations by the JST on the Urban Transport Master Plan and the selection process for the pre-feasibility study, discussions were carried out on the following subjects:

- Vridi Bridge
- The Feasibility Study
- Issues related to urban transport in general (rail and road projects on west to east corridor, the BRT, roads and alignments)

Discussions between the participants of this workshop were related to a number of issues and concerns as follows:

- Regarding the alignment of Vridi Bridge proposed by the JICA Study Team, Abidjan Port Authority and some government representatives find it inappropriate.
- Several weak points were highlighted concerning the JST proposed alignment of the Vridi Bridge Project
- The Port Authority expressed their preference for the initial alignment proposed by the former Master Plan regarding the Vridi Bridge

Recommendations:

<CONCERNING SDUGA IN GENERAL (URBAN TRANSPORT)>

- JST should take into account the possibility of a feasibility study concerning public transport on a dedicated line on the East-West Corridor (take into account all possibilities), because it is very urgent to decide where the North-South urban train project could be connected with.
- JST plans a railway project which runs in the east-west direction through the fifth bridge but the Ivorian government has already started the study (design) concerning this bridge, therefore it is necessary to co-ordinate the fifth bridge project and the East-West railway project.
- Taking into account the possibility of introducing the BRT project, which could be very easy to implement, the JST should plan a transversal road which goes through Abobo and Cocody

<VRIDI BRIDGE>

- JST should take into account the functionality aspect in their proposition regarding Vridi Bridge particularly concerning the proposed policy (to forbid trucks to go through the city center plateau) and also take into account the toll on the third bridge and autoroute du nord (Northern Motorway).
- JST must review their proposition for Vridi Bridge and take into account a longer travel time, if required to use the JST's proposed Vridi Bridge.
- The JST explained that the current two bridges connecting Plateau and the port area are heavily congested and it is not desirable for large-size trucks to run in the central business district. Therefore, large-truck traffic should use a regional trunk route such as the Third Bridge and the Northern Motorway which are designed to accommodate large and heavy truck traffic. It was also pointed out that the shortest travel distance was not necessarily the shortest travel time.

A conclusion was not reached about the suitable alignment of the Vridi Bridge.

(3) Group C: TRANSPORT DEMAND ANALYSIS AND MODELLING

The Workshop started with a presentation by the JST members and a question and answer session followed. The discussion was focused mainly on three issues:

- Transport Mode
- The role of government in the transport sector especially in the informal transport sector
- Home Interview Survey (HIS) results

As the result of the discussions, the following recommendations were proposed:

- Government should subsidize public transport to enable people to use non-motorized Transport to access to the Public Transport easily
- Regarding the informal transport, restructuring will be necessary for “woro woro” and “gbaka” transport systems.
- The JST should consider a mass transportation means within the communes (intra-communal) such as a Tramway or Train.
- Analysis of transport demand should also take into account the restructuring of formal transport as well as restructuring informal transport
- It must be interesting to consider lagoon transportation in Greater Abidjan.
- Provide an appropriate transportation means to link areas such as Grand Bassam and Anyama considering the high level of the transport demand in these areas.

The outline of the second stakeholder meeting is set out in Appendix H.

2.0 Technical Transfer Program

2.1 Knowledge Sharing Workshop

The objectives of the knowledge sharing workshops which were agreed to are to provide technical transfer by the JICA Study Team and to improve the involvement of the Ivorian counterpart officials. Five workshops were held in Phase 1 and 2 as follows.

Table 2.1 Knowledge Sharing Workshop

Date	Participants	Purpose
2013-04-19	MCLAU, AGETU, Abidjan District, JICA, JICA Study Team	Introduction on urban planning system in Japan
2013-05-08	MCLAU, MINESUDO, ANDE, AGETU, AGEROUTE, Abidjan District, JICA, JICA Study Team	Acknowledgement of the general concept of SEA and application of SEA on SDUGA Introduction of SEA in Cote d'Ivoire Confirmation of the application of SEA on SDUGA Introduction of good practices and trend of urban development
2013-05-28	MCLAU, AGETU, Abidjan District, JICA, JICA Study Team	Presentation and discussion on transport planning and transport-related surveys
2013-09-13	JICA, JICA Study Team	Introduction of international stakeholders' strategy and projects for Côte d'Ivoire
2014-02-06	MCLAU, AGETU/MT, MIE, AGEROUTE, MINESUDD, Abidjan Autonomous District, JICA, JICA Study Team	Presentation by the JICA Study Team and questions & answers on the transport survey result Reporting on training in Japan by the Sub-director of Urban Planning, MCLAU and discussion

At the first workshop, the JICA Study Team introduced urban planning and its implementation system in Japan. It was found that there were many differences in approving authorities of urban master plans and means of urban development projects between Côte d'Ivoire and Japan.

Participants acknowledged the general concept of a strategic environmental assessment (SEA) as a recent smart planning tool for risk management and sustainability in the second workshop. Though participants acknowledged the enforcement of the Presidential Decree on SEA in Côte d'Ivoire in January 2013, the participants understood that the JICA Study Team was going to apply JICA's Guidelines for Environmental and Social Considerations in accordance with the Record of Discussion between MCLAU and JICA on 31st of October 2012.

Presentations on an introduction to transport planning and the traffic surveys in this project were made by the JICA Study Team at the third workshop. The Ivorian counterparts had many questions and

suggestions on the traffic surveys, and there was substantial discussion about preferred transport modes in Abidjan.

The theme of the fourth workshop was international donor coordination. The JICA Study Team introduced international stakeholders' strategy and projects for Côte d'Ivoire, and participants exchanged information about movements of the international donors.

At the fifth workshop, the results of the transport survey including the household interview survey were reported by the JICA Study Team and participants understood the present state of person trips in Abidjan based on the survey data. After that the Ivorian participants reported on training in Japan in January 2014, and discussed the difference between Japan and Côte d'Ivoire in urban planning and urban transport planning.

2.2 Counterpart Training in Japan

2.2.1 Outline of Training in Japan

Counterpart training in Japan was carried out twice, once in January and once in July, 2014 with the following objectives.

- To study the measures and policies regarding urban development and transport under the Master Plan in Japan
- To acquire the knowledge for promoting the approach of Transit Oriented Development (TOD) in which Japan has abundant experience
- To discuss the urban development master plan for Greater Abidjan based on urban development in Japan, and reflect the conclusions of the discussions in this project
- To strengthen the skill levels of key persons who will implement the SDUGA

The first course of training in Japan was conducted from January 20, 2014, to January 29, 2014 (10 days), excluding the travel time between Côte d'Ivoire and Japan with the participation of the six trainees listed below.

- Assistant Director of Urban Planning, MCLAU
- Project Coordinator, Urban Planning, MCLAU
- Technical Director, Abidjan Autonomous District
- Assistant Director of Urban Planning, Abidjan Autonomous District
- Section Chief, AGETU
- Section Chief, MINESUDD

The second course was conducted from July 7, 2014, to July 16, 2014 (10 days) with the participation of the six trainees listed below.

- Director of Studies and Planning, AGETU
- Deputy Director in Charge of Land Expertise, DTC, MCLAU
- Research Officer, MCLAU
- Deputy Director of Environment and Sustainable Development, Abidjan Autonomous District
- Technical Advisor, Directorate General, MIE
- Road Study Manager, AGEROUTE

2.2.2 Program of Training in Japan

The programs of training in Japan are described below.

