



BONNY KINGDOM, SOCIO-ECONOMIC DEVELOPMENT MASTER PLAN

June 2014

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LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Virus
BCOT	Bonny Crude Oil Terminal
BKDC	Bonny Kingdom Development Committee
BMC	Brand Management Company
BOGT	Bonny Oil and Gas Terminal
BRT	Bonny River Terminal
BUC	Bonny Utility Company
BVC	Bonny Vocational Centre
DPR	Department of Petroleum Resources
ECCDE	Early Childhood Care Development and Education
EGM	Environmental General Meeting
EIA	Environmental Impact Assessment
EMIS	Education Management Information Systems
EMP	Environmental Management Plan
FEPA	Federal Environmental Protection Agency
FEU	Field Evaluation Units
GH	General Hospitals
HA	Hectares
HCD	Human Capital Development
HDI	Human Development Indicators
HIV	Human Immune-deficiency Virus
ICT	Information and Communication Technology
IDAs	International Development Agencies
IOC	International Oil Companies
IPP	Independent Power Plant
JIC	Joint Industry Companies
KPIs	Key Performance Indicators
KW	Kilo-Watt
LC	Local Community
LGA	Local Government Area
LNG	Liquefied Natural Gas
LROT	Lease, Renovate, Operate and Transfer
LV	Low Voltage
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MIS	Management Information System
MOU	Memorandum of Understanding
MPN	Mobil Producing Nigeria
MSEs	Micro and Small Enterprise
MTA	Million Tonnes Per Annum
MV	Medium Voltage
MW	Mega-Watt

NAFCON	National Fertilizer Company of Nigeria
N-AGENDA	NLNG Agro-Enterprise Development Action
NAPEP	National Poverty Eradication Programme
NBTC	National Board for Technical Education
NC	North-central
NCC	Nigerian Communications Commissions
NDDC	Niger Delta Development Commission
NDHS	Nigerian Demographic and Health Survey
NE	North-East
NEPZA	Nigeria Export Processing Zones Authority
NGOs	Non-Governmental Organizations
NHIS	National Health Insurance Scheme
NIFFR	National Institute for Freshwater Fisheries Research
NIPC	Nigerian Investment Promotion Commission
NITEL	Nigerian Telecommunication Limited
NLNG	Nigeria Liquefied Gas Company
NLNG YES	Nigeria LNG Youth Empowerment Scheme
NPA	Nigeria Ports Authority
NW	North-West
OD	Origin and Destination
PHC	Primary Health Care
PPP	Public Private Partnerships
PSP	Private Sector Participation
R&D	Research and Development
RSEPA	Rivers State Environmental Protection Agency
RSEPA	Rivers State Environmental Protection Agency
SE	South-East
SPDC	Shell Petroleum Development Company
STD	Sexually Transmitted Disease
STP	Sewage Treatment Plants
SW	South-West
SWOT	Strengths, Weaknesses, Opportunities and Threats
TVET	Technical and Vocational Education
UN	United Nations
UNCTAD	United Nations Conference of Trade and Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
VOCs	Volatile Organic Compound
WHO	World Health Organization
WLL	Wireless Local Loop

DOCUMENT GUIDE

This section provides a general guide to the report by listing key areas with the corresponding sections.

Section	Name of Section	Scope of Work
1	Introduction	This section will focus on the project scope, coverage are and the overarching goals and objectives of this Master Plan development effort. It will also highlight the methodology and planning approach adopted and the linkages between the existing Master Plan and the updated version
2	Current Position Analysis	This section will provide a general overview of the history and current state of Bonny Kingdom in present day. It will also include a socio-economic profile as well as the developmental opportunities and the socio-economic challenges faced by Bonny Kingdom as a whole. It will further cover the current developmental interventions ongoing and examine possible ways forward.
3	Bonny 2040: Socio-Economic Development Aspirations	This is the envisioned state defined by the key stakeholders of Bonny Kingdom. This section will highlight the overarching vision for Bonny Island in the medium to long term. In addition the key sectoral focus areas (e.g. education, agriculture, infrastructure, health, etc.) will be de highlighted
4	Translating this Vision into Action: Key Strategies	This section will highlight the specific interventions to achieve the socio-economic development vision for Bony Island by 2040
5	Implementation Consideration	This section gives a detailed description of the key implementation considerations for the Bonny Kingdom Master Plan. Specifically it will highlight a developmental roadmap, how the roadmap is to be executed and a monitoring and reporting mechanism to ensure the plan is effectively executed in accordance with predefined timelines

1. INTRODUCTION

1.1. OVERVIEW

Bonny Kingdom, one of the most industrialized communities in Nigeria - the Bonny Local Government Area and, in particular, Greater Bonny Island, has experienced very rapid physical growth in recent years as a result of its strategic position. The Kingdom plays host to three (3) major oil and gas companies in Nigeria – Nigeria Liquefied Natural Gas (NLNG), Shell Petroleum Development Company (SPDC) and Mobil Producing Nigeria (MPN). NLNG operates a 6-train LNG plant producing 22 million tonnes per annum (MTA) of liquefied natural gas yearly; SPDC exports crude oil from its terminal – Bonny Oil and Gas Terminal (BOGT) which is the largest of its kind in Africa; and MPN operates its onshore fractionation and storage facilities at Bonny River Terminal (BRT). Hence, the scale of investment concentrated within Bonny Island/Kingdom is considerable and possibly in the range of \$20 to \$30 billion¹.

This unique positioning has not only increased the community's strategic importance, but has also spurred economic and infrastructural development in the area. This development is expected to continue in the future because of the many strategic advantages that Bonny possesses, notably its ready access to deep water, its focal point on a number of major gas and oil pipeline networks, and its role as an established location for oil and gas facilities. These advantages are strengthened by the reputation of Bonny as a relatively secure and stable base for industrial operations.

It is widely recognised that orderly and efficient development of Bonny Kingdom can only be achieved by the adoption of a Master Plan to guide development throughout the Bonny Local Government Area. Accordingly, over the past 40 years, two Master Plans were developed for Bonny Kingdom. However, both plans have not translated into the desired socio-economic transformation of the Kingdom. The first Master Plan, developed in 1973 for Bonny Town and its immediate hinterland², antedated the arrival of Mobil and Nigeria Liquefied Gas Company (NLNG) and soon became obsolete. The second Master Plan was developed in 2001 to guide the development of the area up to the year 2020. SPDC, acting on behalf of the Joint Industry

¹ Ecosphere 2006

² Nickson and Bory's & Partners, *Bonny Master Plan and New town Development*, developed for the Government of Rivers State, Port Harcourt, 1973,

Companies (JIC), which comprises SPDC, NLNG and Mobil, appointed Dar Al-Handasah Consultants to prepare a new Master Plan for Bonny on 18th January 2001. The preparation of this Master Plan for Bonny in 2001 was part of a wider programme of projects encompassed in the 1998 Memorandum of Understanding (MOU) between the JIC and Bonny Kingdom (represented by the Council of Traditional Rulers and the Bonny Kingdom Development Committee (BKDC)).

Findings during the stakeholder engagement sessions reveal that majority of the population were never aware of the existence of the Master Plan, and the governance structure expected to drive the actualization of defined initiatives did not take-off.

A Pan-Bonny Sustainable Development Conference was held in 2013 to chart a new direction for Bonny's socio-economic growth. One of the resolutions at the conference was to update the existing Master Plan to address the current needs and realities of the Bonny people. The update of the plan has become critical as the existing plan has not been reviewed since its development thereby not reflecting current realities. In addition, the planning horizon for the plan elapses in 2020 with most initiatives defined in the Master Plan yet to be implemented. In updating the Master Plan, Accenture has been appointed by the JIC to update the current Master Plan in April 2014. The central theme of the update of the Bonny Kingdom is the inclusion of an envisioned state for Bonny Kingdom and the redefinition of an execution / implementation framework for the Master Plan.

The updated Master Plan has a planning horizon of 26 years (2040), and is expected to help achieve orderly and sustainable development across the Kingdom. It takes into cognisance key factors militating against the success of the earlier Master Plans, and utilizes a robust economic planning approach. This plan is woven around strategic development thrusts, builds on Bonny's existing and potential assets, leverages global leading practise, proposes practicable governance and implementation framework / authority, and articulates the funding strategy for the landmark initiatives.

1.2. THE PLANNING AREA

Bonny Kingdom is located in southern Rivers state in the south-eastern region of Nigeria, 40 kilometres to the South-East of Port Harcourt, the State Capital. It spans across parts of

Mainland Rivers State to Bonny Island, off the coast of Rivers. The kingdom covers one (1) Local Government Area (LGA) – Bonny LGA.

Parts of the kingdom are bordered in the north by Okrika, Ogu-Bola and Gokana LGAs; in the west by Degema LGA; and in the east by Khana and Andoni LGAs. Bonny is located about 40 kilometres from Port Harcourt. The kingdom contains over 35 towns, and over 120 settlements³, and is made up predominantly of marshland and farmlands.



Figure 1: Local Government Areas in Rivers State

The Planning Area spans across the Bonny Local Government Area. For the purposes of analysis and planning, the Study Area has been divided into two distinct parts: a Core planning area and an Outer planning area. The total landmass in the Core planning area totals about 215 square kilometres and is formed by Bonny Island, including Bonny Town and New Finima. The Outer area is formed from the remainder of the Local Government Area, and relates to an additional landmass area of about 300 square kilometres, bringing the total landmass area to 515 square kilometres. Details of the study area are illustrated in Figure 2.