Table 2.2 Program of First Course of Training

Date	Place of Training	Item of Training	Description
2014-01-20	JICA Tokyo	Lecture	Program orientation and briefing
	Ministry of Land, Infrastructure, Transport and Tourism (MLIT)		Make a courtesy call on Assistant Vice-Minister for Engineering Affairs, MLIT
	MLIT	Lecture	Learn about the urban planning system in Japan
2014-01-21	JICA Yokohama	Lecture	Learn about six major projects for Yokohama City urban planning and the Yokohama City Planning Master Plan
	JICA Yokohama	Lecture	Learn the development method and concept of Minatomirai 21 Area as an example of improvement of the city center functions
	Minatomirai 21 in Yokohama City	Site visit	Visit Minatomirai 21 Area and appreciate the method of town planning and infrastructure provision
2014-01-22	Mori Building Company Limited	Lecture	Learn the development method and scheme of Roppongi Hills as an example of an urban development project by a private developer, and the issues of redevelopment in an urban central area
	Roppongi Hills in Tokyo	Site visit	Visit Roppongi Hills and appreciate the outline and the concept
	Tokyo Midtown	Site visit	Visit Tokyo Midtown as an example of a redevelopment district plan project of public land by a private developer
	Metropolitan Expressway Company Limited	Lecture	Learn the development method and scheme of Ohashi Junction as an example of a redevelopment project integrated with an urban transport facility
	Ohashi Junction in Tokyo	Site visit	Visit Ohashi Junction, redevelopment buildings and public park
2014-01-23	Hino Campus of Meisei University	Lecture	Learn the development method of Tama New Town as an example of large-scale development in a suburban area
	Tama New Town in Tokyo	Site visit	Visit Tama New Town and appreciate the outline, the present situation and effect
2014-01-24	Tokyo Metropolitan Government (TMG)	Lecture	Learn issues, vision and key strategies and implementation systems of urban development in Tokyo
	View Room of TMG Buildings	Site visit	Have a view of Shinjuku - new urban centre in Tokyo
	JICA Head Office		Make a courtesy call on JICA Head Office
	JICA Head Office	discussion	Discuss difference between Côte d'Ivoire and Japan and give feedback to SDUGA
2014-01-25	Rest Day		
2014-01-26	Travel from Tokyo to Kyoto		
2014-01-27	Kyoto City	Lecture	Learn the comprehensive transport strategy of Kyoto City aimed at 'Pedestrian City,' being an international culture and tourist city
	Kyoto City	Lecture	Learn the bus location system and the bus location information service that is available on a personal digital assistant, having been introduced in Kyoto City

Part 4 Other Project Related Tasks

Date	Place of Training	Item of Training	Description
	Kyoto City	Site visit	Visit the downtown area of Kyoto City and appreciate the comprehensive transport strategy aimed at 'Pedestrian City'
2014-01-28	JICA Kansai	Lecture	Learn the urban planning master plan and the urban planning policy of Kobe City, considering environmental symbiosis
	JICA Kansai	Lecture	Learn the integrated urban transportation policy for Kobe public Transportation
	JICA Kansai	Lecture	Learn "Kobe City Integrated Basic Plan," maritime culture city development (Port Island), new town development (Seishin New Town), and urban management plan for a new development project
	Port Island in Kobe City	Site visit	Visit Port Island and appreciate the development concept, especially new town development integrated with public transport
2014-01-29	Seishin New Town in Kobe City	Site visit	Visit Seishin New Town and appreciate the complex development of residential areas and industrial areas
	JICA Kansai	discussion	Discuss urban planning issues and urban transportation issues in Côte d'Ivoire and Greater Abidjan, and give feedback to SDUGA

Table 2.3 Program of Second Course of Training

Date	Place of Training	Item of Training	Description
2014-07-07	JICA Tokyo	Lecture	Program orientation and briefing
	Oriental Consultants Company Limited	Lecture	Learn issues, vision and key strategies and implementation systems of urban development in Tokyo
	Site of Nishi-Tomihisa District Urban Redevelopment Project	Lecture	Learn the background and the structure of Nishi-Tomihisa District Urban Redevelopment Project as an example of an urban redevelopment project by local inhabitants that has been integrated with a major arterial road project
	Site of Nishi-Tomihisa District Urban Redevelopment Project	Site visit	Visit construction site of Nishi-Tomihisa District Urban Redevelopment Project and appreciate the building configuration and the process of change
2014-07-08	Traffic Control Center, Tokyo Metropolitan Police Department	Site visit	Visit Traffic Control Centre gathering, analyzing and providing traffic information and appreciate the practical operation method
	Mori Building Company Limited	Lecture	Learn the development method and scheme of Roppongi Hills as an example of an urban development project by a private developer, and the issues of redevelopment in an urban central area
	Roppongi Hills in Tokyo	Site visit	Visit Roppongi Hills and appreciate the outline and the concept
	Metropolitan Expressway Company Limited	Lecture	Learn the development method and scheme of Ohashi Junction as an example of a redevelopment project integrated with an urban transport facility
	Ohashi Junction in Tokyo	Site visit	Visit Ohashi Junction, redevelopment buildings and public park
2014-07-09	Yurikamome	Site visit	Take the Yurikamome, a new transit service that links Shimbashi to Toyosu

Date	Place of Training	Item of Training	Description
	Waterfront City in Tokyo	Site visit	Visit the Waterfront City through the use of Yurikamome and appreciate the strategies and land use policies of Tokyo Metropolitan Government
2014-07-10	Architectural Department of Yokohama City	Site Visit	Visit the Architectural Department of Yokohama City and appreciate the map information system for urban development by the city
	JICA Yokohama	Lecture	Learn about six major projects for Yokohama City urban planning and the Yokohama City Planning Master Plan
	JICA Yokohama	Lecture	Learn the development method and concept of Minatomirai 21 Area as an example of improvement of the city center functions
	Minatomirai 21 in Yokohama City	Site visit	Visit Minatomirai 21 Area and appreciate the method of town planning and infrastructure provision
2014-07-11	Ministry of Land, Infrastructure, Transport and Tourism (MLIT)	Lecture	Learn about the urban planning system in Japan
	JICA Head Office		Make a courtesy call on JICA Head Office
	JICA Head Office	discussion	Discuss difference between Côte d'Ivoire and Japan and give feedback to SDUGA
2014-07-12	Hino Campus of Meisei University	Lecture	Learn the development method of Tama New Town as an example of large-scale development in a suburban area
	Tama New Town in Tokyo	Site visit	Visit Tama New Town and appreciate the outline, the present situation and effect
2014-07-13	Travel from Tokyo to Kyoto		
2014-07-14	Kyoto City	Lecture	Learn the comprehensive transport strategy of Kyoto City aimed at 'Pedestrian City,' being an international culture and tourist city
	Kyoto City	Lecture	Learn the bus location system and the bus location information service that is available on a personal digital assistant, having been introduced in Kyoto City
	Kyoto City	Site visit	Visit the downtown area of Kyoto City and appreciate the comprehensive transport strategy aimed at 'Pedestrian City'
2014-07-15	JICA Kansai	Lecture	Learn the urban planning master plan and the urban planning policy of Kobe City, considering environmental symbiosis
	JICA Kansai	Lecture	Learn the integrated urban transportation policy for Kobe public Transportation
	JICA Kansai	Lecture	Learn "Kobe City Integrated Basic Plan," maritime culture city development (Port Island), new town development (Seishin New Town), and urban management plan for a new development project
	Port Island in Kobe City	Site visit	Visit Port Island and appreciate the development concept, especially new town development integrated with public transport
2014-07-16	Seishin New Town in Kobe City	Site visit	Visit Seishin New Town and appreciate the complex development of residential areas and industrial areas
	JICA Kansai	discussion	Discuss urban planning issues and urban transportation issues in Côte d'Ivoire and Greater Abidjan, and give feedback to SDUGA

2.3 SDUGA Database GIS Training Workshop

2.3.1 Objectives

The objectives of the GIS Training Workshop were:

- To provide knowledge of the SDUGA Database by:
 - introducing the SDUGA Database and
 - providing some experience with using the data.
- To improve overall knowledge in GIS and GIS skills by introducing:
 - basic GIS terminology (“speak GIS”),
 - GIS concepts and uses (“think GIS”), and
 - GIS skills and software (“do GIS”).