³ Master Plan 2002



Figure 2: The Planning Area- Bonny Kingdom

1.3. THE IMPERATIVES FOR AN UPDATED MASTER PLAN

It is common practise for nations, states and communities to review (and update where necessary) Master Plans every five years to reflect current realities. Beyond this major review, the activities are to be tracked reflect current realities and assess progress in terms of implementation. The following key factors necessitated the need for an updated Master Plan:

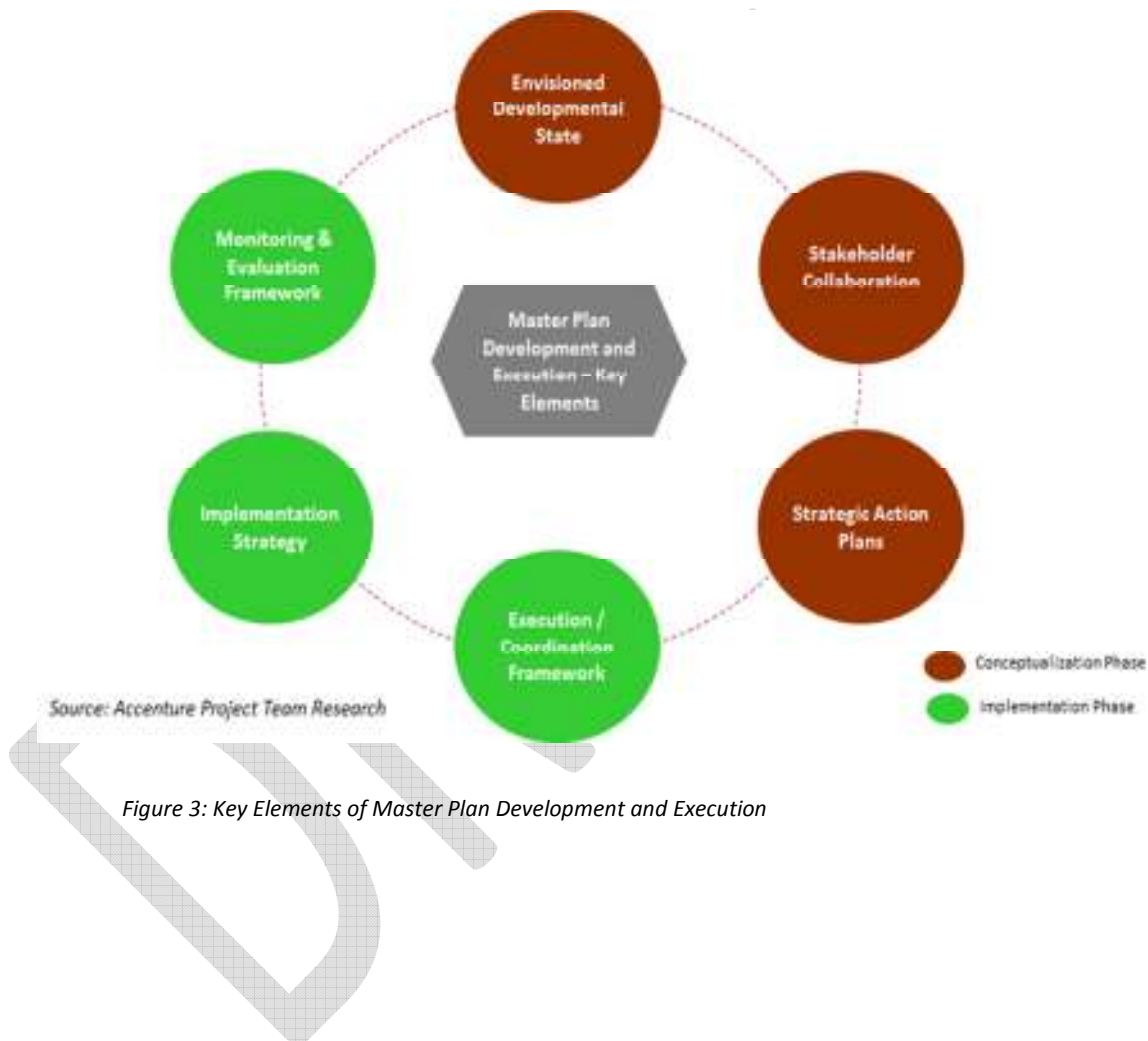
- The Master Plan developed in 2001 (13 years ago) has not been reviewed to reflect the changing priorities of the Bonny Kingdom
- The Master Plan development process was not inclusive- many stakeholders were not aware of the existence of the Master Plan-neither its content nor the approach
- The projected population of Bonny Local Government Area was 127,979. However, it is evident that Bonny has experienced significant population growth as total population in 2006 was 214,983⁴
- The NLNG only had the Train 1 operational at the time when the Master Plan was developed. Today NLNG is operating its sixth train and plans to set up Train 7 are underway
- There has been clear lack of ownership of the Master Plan by any agency or institution, thus leading to abandoned initiatives, lack of baseline data on execution achievements
- There was no clear funding mechanism for the proposed initiatives, therefore there was a huge funding gap to support the realization of the Master Plan
- The existing Master Plan focuses extensively on physical development, while economic strategies for the socio-economic development of Bonny Kingdom were not sufficiently articulated
- There was no clearly defined monitoring and evaluation framework to support the tracking and evaluation of the performance
- The existing Master Plan did not capture an envisioned state for Bonny Kingdom. This current effort builds on the vision of the Bonny people (diverse stakeholder groups) for the future Bonny they desire to create, aggregated through stakeholder envisioning sessions. The envisioning is one of the most critical elements of successful planning and

⁴ National Bureau of Statistics (2006)







will serve as the Launchpad for setting goals, priorities and direction for the Master Plan

Key Elements of Successful Master Plan Development

Due to the complex nature of developing and executing a master plan, it is critical certain elements are built into the plan to ensure its overall success.



The table below highlights the definition of each element as well as an appraisal of the existing Master Plan using the key elements and ratings.

Key Element	Description	Rating	Findings
Envisioned Developmental State	This involves the development of a clearly articulated future or envisioned state. This should be hinged upon a set of pre-defined goals and objectives		<ul style="list-style-type: none"> • There was no clear vision in the plan upon which the project / initiatives were created • Absence of clearly defined developmental targets – non-availability of baseline figures for socio-economic development indicators
Stakeholder Collaboration	This involves the engagement of key stakeholders in the conceptualization / development of the master plan. It is expedient that the plan is all inclusive and elicits the support of a wide range of stakeholders. Such stakeholder collaboration will also be vital in executing the plan		<ul style="list-style-type: none"> • No clear cut evidence that substantial stakeholder engagement was carried out / achieved in the development of the plan • Detailed approach utilized in developing the plan is not included in the document nor any form of stakeholder endorsement
Strategic Action Plans	The master plan should contain strategic action steps aligned to the envisioned state. There should be a clear correlation between the action steps and how the goals and objectives are to be met.		<ul style="list-style-type: none"> • Projects and programs sequenced over the short to long term • Poor linkages between projects to socio-economic development of Bonny Kingdom • Absence of financial and non-financial implications
Execution / Coordination Framework	The overall accountability for the execution of the master plan should be domiciled with a key stakeholder group / institution. A coordinating institution and approach needs to be clearly defined		<ul style="list-style-type: none"> • An execution and coordination framework does exist in the plan – however, the implementing body (Local Government) does not appear suitably placed for this task
Implementation Strategy	The successful implementation of the master plan requires a clearly articulated implementation strategy. A practical implementation plan articulating key initiatives / action plans, timelines for execution and responsible parties is re		<ul style="list-style-type: none"> • Impracticality of the master plan execution framework • No clear definition of stakeholder roles and responsibilities in project / Program execution
Monitoring & Evaluation Framework	This involves defining measures to track the implementation of the master plan – clearly defined measures of success; reporting		<ul style="list-style-type: none"> • Absence of a monitoring and reporting mechanism – no clear indicators specified for the monitoring of the master

	<p>mechanism and mitigation strategies need to be adopted to ensure the plan is properly monitored against pre-defined goals</p>		<p>plan implementation</p> <ul style="list-style-type: none"> • Lack of implementation risks and mitigation
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Table 1: Appraisal of the Existing Master Plan Using the Key Elements of Master Plan Development

1.4. MASTER PLAN PURPOSE AND OBJECTIVES

The Bonny Master Plan is a blueprint intended to guide socio-economic development in the LGA over the next 26 years.

The objectives of the Master Plan as set out in the Terms of Reference are:

- To articulate a clear envisioned socio-economic state for Bonny Kingdom in 2040
- To give a clear short and long-term picture of the physical, economic and social conditions of the city region focusing on the greater Bonny Island as the core planning area and the rest of the Bonny Local Government Area as the outer planning area of the Master Plan.
- To update the execution and stakeholder coordination framework for the Master Plan – this framework will highlight the responsible entity to champion the implementation of the Master Plan and clearly articulate the roles of each developmental stakeholder.
- To guide the implementation of development projects and programmes in order to maximise the overall benefit to all groups in the community.
- To provide information especially on economic development potentials for authorities both local and international (e.g. NGOs and development agencies) and interested groups which would contribute to the improvements of sustainable settlement management in the city region.
- To have the community participate in all development of the Master Plan through well-structured public fora including focus group discussions and public attitude surveys.

1.5. KEY LIMITATIONS

The dearth / availability of up to date socio-economic data for Bonny Kingdom was a major limitation in updating this Master Plan – unlike 2001 when a detailed socio-economic survey was conveyed on the island. Accordingly, extrapolation / assumptions were made to bridge this gap. Going forward, it is imperative that a detailed socio-economic survey ifor Bonny Kingdom is undertaken in order to effectively plan – once this activity is concluded by the relevant body, the Master Plan can be updated accordingly

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1.6. MASTER PLAN PLANNING PROCESS AND METHODOLOGY

A key element for the successful development of the Master Plan is the adoption of an all-inclusive approach in articulating the envisioned state; goals and targets; and requisite strategies. To allow for a robust delivery process, the update of the Master Plan is split into two (2) distinct phases- Envisioning Phase and Strategy Definition Phase



Figure 4: Bonny Master Plan Update: Overall Approach / Methodology

Envisioning Phase

Visioning is an effective approach for empowering communities to take ownership of their future by defining and articulating what and where they want it to be within a stipulated timeframe. It is a platform for key stakeholders to express their ideas about the future of their community and as well as influence development choices, goals and priorities. It is expected that the extensive public involvement in the community envisioning process will not only foster the development of comprehensive planning documents, but also lead community-wide ownership and buy-in in planning documents and projects.

Strategy Definition Phase

Based on the pre-defined envisioned state for Bonny Kingdom, practical strategies will be identified to move from the current position to the envisioned state. A development roadmap will be defined – this roadmap will capture the key initiatives to be implemented within a set timeframe (including the responsible parties) and ensures proper monitoring of the plan

In line with the overall approach, critical stakeholders were engaged in envisioning sessions to articulate the desired future state of Bonny Kingdom. Bonny kingdom has a well-coordinated administrative structure with various stakeholder groups which fostered successful stakeholder interactions. A bottom-up approach was utilized to ensure diverse views at all levels were appropriately captured and incorporated into the planning process.

Focus Group Discussions were held in Bonny and Finima in from February to May 2014, with different stakeholder groups across Bonny Kingdom. The stakeholder meetings are highlighted below:

S/N	Stakeholder Group	Engagement Date
1	The Amanyanabo of Grand Bonny Kingdom and Council of Chiefs	May 3, 2014
2	Bonny Local Government	
3	Bonny Kingdom Development Committee	March 26, 2014
4	Finima Development Committee	March 25, 2014
5	Titled Citizens Assembly	February 28, 2014
6	Bonny Youths Federation	February 27, 2014
7	Finima Youths Congress	February 28, 2014
8	Bonny Environmental Consultative Committee	February 28, 2014
9	National Council of Women's Society, Bonny	February 28, 2014
10	Bonny Graduates Forum	February 28, 2014

Table 2: Key Stakeholder Groups Engaged

The objectives of the sessions were to share the approach / plan to be utilized in updating the Master Plan, and gather expectations and insights on an envisioned state for Bonny Kingdom

Each session focused on the following key activities:

- Analysis of the internal strengths and weaknesses of Bonny Kingdom as well as its exposure to external threats, and opportunities that can be tapped into
- Development of envisioning statements for the desired future-state of Bonny in 2040 cutting across key sectors including: Education, Health, Infrastructure, etc.



Figure 5: Key Activities at the Bonny Master Plan Envisioning Sessions

The views gathered across all stakeholder groups have been consolidated and articulated in this document.



Figure 6: Cross-Section of Participants at Envisioning Sessions

2. CURRENT POSITION ANALYSIS

2.1. HISTORY OF BONNY KINGDOM

Bonny Kingdom is situated in Rivers State -with a total population of 215,358 (Census, 2006) and occupying a land area of approximately 642 square kilometres. Bonny Kingdom, one of the earliest prominent sovereign city states in the pre-colonial days, is a coastal town in the Niger Delta, occupied by Ibani People of Ijaw tribal identity. The kingdom having been in existence for over a thousand years was the centre of trade for the Ijaw people. Before the colonial government and well into the slave trade era, the Kingdom is recorded as rich in palm oil production and naturally in fishing activities – the Kingdom was also engaged in active trade with neighbouring communities.

Bonny has a long and rich history dating back to the 15/16th century as the major trading post of the eastern delta. Founded in the 14th / 15th century and way back in those days, Ibani (the original name of Bonny) was a thriving community with its own kings and by the by the 15th century, was already participating in complex trading systems with the hinterland. As a result of its status as a deep-water port, Bonny played a major role in the trans-Atlantic slave trade around the 15th century. Dutch and British merchants took control of the trade in the 18th century; however by the middle of the 19th century when slave trade was abolished, Bonny became a major exporter of palm oil and palm kernels. Its port was used to ship other commodities like ivory, timber and beeswax as well. It was largely through trade that by the end of the 19th century Bonny had grown to become the wealthiest and most powerful kingdom in Eastern Niger Delta. Craft making, and farming were also major sources of livelihood for the Ibani people in the region.



Figure 7: 19th Century Imani Fishermen

The decline of Bonny as an administrative and commercial centre was prompted by the creation of the new railroad terminus in Port Harcourt in 1916. With the establishment of Port Harcourt town, there was the tendency among the European traders in the creeks of the Niger Delta to move to the new town in order to engage in more direct dealings with the palm oil producers of the hinterland. The result was that the various commercial establishments in the creeks gradually closed down and relocated to Port Harcourt.

Bonny regained its prominence with the entry of key oil and gas companies / investments:

- The establishment of Nigeria Liquefied Natural Gas (NLNG) Company- Africa's largest LNG Company. Since it began operations, the company has contributed about 4% of Nigeria's Gross Domestic Product⁵
- The commissioning of Shell's Bonny Oil Terminal- one of Africa's largest oil terminals
- The commencement of the East Area Natural Gas Liquids II project by Mobil in 2008

Bonny Kingdom has been the chief shipper of the region's oil. Oil & gas activities became the main source of livelihood and the critical driver of the local economy while

⁵ NLNG Factsheet, 2014

fishing, farming and other income generating activities were relegated to subsistence levels. Trading with other communities also declined. Exportation revolved around oil and gas resources as the Onne Free Trade Zone was established in 1997.



Figure 8: 19th Century Ibani Fishermen

2.2. ADMINISTRATIVE STRUCTURE

Traditional Administrative Structure

Bonny Kingdom is a structured community with a largely organized extended family system; headed by a recognized traditional Chief and his cabinet of elders who owe allegiance to the King (Amanyabo) – their “natural ruler”. The families are categorized into Houses. These Houses are thirty-four (34) in number including the royal House (George Pepple) – fourteen (14) major Houses and twenty (20) minor Houses.

These families have their bases in the different villages and towns such as Finima, Kalaibama, Kuruma, Oloma, Fibri, Ayaminima, Akiama, Oguede, etc. However, the traditional administrative base is in Bonny Town.

The Bonny Monarchy is about the oldest institution of traditional rule in the Niger Delta. The Amanyanabo of Bonny is at the apex of traditional rule as he is the head of the Monarchy. Bonny operates a dynastic rule; kingship is by birth primogeniture. The present monarch, King Edward Asimini William Dappa Pepple III, Perekule XI is the 22nd ruler of Bonny Kingdom.

Bonny Kingdom Houses			
Royal House	George Pepple		
Major Houses	Manilla Pepple	Allison	Long John
	Hart	Brown	Wilcox
	Halliday	Jumbo	Banigo
	Jack Wilson Pepple	Dick-Tolofari	Finecountry
	Green	Bristol	
Minor Houses	Abbey Hart	Dan-Jumbo	Jamaica Allison
	Ezekiel-Hart	Benstowe	Allaputa
	Jack-Manilla	Attoni	Dick Obunku (now Beresiri)
	Jim Halliday	Christie Wilcox	John Jumbo
	Pullyyn	Jack May	Tobin
	Willy-Pepple	Abraham Hart	Jecky Green
	Ada Allison		

Table 3: Bonny Kingdom Houses

The **Bonny Chiefs Council** is made up of the heads of the chieftaincy Houses. They assist the King in the day-to-day administration of the kingdom. The Ibani-se Kobiri (Bonny National Conference) established in 1874 by King George Oruigbi Pepple I, is the highest decision making body in Grand Bonny, a war council constituted by the Amanyanabo-In-Council. It is comprised mainly of delegates from the chieftaincy Houses.

The **Bonny Kingdom Development Committee** was created by in 1996 by the Amayanabo in- council in order to project a unified voice for the community on development matters. The BKDC comprises of professional men and women (medical doctors, lawyers, architects, land surveyors, town planners etc.) from the community.

Members are not paid for their services; neither do they collect money from any company.

The **Finima Development Committee** is akin to the BKDC only that it represents the interests of the Finima people on development matters.

The **Titled Citizens Assembly** is made up of honoured citizens of Bonny Kingdom. They are appointed by the Amanyanabo-In-Council to assist the King and his Chiefs to administer the Kingdom, especially mediation, advisory etc.

Political Administrative Structure

Bonny Local Government (LG) was created in August 1991 and is comprised of twelve (12) wards. The Councillors representing the wards constitute the Legislative arm of the Local Government Council with a Leader. The Local Government Chairman, as the Chief Security Officer of the Local Government Area is in charge of the day-to-day administration of Government affairs in the Local Government. The LG is responsible for security, the environment, revenue drive and socio-economic development of Bonny.

2.3. DEFINITION OF DEVELOPMENTAL AREAS

While the Master Plan relates to Bonny Local Government area as a whole it should address specific issues arising within its individual parts. In this respect it is considered that the following individual and clearly defined areas, illustrated in Figure 8 should be addressed at both the strategic and local levels:

- Bonny Urban Area including Abalamabie and New Finima
- The Various Groups of Villages forming the Middle Core
- The Fishing Villages along the Opobo Channel and Andoni River forming the Outer Core
- That part of the Outer Planning Area comprising Peterside and Kalaibama (Inner West)

- The remainder of the Outer Planning Area comprising the Outer West Fishing Villages

DRAFT

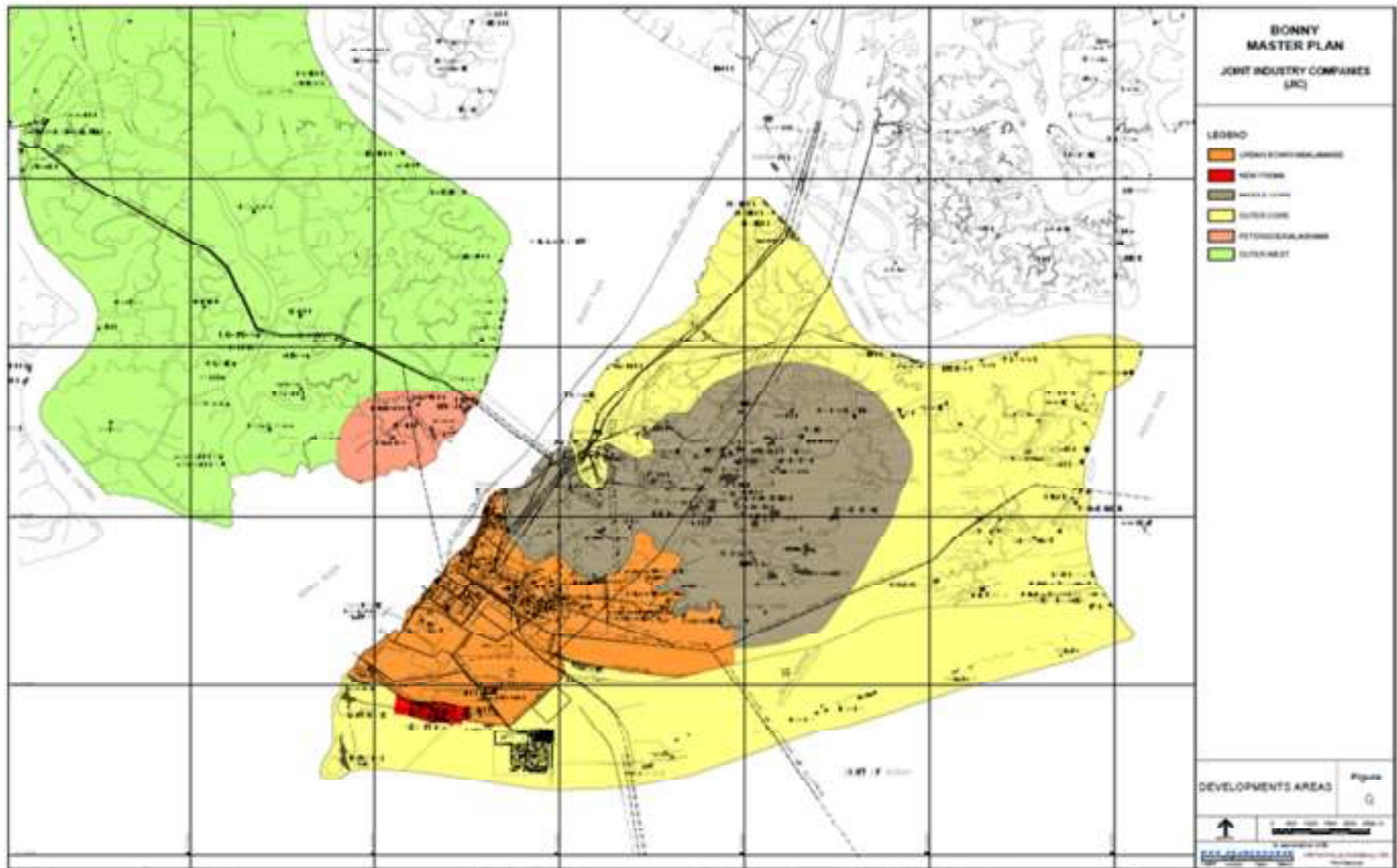


Figure 9: Developmental Area

5

2.3.1. SITE ANALYSIS

There are diverse factors that influence the form of development predominant in Bonny Kingdom today and the possible shape development will take in the future. Some of these critical factors relate to physical conditions, which inhibit access and reduce the amount of land on which development can occur. Others relate to economic influences such as the dominance of the oil and gas industries in comparison to traditional activities such as agriculture and fishing.