2.3.2 Schedule

The GIS Training Workshop was scheduled to cover five days, with a session held every morning. Due to the request from participants and their desire to cover more topics, the fifth day contained an additional afternoon session. So in total, the GIS Training Workshop contained six sessions over five days.

- Days of workshop: September 22 to September 26
- Time of sessions: 09:00 to 12:00, including a break
- Plus an additional session held on September 26, from 14:00 to 17:00

2.3.3 Participation

Participants in the training workshops joined from three counterpart agencies. A summary of the participation in the 5-day training workshop is provided below.

Table 2.4 Summary of the Participation in the 5-Day GIS Training Workshop

Participants				Day 1	Day 2	Day 3	Day 4	Day 5
No.	Name	Position	Organization					
1	Adjon Alberic	Ingénieur Géomaticien, Chef de Service	District d'Abidjan	Yes	Yes	Yes	Yes	Yes
2	Bini K. Roland	Sous-Directeur	MCLAU, DU	Yes	Yes	Yes	Yes	Yes
3	Delbe Narcisse	Sous-Directeur, Expertise Foncière	MCLAU, DTC			Yes		
4	Djaha K. François	Agent	MCLAU, DU	Yes	Yes	Yes	Yes	Yes
5	Gode Adou Richard	Ingénieur Géomaticien	District d'Abidjan	Yes	Yes	Yes	Yes	Yes
6	Kassia Lomy J.B	Technicien Sup., Chef de Service	District d'Abidjan	Yes	Yes	Yes	Yes	Yes
7	Kra Bini Kouassi	Agent	MCLAU, DU	Yes	Yes	Yes	Yes	Yes
8	N'Da Yao	Sous-Directeur	MIE, DGIR	Yes	Yes	Yes	Yes	Yes

2.3.4 Topics

The topics covered in the 5-day workshop were as follows:

- Day 1: Introduction to SDUGA Database, GIS, QGIS, and Basic Mapping
- Day 2: Basic Mapping and Basic Windows Operation
- Day 3: Basic Mapping
- Day 4: Basic Mapping and Advanced Mapping
- Day 5: Advanced Mapping, Tabular Data, Raster Data, GPS, and 3D

Due to the nature of the training, after each day, the training material was evaluated and adjusted to meet the needs of the participants. So, the final training topics, which are shown above, deviate slightly from the original proposed plan. Even so, the objectives of the workshop, which were to introduce the SDUGA Database and to provide GIS knowledge and QGIS skills, were all covered within the 5-day event.

Regarding the SDUGA Database, only a sample of the base data was used in the training, i.e. the existing condition data in and surrounding the Plateau area. The planning data was not used nor shared with the participants due to the data's sensitive nature and its status as being "unapproved".

The following sub-sections provide additional details on all the topics covered.

2.3.4.1 Day 1

Day 1 was the introduction to the SDUGA Project and Database, GIS, and the QGIS software. In the following list, in bullet points, are the topics covered in Day 1, along with the hands-on exercises.

Day 1 Topics

- **Topic 1 – SDUGA Database Introduction**
 - Uses for GIS and the SDUGA Database in the SDUGA Project
 - Software used for development of the SDUGA Database
 - Sources and formats of the GIS data
 - Tasks performed by the JICA Study Team to create the database
- **Topic 2 – GIS Introduction**
 - Definition and history of GIS
 - Uses for GIS
 - Concepts and terminology: coordinate system, attributes, and topology
 - Technologies, software and hardware
 - GIS data types
- **Topic 3 – QGIS Introduction**
 - Reasons for using QGIS
 - Comparison between ArcGIS and QGIS
 - How to obtain and install QGIS
- **Topic 4 – QGIS Basics**

- The QGIS user interface organization and basic functions
- Attribute data in GIS
- Working with attribute data in QGIS
- Basic printing facilities of QGIS

Day 1 Exercises

- **Exercise 0 – QGIS Installation:** Participants downloaded and installed QGIS on their laptop computers.
- **Exercise 1 – QGIS Interface and Adding Layers:** Using QGIS, participants added several layers from the SDUGA Database and produced a basic map containing administrative boundaries and roads of the central Abidjan area.
- **Exercise 2 – Categorize Features:** Using the map created in the previous exercise, participants added labels to the administrative boundaries and assigned colour and line styles to roads based on the road type. (Due to time constraints, adding point data was skipped for this exercise.)
- **Exercise 3 – Print Manager:** Continuing from the previous exercise, participants created a new print A4 layout with a map, scale bar, and legend.

Day 1 Review

- Day 1 ended with a brief question and answer session.
- Concern was expressed by the participants regarding the pace of the workshop. Though a few participants could follow along, the majority had difficulty in keeping pace. The JICA Study Team agreed to slow the pace.

2.3.4.2 Day 2

At the beginning of Day 2, the participants expressed a desire to redo the exercises from Day 1. The JICA Study Team felt that the importance of the basics taught in Exercises 2 & 3 justified accepting the participants' requests.

Below, in point form, are the topics covered in Day 2, along with the hands-on exercises.

Day 1 Review

- Day 2 started with a brief review of Day 1 and a question and answer session.
- Participants requested a more detailed review of Exercises 2 and 3 from the previous day.

Day 2 Topics and Exercises

- Topic 4 was reviewed and Exercises 2 and 3 from Day 1 were performed again by all participants, with additional demonstrations and explanations by the JICA Study Team.
- Due to the limited knowledge of some participants for basic Windows operation, some basic Windows concepts and techniques were also taught, such as: folders and files, scrolling through lists, mouse operations like clicking and dragging, starting applications from the Windows 7 Start Menu or the Windows 8 Start Screen, etc.

Day 2 Review

- Day 2 ended with a brief question and answer session.
- Generally, participants felt they had grasped the QGIS basics.

- Participants suggested having an additional afternoon session on either Thursday or Friday. The JICA Study Team agreed in principle, but asked all participants to think about it and to decide within the next couple days based on the progress of the topics covered.

2.3.4.3 Day 3

Day 3 was a continuation of the basic mapping skills required to operate QGIS, with the introduction of point data. Below, in point form, are the topics covered in Day 3, along with the hands-on exercises.

Day 2 Review

- Day 3 started with a brief review of Day 2 and a question and answer session.

Day 3 Topics

- **Topic 4– QGIS Basics (continued)**
 - Working with attribute data in QGIS (introduction of new elements)

Day 3 Exercises

- **Exercise 4 – Categorize Features:** Continuing from Exercise 2&3, participants added a point layer data and applied different symbols for the different facility types as defined in the attribute data.
- **Exercise 4 (continued) – Print Composers:** The participants practiced was further modifying the print layout by adding more formatting such as boxes and borders; a numeric scale; a North Arrow; and finally, a legend was added and formatted to fit into the page layout.

Day 3 Review

- Day 3 ended with a brief question and answer session.
- Some participants requested more advance GIS methods, such as digitizing importing Excel data, and creating new shape files. The JICA Study Team informed that these materials are already planned to be covered in future sessions, but only after the basic skills for using QGIS were understood.
- All participants agreed to hold additional session on Friday afternoon.

2.3.4.4 Day 4

Day 4 was a continuation of the basic mapping skills required to operate QGIS, plus the introduction of more advancing mapping and GIS concepts. Below, in point form, are the topics covered in Day 4, along with the hands-on exercises.

Day 3 Review

- Day 4 started with a brief review of Day 3 and a question and answer session.

Day 4 Topics

- **Topic 4– QGIS Basics (continued)**
 - Working with styles in QGIS including color ramps and random colors
 - Resolving problems with “character encoding” in DBF and text files, i.e. to resolve issues when the French characters are not displayed properly in data from international and domestic sources.
 - Data filter concepts in GIS and filtering data in QGIS
- **Topic 5 – More GIS Concepts**

- GIS Concepts and Terminology
 - Coordinate systems and projections
 - Scale
- Working with coordinate systems and projections in QGIS
- Setting layer visibility based on scale in QGIS
- **Topic 6 – Advanced Mapping**
 - Defining complex drawing styles in QGIS
 - Mapping units versus printing units, and how to use them in QGIS

Day 4 Exercises

- **Exercise 5 – Countries (Random Color Styles):** The participants created a map of the World showing all countries using random color style.
- **Exercise 6 – Countries (Character Encoding):** Participants practiced coloring and labeling the countries data using both the English and French names. Plus they practiced changing the character encoding to ensure that French characters appeared properly.
- **Exercise 7 – Filtering Data:** Using the map from the previous exercise, the map was filtered so that only the continent of Africa was shown. Finally a print layout was created for the Africa map.
- **Exercise 8 – Coordinate System:** Participants practiced changing the projections from the previous map of the World and noted the affect it had on the countries shapes and sizes.
- **Exercise 9 – Projected Coordinate System:** Participants practiced using data with different coordinate systems and using the QGIS “on-the-fly transformation” feature. Participants also practiced transforming data from one coordinate system to another and assigning a coordinate system to data that were provided without a coordinate system.
- **Exercise 10 – Scale:** Various data layers of different scales were loaded into a single map to examine the differences and details, and also to determine which data had the similar scales.
- **Exercise 11 – Coordinate System:** Participants practiced setting the visibility of data based on the data’s scale from the previous scale.
- **Exercise 12 – Advanced Mapping, Lines:** Participants created complex styles (white with black double line) for roads and learned how to control the drawing order of the individual graphic elements in the style.
- **Exercise 13 – Advanced Mapping, Controlling Drawing Order:** Participants practiced controlling the drawing order of symbols to ensure that some styles stayed on top of others.
- **Exercise 14 – Mapping Units and Printing Units:** From the previous exercise data, participants controlled the visibility of layers based on the scale, and setting the size of line objects (roads) to mapping units versus printing units.

Day 4 Review

- Day 4 ended with a brief question and answer session.

2.3.4.5 Day 5 Morning Session

Day 5 Morning Session was a review of all basic concepts and a continuation of the advanced mapping skills for QGIS, plus the introduction of external data and raster data.

Below, in point form, are the topics covered in the morning of Day 5, along with the hands-on exercises.

Day 1, 2, 3, and 4 Review

- Day 5 started with a review of Days 1, 2, 3, and 4 and a question and answer session.
- All areas of importance to understand the GIS concepts and QGIS operation were emphasized again.

Day 5 Morning Session Topics

- **Additional Tips**
 - Before starting on new topics, and immediately after the review, advanced tips for using the QGIS interface were given, which the users practiced with a hands-on exercise.
- **Topic 7 – Advanced Mapping**
 - Tabular data (Excel, DBF, and CSV) and the GIS join function
 - GPS Data
- **Topic 8 – Raster Data and DEM**
 - Introduction to GIS raster data: satellite imagery, digital elevation model (DEM), and other types of data in raster format
 - Using DEM data in GIS: hillshade, relief, and raster calculator
- **Topic 6 – Advanced Mapping**
 - Defining complex drawing styles in QGIS
 - Mapping units versus printing units, and how to use them in QGIS

Day 5 Morning Session Exercises

- **Exercise 15 – Advanced QGIS Interface Techniques:** The participants practiced various QGIS techniques, such as manipulating layers, creating a layer file, and editing and modifying the legend.
- **Exercise 16 – Opening Excel Data in QGIS:** Participants practiced opening an Excel file in QGIS and examining the data contained within it. This data was joined to GIS data and a new map created using this data. Participants also practiced creating a new shape file from the joining of the Excel data with the GIS data. Other types of text data (DBF and CSV) were also opened, examined, and used by the participants to create maps and new shape files.
- **Exercise 17 – GPS:** GPS data was opened and plotted on a map by participants. Using a 3D plugin in QGIS, the GPS data was plotted in 3D using the elevation information in the GPS data.
- **Exercise 18 – DEM:** Using a given DEM file of Abidjan, the participants created hillshade and relief data. These were used to create a relief map. This data was then viewed in 3D using the 3D plugin in QGIS. The Raster Calculator was used to increase the elevation so as to emphasize and make more visible the heights.
- **Exercise 19 – Raster Data:** Using a raster data file of Cote d'Ivoire containing a grid of the population, the participants created a color map showing the highly populated areas. The data was viewed in 3D to visually show the spikes in areas of high population.

Day 5 Morning Session Review

- Day 5 Morning Session ended with a brief question and answer session.

2.3.4.6 Day 5 Afternoon Session

Day 5 Afternoon Session introduced new topics to the participants. The format was adjusted slightly to be only exercises that introduced the new techniques and also forced them to practice their newly learned skills in QGIS.

Below, in point form, are the topics covered during the afternoon of Day 5, along with the hands-on exercises.

Day 5 Afternoon Session Exercises

- **Exercise 20 – Georeferencing to Vector Data:** Participants installed the georeferencing plugin and georeferenced a satellite image of the Plateau area onto the road and facility map they created in Exercise 3.
- **Exercise 21 – Editing Data:** From the newly georeferenced satellite image, missing hotels in Plateau were added to the point data.
- **Exercise 22 – Digitizing and Snapping:** Still using the georeferenced satellite image, the participants created new shape file and created a boundary feature for the port area in Plateau. The participants also practiced using the snapping and intersection options in QGIS to help improve and simplify the digitization process.
- **Exercise 23 – Digitizing from Satellite Imagery:** Continuing with the above satellite image, the participants added a building footprint layer and added additional data by digitizing buildings in the port area.
- **Exercise 24 – Editing Attribute Data:** Participants practiced creating an attribute and inserting calculated values into it based on other attributes; in this case, it involved calculating the height of buildings by multiplying the number of floors by 3 metres.
- **Exercise 25 – 3D Buildings/Cityscape:** Using the 3D plugin, participants were able to create a 3D image of the Plateau area from the DEM data, and including 3D buildings from the building footprint data.
- **Exercise 26 – Google Earth:** Based on the request of participants, the method to open the GIS data in Google Earth was demonstrated, including the 3D buildings in the Plateau area. Participants were encouraged to try this on their own.

Day 5 Afternoon Session Review

- Day 5 Afternoon Session ended with a brief question and answer session.
- Additional material was introduced to the participants to explore on their own:
 - Online Resources for data and information
 - Recommended QGIS plugins to install and try
 - Other free GIS and office software to try
- Certifications of participation were distributed to all participants of the QGIS Training Workshop.

2.3.5 Summary of the Workshop

The workshop enjoyed a high level of attendance from the participants, with all 7 of the original participants attending all 5 days of the workshop. One participant attended for only one day on Day 3.

The skill levels of the participants varied considerably with regards to GIS background and also with regards to using a computer and Windows. Some of the exercises took far longer to complete than anticipated due to the lack of Windows skills on behalf of the majority of the participants. In addition, training on basic Windows and mouse operation had to be provided from time to time.