The environmental quality and context complicates matters to the extent that for future development to be sustainable efforts must be made to ensure that pollution and the denudation of resources is prevented and environmental quality preserved.

Another major component of socio-economic development is the institutional frameworks that effect governance in the area- a mixture of government and traditional administration. While this has helped spur development in the area, it also poses limitations on the speed of development given the legal implications of this structure for external investors seeking to invest in Bonny Kingdom.

There are a number of physical factors which influence the nature of existing and future development. These act as both opportunities and constraints depending on their influence, the actions necessary to exploit them and their cost. The main features considered to influence the nature of development are:

- Rivers, creeks and other water features
- Drainage
- Landform and soil quality
- Naturally occurring vegetation

Other Physical Factors

There is a significant size of Greenfield and Brownfield sites which can be found in Bonny Town, Finima other semi-urban areas.

The overall effect of the physical influences is to either inhibit or encourage physical development. In the broadest terms the relationships between hydrological systems, landform and soils establishes the flooding regime and determines:

- Those areas which are regularly subject to seasonal flooding;
- Those areas best suited to land reclamation;
- Those areas suitable or unsuitable for specific development.

The Master Plan seeks to utilise the most readily available land to accommodate and promote the most appropriate forms of development. As simple examples it might be expected that:

- The best quality of agricultural land would be retained
- Human habitation would be located on areas least likely to be affected by seasonal flooding
- Engineering intervention would be made only when there was a threat of unsustainable development and potential pollution
- Natural resources such as forests would be generally protected from loss and pollution

There is a significant size of Greenfield and Brownfield sites which can be found in Bonny Town, Finima other semi-urban areas. However, given its limited land mass,

Environmental Factors

The environment with its wide range of ecological bio-diversity is worthy of protection and enhancement and the actions and policies contained in the Master Plan will be directed toward achieving this.

Use will be made of an Environmental Management Plan to ensure that those areas outside the prime protection areas such as the forest and mangrove are subjected to “sustained multiple use management” practices. These will include both urban and rural areas allowing for various economic activities to proceed in an environmentally sustainable fashion.

2.4. SOCIO-ECONOMIC PROFILE

2.4.1. THE LOCAL ECONOMY

Bonny Kingdom has a mono-product economy; it is heavily fuelled by the presence and economic activities of the Oil and Gas industries. This poses a major risk to the economy and while it may seem far-fetched, divestments or decommissioning of the oil and gas investments from the Kingdom will adversely affect its economy. This mono-resource dependence also affects seasonal fluctuations in jobs- causing a cyclical employment profile across the Kingdom.

MAJOR OIL AND GAS INVESTMENTS IN BONNY ISLAND

- **Nigeria Liquefied Natural Gas Limited (NLNG)⁶**

The Nigeria LNG Plant is located on the western coast of Bonny Island, approximately 40 km south of Port Harcourt, Nigeria. The plant site is situated between the Mobil Natural Gas Liquids (NGL) site and Shell's Bonny Crude Oil Terminal (BCOT). NLNG was incorporated in 1989 to harness Nigeria's vast natural gas reserves for export. The company shareholding comprises Nigerian National Petroleum Company (NNPC) 49%, Shell Gas B.V (Shell) 25.6%, Total 15.0% and ENI 10.4%.

The Liquefied Natural Gas (LNG) operations in the Niger Delta comprises upstream activities (the production of natural gas by several oil & gas producers), transportation of the gas through a network of onshore and offshore pipelines to Bonny Island, and downstream activities (the gas liquefaction at the LNG complex at Finima)

The NLNG Gas Transmission System traverses about 110 communities. This cuts across nine LGAs and nine kingdoms all in Rivers State. The greatest impact of the project has been on the host communities of Bonny Island particularly in the areas of housing, catering, infrastructure and transportation. These sectors enjoyed a boom as a result of almost 90 million Naira that

⁶ www.nlng.com

entered the local economy (on a monthly basis) during the construction phase. In addition, a number of service industries were attracted to the Island notable among which were catering, Joint Venture Companies in the area of equipment and spare parts manufacturing.

The considerable financial transactions attracted a large number of banks to the Island. One of the banks hit a record of four corporate and 30 individual customers within the first two weeks of its operations despite the requirement of 20,000 Naira (USD 200) minimum deposits for current accounts and 10,000 Naira (USD 100) minimum deposits for savings accounts. This was, then, a feat unmatched anywhere within the country.

The current Plant is built on 2.27 square kilometres of largely reclaimed land in Finima, Bonny Island.⁷ As at 2013, NLNG contributed four per cent to Nigeria's Gross Domestic Product

- **Shell Petroleum Development Company (SPDC)**

Shell has been active in Nigeria since 1937. Its business activities in Nigeria include exploring and producing oil and gas onshore as well as offshore and gas sales and distribution. Since the 1960s, SPDC, a subsidiary of Shell, has been at the forefront of efforts to develop Nigeria's gas resources with its direct footprint impact directly in the Niger Delta. An expanse of flow lines and pipelines is spread over 6,000 kilometres with 60 oil fields, 700 producing wells, 60 flow stations, 7 gas plants and two major oil export terminals at Bonny and Forcados.

The export terminal located in Bonny - Bonny Crude Oil Terminal (BCOT) is the largest of its kind in Africa. It is one of the most technologically advanced terminals in Africa and gives Nigeria the potential to deliver uninterrupted crude oil exports for the next 25 years.. The Bonny Bureau of Employment has helped place about 400 Bonny indigenes in BCOT since 2012.⁸

⁷ www.nlng.com

⁸ Bonny Employment Bureau

- **MOBIL PRODUCING NIGERIA (MPN)**

ExxonMobil affiliate Mobil Producing Nigeria Unlimited (MPN) is the operator of the Bonny River Terminal (BRT). The terminal is part of a bigger project – East Area NGL II – which is located about 28km offshore Bonny Island. Production comes from 90 offshore platforms, with 283 flowing completions in 353 wells with a production capacity of about 720,000 barrels of crude, condensate and natural gas liquid (NGL) a day. The \$1.3bn project is designed to gather gas from all the MPN fields, compress, extract NGL and inject lean gas to recover 275m barrels of natural gas liquids from associated gas produced in the East Area reservoirs from blocks OML 67, 68 and 70. It uses about 950Mmscf of gas a day.

Other oil and gas companies are situated in Bonny Kingdom – particularly the servicing companies which are usually contractors / ancillary service providers to the three major oil and gas producers on the Island. They are often brought in during construction phases and offer temporary employment to locals. Due to the lucrative compensation, many locals usually leave their regular employments (as fishermen, traders, artisans) to work on a temporary basis with these companies.

2.4.2. POPULATION AND DEMOGRAPHICS

The 2006 census estimated population of Bonny Local Government Area to be 214,983. This is 181 per cent growth from the 1991 population of 76,412. Bonny LGA has grown faster than the national annual population growth rate of 3.2%⁹. Exponential growth projections at a rate of 3.2% will mean that the estimated population of Bonny LGA in 2013 should be about 268,016. It should be noted however that the explosive growth in population was driven by huge volume of economic activities spurred largely by the construction and business activities of NLNG and other oil multinationals- SPDC and Mobil. Between 1996 and 2007, NLNG commenced and completed construction of Trains one to six.

⁹ National Population Commission, Nigeria

PROPORTIONAL CHANGES IN POPULATION DISTRIBUTION

For the purpose of calculating population growth it has been assumed that not only will changes occur in the total numbers of people present in Bonny Kingdom, but also there will be changes in the way they are distributed. At present, it is assumed over 40% of the total population lives in the urban areas (Bonny Town, Abalamabie, New Finima). It is projected that this will change over time and increase to almost 60% by 2040. Such re-distribution is based on the attraction of the urban areas over the rural and will involve an obvious, consequent reduction in numbers living there. Internal migration from the rural to the urban areas will have an effect on the composition of population in the various parts of the LGA. The most significant features are the increase in the proportion of people living in Bonny, Abalamabie, New Finima and the Inner Core against the decline in the proportion of those living in the Outer Core and Outer West parts of the study area. While the prospect of increasing employment may encourage migration from outside the LGA, this will increase urban rather than rural population levels as most jobs will be in urban areas.

The changes in the proportional distribution of population (assuming exponential growth) expected throughout the life of the Master Plan are listed in Table 4 below.

Scenarios	2006*	2014	2024	2034	2040
Scenario 1 (2.83%)	214,983	267,758	355,271	469,632	555,235
Scenario 2 (3.2%)	214,983	276,593	378,999	519,320	627,354

Table 4: Growth Forecast for Bonny Kingdom (Exponential growth) - Source: 2006 National Census Results - Scenario 2 is adopted for this report

Age Group	2014	2020	2025	2030	2035	2040
Below 5	35,591	42,996	50,329	58,914	68,963	80,727
5-15	100,727	121,681	142,437	166,732	195,172	228,464
16-65	110,443	133,419	156,176	182,816	213,999	250,501
65+	29,832	36,038	42,185	49,381	57,804	67,664
Total	276,593	334,133	391,128	457,843	535,939	627,356

Table 5: Total Population by Age Group 2014-2040

Areas	2014	2020	2025	2030	2035	2040
Bonny and Abalamabie	77,366	90,792	104,090	119,657	137,880	159,210
Bonny Edge (Informal)	21,900	35,326	48,625	64,192	82,414	103,745
New Finima	21,900	35,326	48,625	64,192	82,414	103,745
Total Bonny Urban	121,166	161,444	201,340	248,041	302,708	366,700
Middle Core	32,139	36,454	40,729	45,732	51,590	58,446
Outer Core	54,282	58,597	62,872	67,876	73,733	80,589
Inner West	17,305	21,620	25,895	30,899	36,756	43,612
Outer West	51,702	56,018	60,292	65,296	71,153	78,009
Total Others	155,427	172,689	189,788	209,802	233,231	260,656
Overall	276,593	334,133	391,128	457,843	535,939	627,356

Table 6: Total Population by Area 2014-2040 –

Source: Consultants Forecasts.