The material was adjusted to accommodate the participants each day, so that the objectives of the workshop, which was to introduce the SDUGA Database and to provide GIS knowledge and QGIS skills, were all covered within the 5-day event.

2.4 Transport Modelling Workshop

2.4.1 Objectives

The objectives of the Transport Modelling Workshop were:

- To provide knowledge of transport modelling by:
 - introducing a conventional four-step method and other typical methodologies,
 - explaining the usage of a series of transport surveys conducted in SDUGA during the modelling process,
 - Describing the basic idea of project evaluation and
 - building the model and conducting calculation in JICA STRADA
- To provide SDUGA database to the Ivorian government by:
 - transferring SDUGA transport survey database and
 - providing a transport model built in JICA STRADA.

2.4.2 Schedule

The Transport Modelling Workshop was originally scheduled to cover five days with a session held every morning. However, it was shortened to four days training due to a holiday. In response to the request from participants and their desire to cover all topics, the fourth day contained an additional afternoon session. So in total, the Transport Modelling Workshop contained five sessions over four days.

- Days of workshop: October 7 to October 10
- Time of sessions: 09:00 to 12:00, including a break
- Plus an additional session held on October 10, from 14:00 to 17:00

2.4.3 Participation

Participants in the training workshops joined from three counterpart agencies. A summary of the participation in the 4-day training workshop is provided below.

Table 2.5 Summary of the Participation in the 4-Day Transport Modelling Workshop

Participants				Day 1	Day 2	Day 3	Day 4
No.	Name	Position	Organization				
1	Konan Yao Godefroy	Engineer	Ministry of transport	Yes	Yes	Yes	Yes
2	Coulibaly Pligueya Ali	General Manager of Technical Assistant of Project Management	D.G.T.T.C / Ministry of Transport	Yes	Yes	Yes	Yes
3	Kouassi Yapo Nazaire	Engineer of Public Works at Directorate General of Land Transport and Traffic	D.G.T.T.C / Ministry of Transport	Yes	Yes	Yes	Yes
4	Nguessan Etienne	Engineer	MCLAU	Yes	Yes	Yes	Yes
5	N'Da Yao	Director Assistant	DGIR/MIE	Yes	Yes	Yes	Yes

2.4.4 Topics

The topics covered in the 4-day workshop were as follows:

- Day 1: Introduction to Transport Modelling, Transport Survey and JICA STRADA
- Day 2: Trip Generation
- Day 3: Trip Distribution
- Day 4: Trip Modal Split, Traffic Assignment and Project Evaluation

Except for day 1, each programme consisted of three components: 1. Introducing the general idea of the topic, 2. Hands-on exercises in JICA STRADA and 3. Explaining the application in SDUGA. Data sources used in the hands-on exercise is based on the data used in the JICA STRADA tutorial, which contains all the dataset that can be used in JICA STRADA for comprehensive understanding.

All the databases of the transport survey and transport model for SDUGA in JICA STRADA were provided to participants as a draft final version. The following sub-sections provide additional details on all the topics covered.

2.4.4.1 Day 1

Day 1 was the introduction to the transport modelling, transport survey and JICA STRADA. In the following list are the topics covered in Day 1:

Day 1 Topics

- **Topic 1 – Concept of Transport Planning/Demand Forecast**
 - Basic idea of transport planning
 - Purpose of transport demand forecast in the planning process
- **Topic 2 – Concept of Four-Step Method in Transport Demand Forecast**
 - General process of a four-step method
 - Estimation of socio-economic indicators
 - Development of network and zones
 - Trip generation and distribution, modal split and traffic assignment

- **Topic 3 – Introduction of JICA STRADA**
 - Components of JICA STRADA
 - Comparison among similar programmes
- **Topic 4 – SDUGA Transport Surveys**
 - Introduction of 11 transport surveys conducted in SDUGA
 - Purpose, output of each survey and usage in transport modelling
- **Topic 5 – Concept of Transport Modelling**
 - Necessity of transport model
 - Definition of zoning, link, node and centroid connector
 - Definition of trip, trip purpose and transport mode
 - Structuring model

Day 1 Review

- Day 1 ended with a brief question and answer session.
- The idea of a transport model seemed to be difficult for some participants who are not familiar with this kind of technical field. The JICA Study Team provided supporting staff for supplemental explanations during the course.

2.4.4.2 Day 2

Hands-on exercises were started from day 2 applying sample data of JICA STRADA tutorials. The following sub-sections provide additional details on all of the covered topics:

Day 2 Topics: Trip Generation Model

- Aggregation of input data
- Linear regression model
- Model evaluation: t-value, R2 statistic,
- Selection of explanatory variables

Day 2 Exercise

- Preparation of socio-economic indicators
- Preparation of current OD matrices
- Estimation of parameters
- Estimation of trip production/attraction

Day 2 Case Study in SDUGA

- General explanation of the model in SDUGA

Day 2 Review

- Mathematical concept of trip generation seemed to be difficult for some participants who are not familiar with this academic field. The JICA Study Team tried to promote the understanding of the concept as a basic discipline for transport modelling to deal with abstract mathematical ideas using some simple examples.
- The above-mentioned additional explanation shortened the time to explain the case study in SDUGA. However, JICA Study Team decided to give priority to the understanding of the

concept and exercise in JICA STRADA which encourages practical ability and understanding of transport modelling.

2.4.4.3 Day 3

Day 3 dealt with the trip distribution process in a four-step method. Below are the topics covered in Day 3, along with the hands-on exercises:

Day 3 Topics: Trip Distribution

- Basic idea of an Origin-Destination (OD) table
- Approach for the estimation of trip distribution
- Typical model for trip distribution
- Concept of impedance functions

Day 3 Exercises

- Preparation of a network file for the calculation of an impedance matrix
- Estimation of impedance as input of the model
- Estimation of parameters in the model
- Estimation of trip distribution

Day 3 Case Study in SDUGA

- General explanation of the model in SDUGA

Day 3 Review

- Day 3 ended with a brief question and answer session.
- Same as Day 1 and Day 2, some participants could not follow some topics properly due to being unaccustomed to the field. The JICA Study Team tried to promote the understanding of the concept by giving some simple examples.
- The above-mentioned additional explanation shortened the time to explain the case study in SDUGA. However, the JICA Study Team decided to give priority to the understanding of the concept and exercise in JICA STRADA.
- All participants agreed to hold an additional session on Friday afternoon.

2.4.4.4 Day 4

Day 4 was the full day training containing modal split, traffic assignment and project evaluation. Below are the topics covered in Day 4, along with the hands-on exercise:

Day 4 Topics

- **Topic 1– Modal Split**
 - Trip-end and trip-interchange model
 - Explanatory variables
 - Mode definition and decision structure
 - Impedance by transport mode
 - Random utility theory and systematic utility function
 - Iteration for convergence

- **Exercise: Modal Split**
 - Estimation of impedance tables as input of the model
 - Estimation of parameters in the model
 - Estimation of OD matrices by mode
- **Topic 2: Traffic Assignment**
 - Shortest path search
 - Volume-delay functions and QV curve
 - Static & dynamic assignment
 - Wardrop's rules
 - Incremental assignment
 - Transit assignment
- **Exercise: Traffic Assignment**
 - Conducting user equilibrium assignments
 - Conducting transit assignments by loading the result of the user equilibrium assignment
- **Topic 3: Project Evaluation**
 - Cost-benefit analysis
 - Value of time
 - Vehicle operating cost
 - NPV and EIRR
- **Case Study for SDUGA**
 - General procedure of the model, the assignment and the evaluation in SDUGA

Day 4 Review

- Day 4 was fulfilled by lots of new concepts and ideas for participants, which required plenty of explanation for participants to understand the concept properly. The time for explanation of SDUGA was limited, but, however, the JICA Study Team decided to give priority to the understanding the concept and exercise in JICA STRADA.