Areas	2014	2020	2025	2030	2035	2040
Bonny and Abalamabie	28.0	27.2	26.6	26.1	25.7	25.4
Bonny Edge (Informal)	7.9	10.6	12.4	14.0	15.4	16.5
New Finima	7.9	10.6	12.4	14.0	15.4	16.5
Total Bonny Urban	43.8	48.3	51.5	54.2	56.5	58.5
Middle Core	11.6	10.9	10.4	10.0	9.6	9.3
Outer Core	19.6	17.5	16.1	14.8	13.8	12.8
Inner West	6.3	6.5	6.6	6.7	6.9	7.0
Outer West	18.7	16.8	15.4	14.3	13.3	12.4
Total Others	56.2	51.7	48.5	45.8	43.5	41.5
Overall Total	100	100	100	100	100	100

Table 7: Proportional Changes (%) in Population Distribution by Area -
Source: Consultants Forecasts

2.4.3. LABOUR FORCE PROFILE

The labour force within the study area was estimated to be some 110,443 persons – this is based on the projected population age group spread for Bonny Kingdom in 2014 (age group of 15 – 65 used for the available labour force). Two key characteristics of the labour force were revealed within the household survey conducted when documenting the master plan in 2001 - the high levels of self-employment and unemployment.

- An average of 44.6% of the sample labour force across the area subdivisions was recorded as self-employed (associated mainly with traditional activities of fishing and agriculture), a markedly higher incidence within the middle and outer core areas
- An average 30.9% of the sample size was classified as un-employed, the rate of unemployment (in line with national average) increasing sharply within the

urban area; though there is probably a significant element of disguised unemployment or underemployment within the extended family communities of the outer areas but classified by respondents as self-employment

The distribution of the existing and projected labour force within subdivisions of the study area is presented in Table 8, denoting total numbers up to 2040 (at five-year intervals 2014 – 2040).

Areas	Labour Force*					
	2014	2020	2025	2030	2035	2040
Bonny and Abalamabie	30,892	36,253	41,563	47,779	55,055	63,572
Bonny Edge (Informal)	8,745	14,106	19,416	25,632	32,908	41,425
New Finima	8,745	14,106	19,416	25,632	32,908	41,425
Total Bonny Urban	48,381	64,464	80,395	99,042	120,870	146,422
Middle Core	12,833	14,556	16,263	18,261	20,600	23,337
Outer Core	21,675	23,398	25,105	27,103	29,441	32,179
Inner West	6,910	8,633	10,340	12,338	14,676	17,414
Outer West	20,644	22,368	24,074	26,072	28,411	31,149
Total Others	62,062	68,954	75,782	83,773	93,128	104,079
Overall	110,443	133,419	156,176	182,816	213,999	250,501

Table 8: Projected Labour Force in Bonny LGA

*Labour force is based on population age group 15 - 65

Due to the level of unemployment across the Kingdom, it is imperative that employment is reduced to the barest minimum within the planning horizon through the rapid creation of jobs across the Kingdom. Accordingly, an ideal case target scenario is made – 5% unemployment rate by 2040 (Given an estimated 23.9% of the

labour force in Bonny is unemployed) – in the most buoyant economy, full employment can remain an elusive goal as the labour force constantly adjusts to structural changes (matching of skills to the work available) or persons are in the course of switching employment. In achieving this goal, a total of about 154,000 jobs will need to be created within the planning horizon. Details are in Table 9 below:

Scenario	2014	2020	2025	2030	2035	2040
Unemployment Rate (%)	23.9% *	20.1%	16.3%	12.66%	8.8%	5.0%
Unemployed	26,396	26,844	25,519	22,962	18,789	12,525
Employed	84,047	106,575	130,657	159,854	195,210	237,976
New Jobs Required						
<i>By time period</i>		22,528	24,082	29,197	35,356	42,766
<i>Cumulative</i>		22,528	46,610	75,807	111,163	153,929

Table 9: Target Scenarios (Ideal Case) for the Labour Market

Note: Unemployment rate for 2014 based on the National rate (National Bureau of Statistics, 2011 Annual Socioeconomic Report)

In the short to medium term, the economic structure of Bonny LGA will continue to be dominated by the oil and gas sectors - prospects for the further development of this sector remains strong as a result of the implementation of national policies to discontinue gas flaring and continued efforts to reduce wastes and pollution. These policies are likely to encourage continued investment in LNG production and other strategic oil and gas infrastructure in the Kingdom. Traditionally, the oil and gas sector is not a key employer of labour in terms of number employed versus total industry value or when compared to other sectors of the economy (Agriculture). Accordingly, the fundamentals of this plan should be anchored on the development of the non-oil sector to ensure job and wealth creation via economic diversification. The traditional economic activities of agriculture and fishing will continue to be of fundamental

importance to the economic well-being of a substantial proportion of the employed population. It is essential that any employment strategy incorporates policies for strengthening and developing the present situation to a point where it can reliably satisfy actual and potential local and regional markets. Table 10 illustrates the potential employment areas going forward.

Activity	Growth Potential	Size of Investment	Potential Employment	Requirements	Benefits and Types of Development
Oil and Gas	High	High	Low	Infrastructure Trained Workers Support Services	Natural Gas Processing Maintenance Metal Fabrication
Oil and Gas (Indirect)	High	Medium	Medium	JIC Supported Actions Community Development Programmes	Extended & Improved Services Short/Medium construction Long term maintenance work
Construction	High	Low	High	Projects Training	Enhanced skills & capabilities Increased use of local labour for major projects & local needs
Light Industry	Medium	Medium	Medium	Markets Serviced Sites/Units Start up advisory services	Improved Urban Environment Better development prospects
Services	Medium	Medium	Medium	Commercial centres Markets	Reduced congestion
Tourism	High	High	Medium	Markets Attractions Infrastructure	Employment Diversification
Forestry	High	Medium	Low	Infrastructure	Sustainable supply of local inputs:

Activity	Growth Potential	Size of Investment	Potential Employment	Requirements	Benefits and Types of Development
				Access Management	construction, fish smoking, etc
Agriculture: Traditional	High	Low	High	Infrastructure Extensions Services Credit	Increased marketable surplus Improved diet
Intensive	Medium	High	Low	New Markets Infrastructure Management	Horticulture Poultry
Fishing: Artisanal	High	Low	High	Finance Training	Increased productivity
Offshore	High	High	Medium	Equipment Finance Training Support facilities	Increased incomes Opportunities in processing & distribution
Fish Farming	High	High	Low	Finance Technical Assistance on long-term basis Specialist inputs	Development of pond & cage culture for shrimp and high value fish

Table 10: Potential Employment Areas

The kingdom of Bonny has historically engaged in employment in fishing, farming and trading. Recent economic conditions however, have forced employment to shift to oil and gas as these industries are located within the kingdom. Construction activities and light industries have contributed significantly to labour employment in Bonny Kingdom over the years.

Construction Activities

(i) NLNG Plant Expansion

NLNG revealed that at the peak of its operations- particularly construction of the Base plant (1998-1999), it had 12,000 construction workers at Bonny and 6,000 along the pipeline routes totalling 18,000. They had 322 senior staff, both male and female. These jobs attracted about 500 expatriates who played mainly supervisory roles during the base project. Contract work is open to everyone, but indigenes of Bonny LGA enjoy some preferential treatment, especially for jobs whose technical content is adjudged to be within their capacity. The Third Train expansion project employed about 7000 personnel at its peak.

It is estimated that Train 7 will provide about 10,000 jobs for Nigerians, and particularly the youths in the Niger Delta. Bonny Kingdom can benefit significantly from the employment opportunity if it has the requisite skills needed during the construction phase.

The Bureau of Employment, a committee (consisting the State Government, Local Government and Bonny Traditional Leadership) set up to manage recruitment processes for Bonny indigenes across the Kingdom, revealed that 1,800 persons have been employed by NLNG (1,400) and Shell (400) between July 2014 and February 2014.

(ii) JIC Community Projects

The Joint Industries Companies (JIC) operate a programme based on the employment of local people in relation to the community type projects. Such projects include the Power and water supply projects, community construction and infrastructure development projects, Right of Way Maintenance contracts, Nigeria LNG Agro Development Action, etc. The JIC has implemented almost all of its commitment to the community in the Memorandum of Understanding. However, it will still continue to carry out community development initiatives as part of its corporate social responsibility as well as in contribution to the implementation of the Master Plan.

(iii) Other Local Construction

It is expected that the local construction sector will increase as direct result of rising population and incomes. This will involve employment in private house building, the construction of commercial premises and facilities related to agriculture and tourism. Over time this will also include increased provision of minor infrastructure projects outside the community projects of the JIC.

(iv) New Master Plan Projects

It is expected that the Master Plan initiatives will be implemented using a large base of local human resources. It is expected that the development of major downstream petrochemicals projects and associated facilities (port) will not start to become apparent until 2019. The related employment of indigenous Bonny labour will comprise a higher proportion of employed / contracted workforce, compared with previous projects.

Light Industries

To provide the opportunity and stimulus needed to establish and develop a light industrial base in Bonny is one of the main objectives of the Master Plan to assist diversification away from traditional activities. At present these operations as minor craft of repair shops undertaking such activities as car repairs, carpentry, metal work and the manufacture of concrete blocks. These operations are presently carried out in generally unsuitable premises and with a labour force of less than 5.

Light industrial activities generally occur in areas of population concentration and it is expected therefore that the future developments will occur in Bonny and New Finima. A number of small sites up to half a hectare have been designated in both places in order to stimulate the growth of these important activities. It is essential that some form of central business advisory service is available to assist start-up situations in order to maximize the survival rate of new ventures in the early years of development. It is envisaged that the range of activities might be expanded beyond those referred to previously to include, for example: more sophisticated metalworking and machining, plastics processing, conversion of paper and board, furniture making, etc.

2.4.4. AGRICULTURE AND AQUACULTURE

Agriculture and fisheries are a vital element in both the economic and social structure of the study area. There is real need to establish and encourage sustainable actions and policies to support the development of each. These will take the form of individual projects and broader policies both directly applied and in general areas such as the improvement of accessibility and living standards.

- **Agriculture**

Presently, agriculture is largely a secondary activity with most of the produce in the market being imported from Port Harcourt (key commercial activities include poultry farming and cassava farming and market). The market for agricultural products will increase with the growth of population and strengthening of the local economy. The high cost of transporting food from Port Harcourt will continue to provide a financial incentive for the further establishment of facilities to satisfy local demand. Direct encouragement to supply the compounds of the JIC operators and other support industries could provide a useful incentive to generate quality produce that would be acceptable to both local and regional markets.

The nature of soil is the main determinant of the location of any future agricultural development. The main areas of potential for cropland development are located in the southwest part of the Island, which is also the location of the major industries and urban development. However by reducing the areas needed for urban development through a sensible policy of density control will leave land for long term agricultural activities along and to the south of the Bonny / Abalamabie corridor. Up to 9,000 hectares of suitable land in this area is capable of development for agriculture over the plan period. Further developments are possible in the Inner West area where soils are similar.

Based on the total available land mass and the competing land use options, it may be more optimal for agricultural development to take place in the rural areas outside Bonny Island, to enable full-scale industrial and commercial development occur in the city centre. The development of agriculture on a genuinely commercial basis would require considerable effort. However, sector employment and incomes would help to underpin employment in processing, transport, extension services and wholesale and retail

activities. In terms of employment generation, the average agricultural area tended per sector worker in 1998/99 was 4.65 hectares in Nigeria according to FAO (Food and Agricultural Organisation of the United Nations). This would imply an additional 16,000 hectares in Bonny would need to be developed to replicate a similar level of employment, which does not appear to be a practical target. However, it is expected that there will be higher incidence of intensive agriculture in Bonny such as horticulture development for the production of fruit and vegetables than the National average. The required area would therefore be substantially less with the average nearer 2 hectares per worker (or a total of 7,000 hectares).

- **Aquaculture**

Arguably the most unique physical attribute of Bonny are its water courses - flowing around the perimeter of the island and around the coastal regions of the other parts of the LGA, they provide a strong visual link to the kingdom's history - a rich habitat for fishing activities. There are still various fishing communities in Bonny Kingdom despite the decline over years due to adverse operating environment for the fishing sector.

There has been a drastic reduction in fishing activities caused largely by coastal pollution due to oil and gas activities. For instance, prior to the relocation of Finima, the community used to have over forty (40) creeks. However, the number of creeks have been drastically reduced in this area. Today, Bonny Kingdom now imports sea foods from other external communities as there has been a huge shortfall in production. Some of the key challenges and limitation for the fishing sector in Bonny are as follows:

- Inadequate infrastructure / equipment: There is currently no fish landing jetty (centre) in Bonny Kingdom. Also, there are very few cold storage system / freezing facilities available to preserve harvest. This leads to significant post-harvest losses
- Inadequate Access to Feed: There is relatively poor access to feed, heightened by the prohibitive feed costs
- Environmental Pollution: Environmental degradation of suitable sites for fish seems to be on the rise in Bonny. This necessitates the need to also explore inland fisheries

- Diseconomies of Scale: Artisanal fishing occurs across Bonny Kingdom which a focus largely on subsistence and very little synergy among fishers. There is also lack of effective organization in the fishing sector as there is no coordinating framework
- Poor Skills Base of Farmers: There is little or no specialized education on the fisheries business among the majority of the fishing population.
- Poor Market Access / Knowledge: Inadequate information and market ignorance on prices, trends and customer needs

Notwithstanding, fishing remains one of the principal occupations in the LGA - based mainly on artisanal practices it also includes a limited amount of processing and marketing activities which themselves can generate considerable amounts of employment. It was estimated that as at the year 2000, the sector employed about 10,000 persons but maybe only half this number could claim fishing as a full time occupation. Some are engaged either on a part time basis or in small scale processing (primarily smoking) and shore based activities within the extended family system. However, it is deduced that this number has reduced drastically and there may now be much less than 30% of people involved in the sector.

Fishing is a traditional, potentially very profitable and socially acceptable activity in Bonny. Its present circumstances are affected by excessive exploitation of the limited local resources, particularly fish within the tidal creeks and inlets. There is a real need to diversify and expand the fishing sector to allow access to new resources and enable the re-establishment of existing stocks. According to a World Bank assessment in 1995, less than 10% of the local fishing fleet was sufficiently well equipped to venture into and beyond the first nautical mile of the Atlantic Ocean where there are substantial stocks of largely unexploited pelagic fish. Fisheries and aquaculture still remain significantly under-tapped levers for job creation across Bonny Kingdom. The local economy stands to enjoy great benefits through the development of fishing at both the artisanal and commercial levels.

2.4.5. HEALTH

The analysis of existing conditions concluded that there was an inappropriate distribution of facilities in the study area, which led to inadequate services being available to residents of the rural parts of the LGA.

The levels of health care facilities in the Niger Delta States include specialist hospitals, general hospitals, primary health care centres, maternity centres, health posts, dispensaries and a host of private hospitals and clinics. The most widespread of these facilities is the primary health centre, the typical health facility in the rural communities. However, in the urban centres and major cities, private clinics predominate. Specialist hospitals are located in the major urban areas, while general hospitals are located in both major and medium sized urban centres and Local Government headquarter towns. While the Federal and State governments mainly own the specialist hospitals, some of the primary care hospitals are owned by Religious Orders, who provide health care facilities in the rural areas and by private sector organizations who mainly operate in the urban areas.

Currently, there are 11 health centres, 5 private clinics and 1 General Hospital. On average each health centre has the capacity to attend to about 20 people per day. The GH is equipped to handle more people although treatment is still inadequate.

The Ibani-Se Health Initiative was established as a quick response to the drastic increase in prevalence rates of HIV/AIDS in 2006 as a direct result of the growth in oil and gas operations and workers - prevalence rate of about 8%, against the 4.6% national prevalence rate. The Initiative has recorded successes in reducing the prevalence rate for Malaria and HIV on the Island, verified by a post-intervention survey conducted in 2011 by the Initiative, to evaluate the efficiency of the implemented strategies and to measure level of impact.

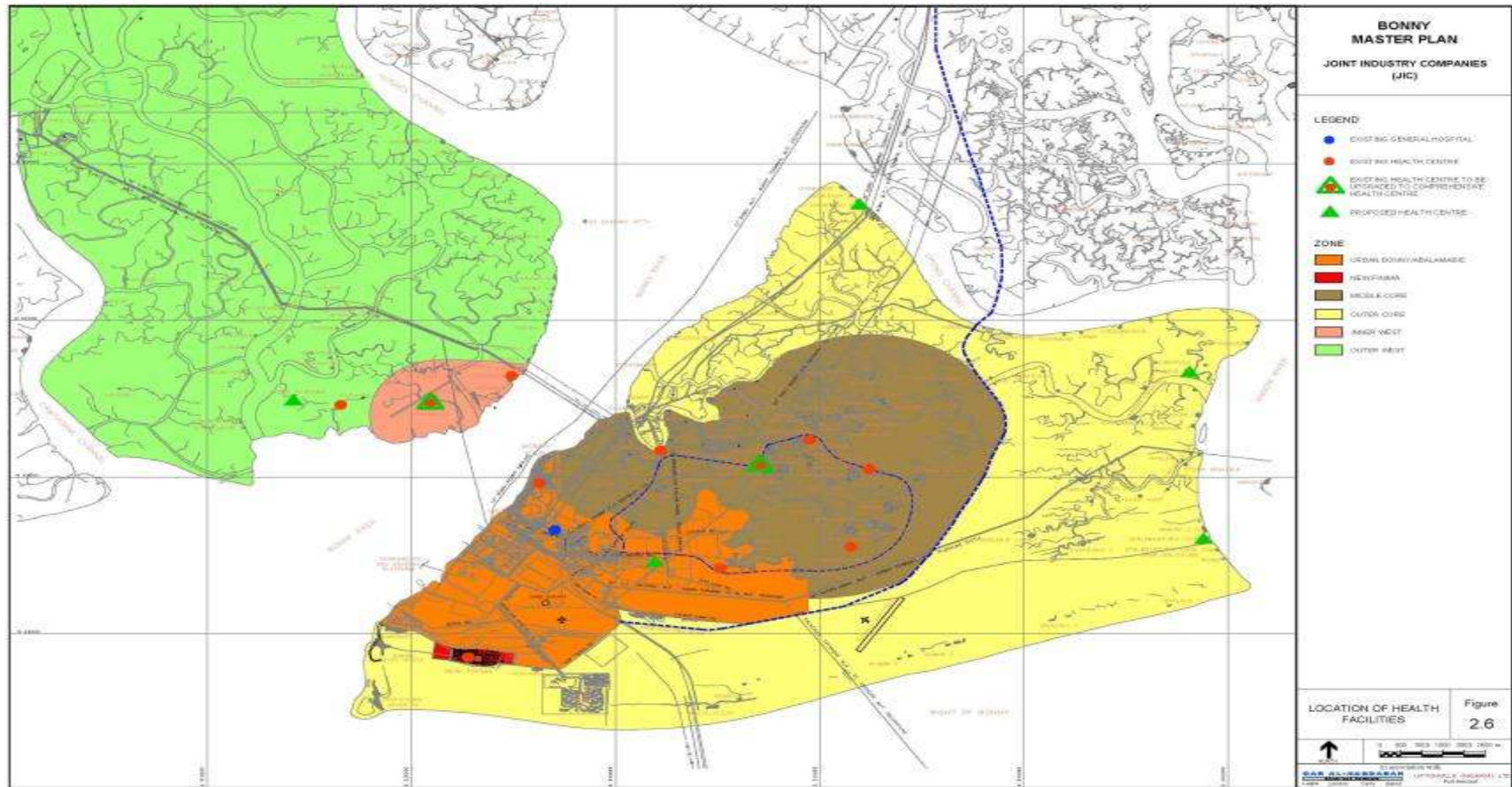


Figure 10: Location of Some Health Facilities

2.4.6. EDUCATION

Similar to the prevailing context in Rivers State, the school system in Bonny Kingdom operates on three levels: pre-primary (nursery – for those aged about three to five years), primary (five to twelve years old) and secondary (junior/3 years and senior/3 years). Until now, there were no facilities available for tertiary education within Bonny LGA. However, a facility for a tertiary institution- a Polytechnic- is being put in place in Bonny Island by the Federal Government. The Federal Gas Polytechnic Bonny is expected to kick off in September 2014 having been included in the 2014 Federal Government budget. The National Board for Technical Education (NBTC) is also set to appoint the Rector, Registrar and other auxiliary staff for the institution.

The majority of these schools are mainly located in the Bonny urban area and the inner core area. Three schools are located in the New Finima/Labour Camp area, four are located in the peripheral area of the island (Finitassingi Agaja, Iwokiri, Nunabie and Alasiakiri); another four are in Peterside area (Peterside, Kalaibama, Oruanga and Kuruama) and one in Iyoba, north of the Opobo Channel.