2.4.5 Summary of the Workshop

The skill levels of the participants varied considerably with regards to mathematical background and also with regards to using a computer. Some of the exercises took far longer to complete than anticipated due to the lack of Windows skills on behalf of the majority of the participants. In addition, training on basic Windows and mouse operation had to be provided from time to time as concerned in the GIS Training.

However, the minimum requirement to overview all of the basic procedures of transport modelling in JICA STRADA could be covered within the 4-days event and the all transport survey database and transport model in STRADA could be delivered to those participants as the draft final version.

3.0 Preparation of SDUGA Database

3.1 Introduction

This chapter describes the SDUGA Database that was created in support of the planning process and for preparing the master plans of the SDUGA Project: the Urban Master Plan, Urban Transport Master Plan, and the Master Plan of Extended Areas.

3.2 Approach and Methodology

The objectives for the development of the SDUGA Database is to provide spatial and quantitative base data to the planning process for the SDUGA Project, and to be a repository for spatial data containing the maps and plans of the SDUGA Urban Master Plan, Urban Transport Master Plan, and the Master Plan of Extended Areas at scales of 1:100,000 for within the planning area and 1:10,000 for within the central urban areas.

The original scope of works for the SDUGA Project was to use the existing data sets available in the governmental agencies of Cote d'Ivoire, such as the CCT and INS, to update those data using satellite imagery and ground surveys, and to finally generate plans based from the updated, current condition data.

3.2.1 Tasks Undertaken

Below are the tasks performed in the creation of the SDUGA Database.

1. Collect existing spatial data and hardcopy maps from sources in Cote d'Ivoire, such as CCT, INS, SOTRA, etc. and digitize or convert them into a useable format for the planning process.
2. Define coverages and boundaries, which include the SDUGA Study Area, the SDUGA Planning Area, survey areas, INS Zones, and Traffic Analysis Zones.
3. Generate base maps based on the requirements of the survey teams and planners.
4. Update the base maps with existing condition data from satellite imagery, survey data, and other sources.
5. Generate current condition base maps based on the requirements of the planners and survey teams; this includes the creation of the Digital Topographic data as described in Volume 2 Part 1.
6. Perform spatial analysis on existing condition data based on the requirements of the planners.

7. Digitize future plan data into the SDUGA Database based on outputs from the planners.
8. Generate SDUGA plans based on directions from the planners.

3.2.2 Data Outputs

The outputs of the tasks for the creation of the SDUGA Database were the various themes of data that were collect or created. These include the following:

- Base Data:
 - Natural Features: water, coastline, rivers, forests, etc.
 - Administrative Boundaries: sub-prefecture, commune, ville, quartier, etc.
 - Policy: protected forest, reserved land, sensitive land, etc.
- Current Conditions: current land use, current road network, etc.
- Planning/Scope Areas: SDUGA Planning Area, urban units, and traffic analysis zones
- Future Forecast Data: demographic data
- Master Plan Data: future land use framework, proposed roads, proposed transit stations, etc.

For the above data, the coordinate system follows the specifications of CCT and was used for the topographical mapping described in Volume 2 Part 1 Chapter 3.2. Parameters for the selected reference coordinate system are shown below:

Parameters for the selected reference coordinate system:

- Projection: Universal Transverse Mercator zone 30 North
- Meridian of origin: Greenwich
- Latitude of origin: Equator
- Longitude of origin: 3° 00' West of Greenwich
- Scale factor: 0.9996
- False easting: 500,000 m
- False northing: 0 m
- Reference Ellipsoid: World Geodetic System 1984
- Datum: WGS 1984

Using the SDUGA Database's data described above, all necessary maps and plans are generated for the reports and documents of the SDUGA Project, including this Final Report

3.2.3 Existing Map Data

The collection of existing map data from CCT and its assessment and incorporation into the SDUGA Database is discussed in Volume 2 Part 1 Section 3.2. Please refer to that chapter for more detail. Below is a summary of the findings from that section.

Two sets of data were provided from CCT: a data set at 1:5,000 scale and another at 1:50,000 scale. Both the 1:5,000 and 1:50,000 scale maps of the collected data were originally created by conventional mapping methods in the 1980s and the results were being maintained in the form of “paper products”. The paper products were afterwards digitalized thanks to the rapid development of IT technology in recent years; however, the accuracy and freshness remain the same as those of the 1980s. Recently, thanks to the increased demand for map information for various purposes, a part of the map data were updated using only 2D-dimensional features by simply overlaying satellite imagery based on the 1980s maps. On the other hand, for 1:50,000 scale map data, some of the data were retrieved from a smaller scale map of 1:200,000, which is an unusual way for map compilation. As a result, data positional accuracy may vary in different locations, due to the use of different data sources, methodologies, time frame and accuracy level verification.

The data from CCT was provided in map sheets. Map sheets are a geographical mapping construct to aid in map production and management; however, for planning they have limited value after the digitization process and are neither necessary nor used in the planning process. It is understood, though, that for geographical map administration and management in CCT, these are used, so the digital topographic map data created in the first phase of the project is provided in two formats, both as map sheets and second as a complete coverage for the SDUGA Planning Area. Other than the digital topographic data, no other data is provided in map sheets. The digital topographic data’s map sheets are provided as a separate data set and are not included in the SDUGA Database.

3.2.4 SDUGA Project Coverage

Two coverages are defined and used for the project: (1) the SDUGA Study Area and (2) the SDUGA Planning Area.

Though, for the planning process, only the SDUGA Planning Area is used. From the perspective of data, however, the distinction between the two areas must be understood and proper allowances made to their usage.

1. The SDUGA Study Area adheres to administrative boundaries and correlates directly to the coverage areas of the statistical data, such as demographic data from INS, which is provided by sub-prefecture and commune. Therefore, for the SDUGA Study Area, and any sub-divisions within this area, the statistical data can be used without adjustment.
2. The SDUGA Planning Area follows the planning scope of works of the SDUGA Project. It covers areas of planning interest for the Greater Abidjan area, and though it does follow administrative boundaries in some areas, however for the most parts, it does not adhere to the administrative boundaries. Because of this, all statistical data obtained by administrative boundaries has to be proportionally adjusted based on land areas.



Source: JICA Study Team

Figure 3.1 Comparison of the SDUGA Study Area and SDUGA Planning Area

3.2.5 Administrative Boundaries

The administrative boundaries in the SDUGA Database were created by the SDUGA Project Team for use only for the planning process. They are based on digital data from CCT and INS boundaries (INS Zones) used for their surveys and statistics. CCT data is only provided for region, department, sub-prefecture, and commune, while INS has boundaries down to ville and quartier.

The two data sets were edited by the SDUGA Project Team so that they adhered to geographical features, such as water bodies and roads, and were edited so that the boundaries of the administrative hierarchies corresponded. Data obtained from INS could not be integrated directly into the SDUGA Database due to unreconciled differences in scale, orientation, and accuracy. These maps were used only as reference maps and the boundaries were digitized manually by using visual references in the INS maps, such as road and river features from CCT and satellite imagery.

Though every attempt is made to ensure that the administrative data matches official boundaries, this data has not been verified by official sources and therefore are intended to be used only for the SDUGA Project and its outputs, and should not be used for any official administrative boundary work.

3.2.6 Other Boundaries Used in the Planning Process

3.2.6.1 INS Zones

INS Zones in the SDUGA Database are based on the zones used by INS for their surveys. These are based on the quartier boundaries, with a single quartier forming a single INS Zone, and the areas outside of quartiers within communes and sub-prefectures, with these areas being taken as a whole or divided into INS Zones.