Age Group	2014	2020	2025	2030	2035	2040
Below 5	35,591	42,996	50,329	58,914	68,963	80,727
5-15	100,727	121,681	142,437	166,732	195,172	228,464
Total	136,318	164,677	192,766	225,646	264,135	309,191

Table 11: School Age Population

Area Under Consideration	No of Existing Schools		Current school population		Forecast Attending School Population 2040		
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Total
Urban Bonny	16	6	14,153	5,002	80,125	50,746	130,870
Middle Core	7	1	4,991	1,764	12,770	8,088	20,858
Outer Core	5	-	9,006	3,183	17,609	11,152	28,761
Inner West	2	-	2,300	813	9,529	6,035	15,564
Outer West	2	-	8,539	3,018	17,045	10,795	27,841
Total	32	7	38,988	13,779	137,078	86,816	223,894

Table 12: Number of Schools across the LGA

In terms of performance, the most immediate indicator for measuring the effectiveness of schools in Bonny Island has been through a review of the performance of students in their final examinations. The examination results show poor returns on investments with a low percentage of students passing the School Certificate Examination (with 5 credits as required for full pass). The performance of students in the Kingdom was analysed over a ten year period. A detailed analysis of the performance of senior secondary school students who obtained with 5 credits in the West African School Certificate Examination in schools within Bonny LGA from 2003 – 2012. A total of 4,098 sat for the WAEC examination in 7 secondary schools in Bonny LGA. A total of 1,666 (41%) of the students obtained 5 credits and above in various subjects within the period under review. In order to compare this performance at state level, a detailed ranking of the performance of 540 schools in WAEC examination in Rivers state from 2010 - 2012 indicated that Bonny National Grammar School which ranked 40th position in 2010 moved to 1st position in 2012. On the other hand, Community Secondary School Burukiri that ranked 1st in 2010 moved to 372th position in 2012, showing a rapid decline in academic performance. The ranking of the other schools in Bonny also show a decline in student performance in WAEC examination from 2010 - 2012.¹⁰

The education sector had been characterised by: large level infrastructural decay well below recommended minimum standards, shortage and uneven distribution of education personnel in schools and education authorities, weak incentives to join the teaching profession and even lesser motivation to work in rural areas, poor quality teaching, weak enforcement of existing legal and regulatory provisions and controls over minimum standards, inadequacy of some legal, regulatory and policy frameworks. Identifying teacher issues as a further challenge the NLNG also runs a top-up (salary) scheme for teachers in order to encourage more teachers to remain in the island when posted and has trained secondary school teachers for greater effectiveness at lesson delivery.

¹⁰ Source - NLNG Education and Community Empowerment Support Strategy (NECESS) Document

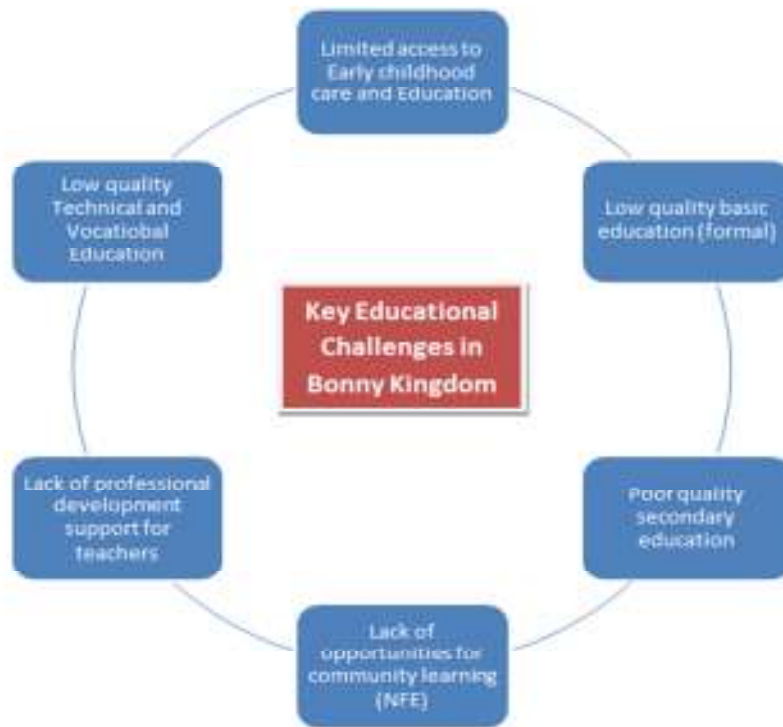


Figure 11: Gaps in Educational Development in Bonny Island (Source NLNG Bonny Kingdom Education Support Strategy)

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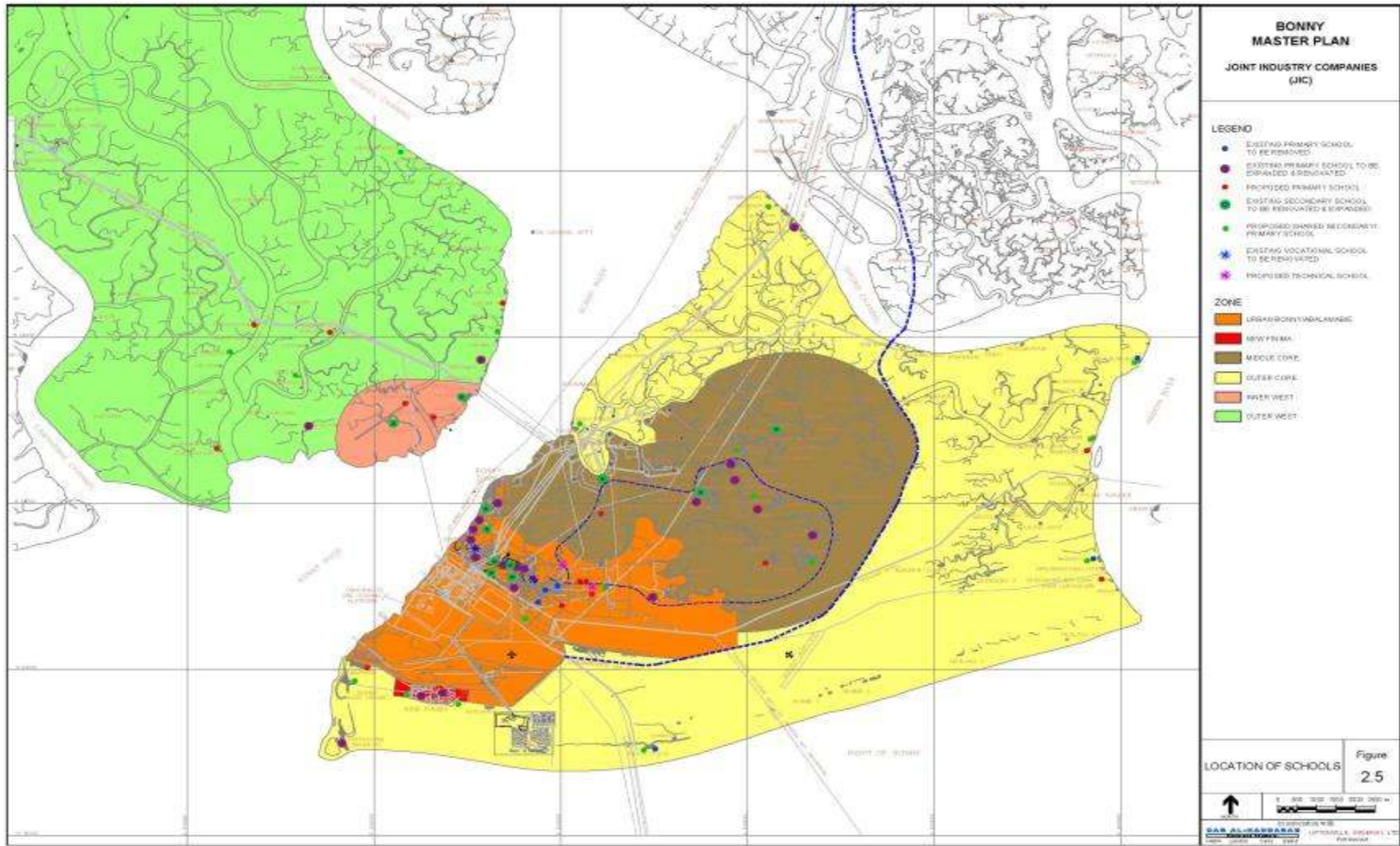


Figure 12: Location of Some Schools

2.4.7. INFRASTRUCTURE & PUBLIC SERVICES

An adequate, reliable and safe system of infrastructure is an essential element of the Master Plan for Bonny. At present there are a variety of systems and networks of varying efficiencies operating in the LGA as well as areas in which there are none. The Master Plan will include proposals for new networks as well as examples of upgrading for those systems, which will require expansion in order to respond to the demands placed on them by forecast growth.

- **Water Supply and Distribution**

Reliable and safe water supplies should be available to all residents regardless of where they are located within the LGA. Clean and regular water supply is vital for a decent quality of life. It enables people to engage in industrial activities as well as maintaining a healthy diet and clean environment. Communities throughout the region suffer from a weak infrastructure for the efficient and effective delivery of water supply and access to potable water. The vast majority of the settlements in Niger Delta States depend on springs and wells for their water supply and some rural settlements particularly the larger ones depend on water from boreholes. The state of water supply in Bonny Kingdom mirrors this prevalence.

Water treatment and distribution is provided by the state government and the JIC in the outer core and main core areas respectively. The methods employed to distribute water to consumers differs with regard to the areas served. Currently, in urban areas such as Bonny and Finima town, there are two treatment plants (provided by the JIC) in operation that serves customers through a piped network to either standpipes or direct domestic supply. Water distributed is of good quality.

The Bonny Island network is undergoing expansion both to improve service to existing consumers and to accommodate future development. The same is true of Finima where new development outside the present urban limits will require that the networks be enlarged to accommodate forecast population growth. Three additional treatment plants will come on-stream by 2015 to serve the greater community to reach rural areas. Water kiosks are distributed around the island to serve non-paying customers who can come and fetch water as needed. Developmental efforts on water distribution are focused on Bonny Island, while majority of the outer villages have very poor access to water. Many of the

smaller rural communities in other parts of the LGA, boreholes are utilised wells and streams.

Similar to regional realities, factors underlying the poor water situation in the area include problems in the operation of the state water system, lack of effective urban planning, inadequate attention from government to the sector and limited involvement of the private sector in water resources management and service provision. Problems relating to state water agencies and their network include, limited coverage; low level of priority attached to the effective management and expansion of the water works; inadequate funding; poor revenue generation such as ineffective mechanisms for the collection of water rates; and low political will to effect significant expansion of the scope of existing water services and to establish appropriate innovative schemes to boost water supply.