3.2.6.2 SDUGA Urban Units

The Urban Units used in the SDUGA Project and the Urban Master Plan are created by the JICA Study Team and are derived primarily from the administrative boundaries of sub-prefecture and commune within the SDUGA Planning Area; however, the urban units around the port area do not adhere to administrative boundaries.

3.2.6.3 SDUGA Traffic Analysis Zones

The Traffic Analysis Zones used in the SDUGA Project and the Urban Transport Master Plan are created by the JICA Study Team and are derived directly from the INS Zones. The majority of Traffic Analysis Zones equate directly to a single INS Zone; however, some of the Traffic Analysis Zones contain more than one INS Zone.

3.3 SDUGA Database Data Catalogue

This section describes the data catalogue for the SDUGA Database in three tables:

Table 3.1 SDUGA Database Base Data, Planning Areas, and Current Conditions

Feature Class Name	Description	File Name / Data Creator / Date (if relevant)	Sources and modifications and/or processing done by JICA Study Team
Natural Features			
Water	Water bodies and coastline.	<i>SDUGA_E1_Water_Rev1310</i> JICA Study Team 2013	Portions taken from and updated based on data from CCT.
Administrative Boundaries			
Sub-Prefecture Boundaries	<i>Sub-prefecture</i> boundaries used for the SDUGA Project, based on INS data.	<i>SDUGA_A4_SousPrefecture_Rev1310</i> JICA Study Team 2013	This digital data is created by JICA Study Team, based on hardcopy INS Zone Maps matched to digital data from CCT (roads, rivers, and coastline)
Commune Boundaries	<i>Commune</i> boundaries used for the SDUGA Project, based on INS data.	<i>SDUGA_A5_Commune_Rev1310</i> JICA Study Team 2013	This digital data is created by JICA Study Team, based on hardcopy INS Zone Maps matched to digital data from CCT (roads, rivers, and coastline)
Ville Boundaries	<i>Ville</i> boundaries used for the SDUGA Project, based on INS data.	<i>SDUGA_A6_Ville_Rev1401</i> JICA Study Team 2014	This digital data is created by JICA Study Team, based on hardcopy INS Zone Maps matched to digital data from CCT (roads, rivers, and coastline)
Quartier Boundaries	<i>Quartier</i> boundaries used for the SDUGA Project, based on INS data.	<i>SDUGA_A7_Quartier_Rev1401</i> JICA Study Team 2013	This digital data is created by JICA Study Team, based on hardcopy INS Zone Maps matched to digital data from CCT (roads, rivers, and coastline)
Restrictive Areas			
Sensitive Land	Low-lying areas where land is sensitive to development.	<i>SDUGA_Sensitive_land_1402</i> JICA Study Team 2014 (based on DEM data dated Feb.2000)	Sensitive land is extract from NASA SRTM (SRTM 3) Collections data (dated Feb., 2000), which were downloaded from <i>earthexplorer.usgs.gov</i> . SRTM 3 is DEM (digital elevation model) data, which contains elevation information.
Protected Forest	Forest boundaries within the SDUGA Planning Area.	<i>CCT_Forest</i> CCT / JICA Study Team 2014	The forest data from CCT (forest_merge) is processed to obtain clean boundaries of forests, and updated using information from SODEFOR.
Abidjan Port Expansion	Boundaries of Abidjan Port.	<i>Port_Expansion_Rev1402b</i> JICA Study Team / PAA 2014	Digitised from the Port Expansion Plan from Port Autonome d'Abidjan (PAA). A hardcopy of the plan was scanned and georeferenced to produce the digital data.

Part 4 Other Project Related Tasks

Feature Class Name	Description	File Name / Data Creator / Date (if relevant)	Sources and modifications and/or processing done by JICA Study Team
Reserved Land	Boundaries of land reserved by government agencies or the Decentralized Authorities for future projects.	<i>Land_Reserved_Rev.1402</i> JICA Study Team / Government Agencies or Decentralized Authorities, 2014	Hardcopy plans, drawings, and tabularised geographical coordinates of reserved land were collected from government agencies and Decentralized Authorities, and which were then digitised by the JICA Study Team.
SDUGA Study and Planning Boundaries			
SDUGA Study Area	The study area of the SDUGA Project.	<i>SDUGA_E2_StudyArea_Rev1310</i> JICA Study Team 2013	Based on administrative boundaries from CCT and on INS Zone Maps
SDUGA Planning Area	The planning area of the SDUGA Project. Also, the map production extent.	<i>SDUGA_E3_PlanningArea_Rev1310</i> JICA Study Team 2013	Based on administrative boundaries and natural features from CCT and on INS Zone Maps, augmented by satellite imagery
SDUGA Urban Units	The grouping of sub-prefectures and communes within the SDUGA Planning Area into urban units for planning.	<i>SDUGA_E3_UrbanUnit_Rev1402</i> JICA Study Team 2014	Based on drawings from the SDUGA planners, matched to existing administrative boundaries and the SDUGA Planning Area boundary, except around the Abidjan port area.
INS Zones	INS Zones within the SDUGA Study Area.	<i>SDUGA_E2_INSZone_Rev1401</i> INS / JICA Study Team 2014	Original hardcopy data from INS, digitized by JICA Study Team. INS maps were not digitized directly from the hardcopies. The INS maps were visually interpreted, and manually matched during digitization to existing spatial data on roads, rivers/water, and known commune and sub-prefecture boundaries.
SDUGA Traffic Analysis Zone	Traffic Analysis Zones within the SDUGA Study Area used for transport modelling.	<i>SDUGA_E4_TAZ_Rev1401</i> JICA Study Team 2013	Based on INS Zones.
SDUGA Household Interview Survey	INS Zones within the SDUGA Planning Area into Household Interview Survey Zones for Quartier Expansion Factor.	<i>SDUGA_HIS_Rev1311</i> JICA Study Team 2013	
Current Conditions			
Existing Land Use for 2013	The existing land use. Partial coverage within the SDUGA Planning Area; primarily within the urban areas.	<i>LandUse_20131005_0346b_Rev1401</i> JICA Study Team 2013	Created from base data from the CCT, which was updated using satellite imagery and ground surveys by the JICA Study Team.
Existing and Proposed Roads	<i>Refer to "Existing and Proposed Roads" feature class in the table "Master Plan Data" below.</i>		
CCT Base Data			
Rivers	Rivers within the SDUGA Planning Area.	<i>hydro_200_merge</i> CCT 1970s-1980s	The original data is processed by the JICA Study Team by merging all relevant map sheets into a single data set and clipping it to within the SDUGA Planning Area. No other processing is done.
Power line	Electricity power lines within the SDUGA Planning Area.	<i>ligne_HT_merge</i> CCT 1970s-1980s	The original data is processed by the JICA Study Team by merging all relevant map sheets into a single data set and clipping it to within the SDUGA Planning Area. No other processing is done.

Feature Class Name	Description	File Name / Data Creator / Date (if relevant)	Sources and modifications and/or processing done by JICA Study Team
Human settlement	Urban land (city, town, village, hamlet) within the SDUGA Planning Area.	<i>habitat_merge</i> CCT 1970s-1980s	The original data is processed by the JICA Study Team by merging all relevant map sheets into a single data set and clipping it to within the SDUGA Planning Area. No other processing is done.

Table 3.2 SDUGA Database Master Plan Data

Feature Class Name	Description	File Name / Data Creator / Date (if relevant)	Sources and modifications and/or processing done by JICA Study Team
Transportation Master Plan			
Existing and Proposed Roads	The road network for the Greater Abidjan area. Includes both existing and future proposed roads. This data is also utilized in the surveys and transport modelling, and therefore contains additional information for these tasks.	<i>SDUGA_RoadNetwork_Vers14 0416</i> JICA Study Team / CCT 2014	Existing roads based on CCT base data (route_merge). Future road data is provided by the JICA Study Team.
Proposed Transit Framework	Freight rail, urban rail, ferry routes, and Bus Rapid Transit (BRT) routes up to the year 2030.	<i>TransitFramework_vers1403c</i> JICA Study Team, 2014	Proposed by the JICA Study Team.
Proposed Transit Stations	Multi-modal interchanges, urban rail stations, and ferries up to the year 2030.	<i>SDUGA_Stations_vers1403c</i> JICA Study Team, 2014	Proposed by the JICA Study Team.
Proposed Future Transportation Projects	Future road and transit projects for development or upgrading by years 2020, 2025, and 2030.	<i>SDUGA_future_Road_Implement_Rev1403</i> JICA Study Team, 2014	Proposed by the JICA Study Team.
Urban Master Plan / Future Land Use Framework			
Proposed Greater Abidjan Urban Development Implementation Strategy	Greater Abidjan urban development implementation strategy for the years 2015 to 2030.	<i>SDUGA_future_land_use_Implementation_Rev1403b</i> JICA Study Team, 2014	Proposed by the JICA Study Team. Digitized drawings from the SDUGA planners referencing the existing Land Use for 2013, Existing and Proposed Roads, Proposed Transit Framework, Proposed Transit Stations, and population growth.
Future Land Use Framework by Urban Units	Future Land Use Framework in Urban Units of SDUGA Planning Area	<i>SDUGA_LU_Framework_UU_Rev1403h</i> JICA Study Team, 2014	Proposed by the JICA Study Team. Digitized drawings from the SDUGA planners referencing the existing Land Use for 2013, Existing and Proposed Roads, Proposed Transit Framework, Proposed Transit Stations, and population growth.
Future Road Network by Urban Units	Future road network by urban units, for mapping and presentation only. Use "Proposed Future Transportation Projects" feature class for future road and transit data.	<i>SDUGA_Future_Road_Urban_Unit_Rev1403b</i> JICA Study Team, 2014	
Future Employment Cluster Area	Area of employment clusters within the SDUGA Planning Area at a radius of 12Km and 25Km.	<i>SDUGA_Future_Employment_Zone_Rev1403</i> JICA Study Team, 2014	Proposed by the JICA Study Team.

Part 4 Other Project Related Tasks

Feature Class Name	Description	File Name / Data Creator / Date (if relevant)	Sources and modifications and/or processing done by JICA Study Team
Future Employment Clusters	Employment clusters within the SDUGA Planning Area.	<i>SDUGA_Future_K-Economy_Cluster_Rev1403</i> JICA Study Team, 2014	Proposed by the JICA Study Team.
Future Areas for Tourism	Areas highlighted for future tourism development within the SDUGA Planning Area.	<i>SDUGA_LU_Framework_Tourism_Rev1403c</i> JICA Study Team, 2014	Proposed by the JICA Study Team.
Master Plan for Extended Areas (MPEA)			
MPEA Zoning Plan of Attinguie	Land use zoning plan of Attinguie.	<i>SDUGA_Attinguie_Future_LandUse_Zoning_Plan_Rev1404g</i> JICA Study Team, 2014	Proposed by the JICA Study Team. Digitized drawings from the SDUGA planners referencing the hardcopy of the subdivision plan of Alokoi, along with the existing Land Use for 2013, the Future Land Use Framework, and Existing and Proposed Roads.
MPEA Urban Planning Area of Attinguie	Boundaries of Attinguie's land use zoning plan.	<i>SDUGA_Attinguie_Urban_Planning_Boundary_Rev1404</i> JICA Study Team, 2014	Proposed by the JICA Study Team.
MPEA Zoning Boundary of Attinguie	Boundaries of future urban area of Alokoua village, Attinguie industrial area inside the boundaries of Attinguie's land use zoning plan.	<i>SDUGA_Attinguie_Zoning_Boundary_Rev1404</i> JICA Study Team, 2014	Proposed by the JICA Study Team.
MPEA Zoning Plan of Bonoua	Land use zoning plan of Bonoua.	<i>SDUGA_Bonoua_Future_LandUse_Zoning_Plan_Rev1404c</i> JICA Study Team, 2014	Proposed by the JICA Study Team. Digitized drawings from the SDUGA planners referencing the hardcopy of the subdivision plan of Bonoua, along with the existing Land Use for 2013, the Future Land Use Framework, and Existing and Proposed Roads.
MPEA Urban Planning Area of Bonoua	Boundaries of Bonoua's land use zoning plan.	<i>SDUGA_Bonoua_Urban_Planning_Boundary_Rev1404</i> JICA Study Team, 2014	Proposed by the JICA Study Team.
MPEA Existing and Proposed Road Network	Existing and proposed roads into of land use zoning plan of Attinguie and Bonoua.	<i>SDUGA_Road_Network_Zoning_Plan_Rev1404</i> JICA Study Team, 2014	Taken from "Proposed Future Transportation Projects" data, refer to that feature class for full data.

Table 3.3 SDUGA Database Quantitative Data

Dataset Name	Description	File Name / Data Creator / Date (if relevant)	Sources and modifications and/or processing done by JICA Study Team
Socio-Economic Data - Current Population of 2013			
Population by INS Zone	Estimated total population for 2013 by INS Zone.	JICA Study Team and INS, 2013	Original estimated population data, which was estimated by INS and JICA Study Team, was provided for the SDUGA Study Area by INS Zone. The JICA Study Team transferred this data to the SDUGA Planning Area.
Employment by INS Zone	Estimated number of workers for 2013 by INS Zone, by primary, secondary, and tertiary sectors.	JICA Study Team, 2014	Estimated by the JICA Study Team using the traffic model.
Students by INS Zone	Estimated number of students by INS Zone.	JICA Study Team, 2014	Estimated by the JICA Study Team using the traffic model.

Dataset Name	Description	File Name / Data Creator / Date (if relevant)	Sources and modifications and/or processing done by JICA Study Team
Socio-Economic Data - Projected Population of 2030			
Population by INS Zone	Estimated total population for 2030 by INS Zone.	JICA Study Team, 2014	Estimated by the JICA Study Team.
Employment by INS Zone	Estimated number of workers for 2030 by INS Zone, by primary, secondary, and tertiary sectors.	JICA Study Team, 2014	Estimated by the JICA Study Team using the traffic model.
Students by INS Zone	Estimated number of workers for 2030 by INS Zone, by primary, secondary, and tertiary sectors.	JICA Study Team, 2014	Estimated by the JICA Study Team using the traffic model.

3.4 Conclusion / Recommended Future Works

The SDUGA Database was sufficient to support the planning process for the SDUGA Project; however, any future work using the GIS data should consider the scope of the data in the SDUGA Database and its limitations.

The data in the SDUGA Database is a snapshot in time of the current conditions in Greater Abidjan and as such is very time sensitive. Within the timeframe of the SDUGA Project, the data is relevant and valid; however, as time passes and policies and conditions change, the data will become less relevant. Future planning work should only use the SDUGA Database as a base or template to create a new database, with all data within the database being reassessed and updated as necessary.

To use the digital mapping data in other fields, further work may be needed in order to have up-to-date high quality digital mapping data. In particular, the need to validate and update the administrative boundaries and to resolve the discrepancies in the digital topographic data regarding different accuracies (refer to the Volume 2 Part 1 Section 3.1 on Mapping and the discussion on the Red and Blue areas). As a result, without updates, the data in the SDUGA Database is recommended solely for the purpose of the urban master planning process.