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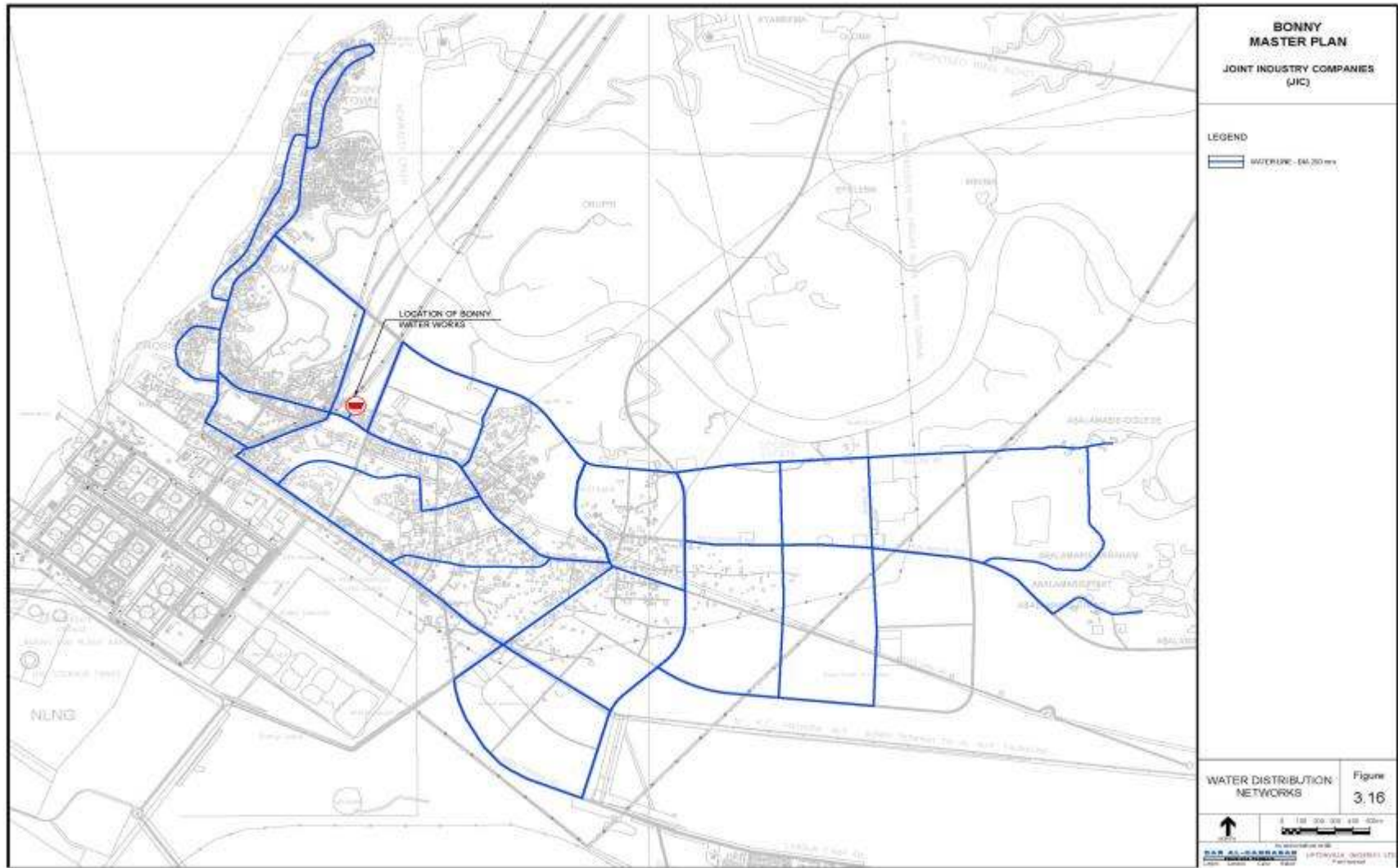


Figure 13: Water Distribution Network

- **Electrical Power and Distribution**

Reliable electrical power supplies are particularly important in supporting the rational development of any community. The economic prosperity of Bonny depends heavily in power being available particularly in the urban areas. The power needs of Bonny Island are currently being met by the JIC through the Bonny Utility Company (BUC). The utility receives electric power generated from a modern gas-fired turbine located at the Shell BOGT facility. This turbine, dedicated to providing up to 20MW of power to the community is fed with natural gas from NLNG and SPDC. Initial plans for ExxonMobil to build an Independent Power Plant (IPP) that will generate an additional 5MW of power for the island have not been realized. Since inception, the JIC has expended millions of dollars in generating and distributing power to the community.

Currently, BUC distributes in excess of 90,000MWh of electricity to the residents of Bonny town, Finima and surrounding communities. Peak load for the distribution is about 16.9MW (2013 figures). Electricity is distributed via substations and grid-lines to customers who use prepaid meters by purchasing electric credit units at banks across the island. BUC's service portfolio also includes water production, treatment and distribution services.

It is not presently feasible to implement a comprehensive supply network from BUC to the outskirts of the island and to other parts of the LGA (on the mainland) within the short or medium time frame. Rural power supply issues differ from those of the urban areas and other solutions may be proposed in small and isolated communities that cannot realistically access a grid-based network. Innovative and sustainable options such as solar electricity from "solar voltaic cells" used in combination with community diesel generators may be appropriate.

- **Sewage Collection and Disposal**

Health problems resulting from water borne diseases are directly related to the methods of sewage disposal presently operating throughout the LGA. There is a real need to improve the methods of disposing of sanitary wastes both in order to improve public health and general environmental conditions. Improvements can be achieved through adopting appropriate methods relating to the scale of the problem.

In the urban areas such as Bonny and New Finima where population concentration results in sanitary wastes polluting watercourses there is a need to introduce a system of sewage collection and treatment before discharge. This would require the construction of one or more biological sewage treatment plants and connecting users to it through a piped collection system. It is possible that a supplementary system of sealed cesspits could be used with sewage being removed regularly for transfer and disposal at the sewage treatment plant. The system could be phased but a sewage treatment plant would need to be constructed in advance at considerable cost. The Detailed Master Plans for Bonny and New Finima indicate the routes of the primary collection systems and the suggested location of a sewage treatment plant is shown in the figure overleaf. Outside the urban areas greater efforts must be made to construct septic tanks, which operate correctly in the prevailing conditions and do not risk polluting watercourses and sources of drinking water.

- **Stormwater Drainage**

Stormwater drainage is an essential element of any functioning urban area. Provision will be made for stormwater disposal in all major urban settlements through the incorporation of appropriately sized drains within each road cross section. Discharge locations in the urban areas will be selected to reduce backup and ensure rapid drain away minimising the incidence of local flooding.



Figure 14: Drainage and Sewage Network

- **Solid Waste Management**

Bonny like the rest of the Niger Delta region is faced with a myriad of waste management related problems. The more critical of these include the difficult, mostly water-logged and inaccessible terrain that leaves very little land available for development, the high level of environmental pollution from the oil, gas and other industrial activities, and the intractable problems of solid waste management especially within the overpopulated semi-urban and urban areas. Most of the oil production and industrial activities lead to the generation of large volumes of solid and hazardous liquid and gaseous wastes, which in turn pollute air, water, and land.

Industrial and municipal waste management remain one of the critical environmental problems and constitutes a major health hazard in Nigeria. In cities like Port Harcourt, Aba and Warri in the Niger Delta, only a small proportion of the solid waste generated is collected by public or private agencies that have the capacity to ensure their safe disposal. The rest of the waste, including toxic and hazardous materials, are disposed of indiscriminately, by dumping either at open and unprotected sites usually located within the cities, in public drainage systems or in streams and creeks. Some incineration is practiced through open burning at the backyards of residences.

Landfilling is the most common method for disposing of municipal solid waste. Incineration has been utilized especially in regions where the availability of land is limiting and/or cost of land is very high. Incineration is used either as a means of reducing the volume of solid waste or for energy recovery. In either case ash and sometimes sludge are produced necessitating their disposal in a landfill. Further, for incineration to be effective additional sources of energy might be required so as to properly or completely incinerate the waste. Potential emissions from incinerations include particulates, gaseous emissions, incompletely burned products (primarily hydrocarbons) and trace emissions. All of these can create aesthetic and/or health problems and therefore must be controlled. The cost of air pollution control devices is much higher than the cost of the incinerator (including associated process trains). In addition, these devices need proper and continuous maintenance by highly qualified and specialised personnel. Communities who wish to maintain environmental quality cannot afford to have incinerators without emission control devices.

The Master Plan concentrates on the use of recycling, landfill and composting as the principal methods of safely disposing of wastes arising. The following methods of waste processing disposal are proposed for use:

- A site for an engineered landfill with a capacity for up to 250,000 cubic meters of waste is proposed for the Bonny and New Finima Urban Areas and is illustrated in figure overleaf.
- A combination of recycling and composting is proposed elsewhere in the LGA

The waste generated in the project area is mostly organic material that does not lend itself well to incineration. Additional fuel needs to be added for proper and complete incineration resulting in exorbitant costs. Therefore, for the purposes of this plan, an incinerator as a sole option for disposal of municipal solid waste for the project area should not and was not considered.

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Figure 15: Areas Proposed for Land Reclamation (2001 Master Plan)

2.4.8. HOUSING

The socio-economic surveys conducted in 2001 indicate that the housing stock is in relatively poor condition and does not adequately provide for the resident population. The absence of proper housing is a constraint on development, new housing however will respond to both the need for improvement to the existing situation and urban expansion. Housing is one of the key factors in regional development. The number of dwelling units reflects the size of population; the location of dwellings reflects the location of economic activity, the transportation system and the ability to travel between residence-work-services, which in turn is related to the income level of the residents; dwelling size and type related to the residents' household size, culture, and level of income, again reflects economic activity.

There were just over 19,000 housing units in Bonny LGA in 1991 and almost 54,000 units in 2006 - based on population census and assumptions of an average of 4 persons per household. This illustrates a 184% increase since 1991 - the majority of the increase can be attributed to the expansion of oil and gas operations within the LGA. It is expected that the LGA will experience additional housing growth as these operations grown and as access to Bonny Island increases with the proposed construction of a roadway from mainland Nigeria to the island.

Bonny Kingdom is a mix of both rural and urban communities. The urban communities are formed around businesses and city centers while the rural communities are on the outskirts. The present urban area forming Bonny Town is clustered around the Admiralty Creek and along the various roads leading south and east. Densities decline eastward toward Abalamabie and New Finima. The availability of low to moderate-income housing is becoming more important as home values are on the rise on the island. Currently, the annual rent for self-contained apartments is one hundred thousand Naira (₦100,000). One bedroom apartments go for an average of one hundred and fifty thousand Naira (₦150,000) while two bedrooms can be found for an average of two hundred and fifty thousand Naira (₦250,000).

2.4.9. TRANSPORTATION

The ease with which Bonny is accessed and navigated is very closely linked to its ability to function successfully as place of commerce, culture and civic life. Accessibility to Bonny Kingdom remains poor - the main access route into the Kingdom is Bonny Island which can only be accessed by Water and Air. The communities outside the island are largely connectible by water. Estimated air travel time from Lagos to Bonny is 90 minutes; and from Port Harcourt to Bonny is 15 minutes. Water travel from Port Harcourt to Bonny is between 1.5 hours and 2 hours depending on the type and speed of the passenger commuting vessel. The difficulty accessing Bonny has several adverse implications on the economic growth of the Kingdom. There is presently no comprehensive transport policy for Bonny LGA, with transport issues being addressed on an ad hoc and unconnected basis. There is a need to establish an integrated policy, which identifies objectives to be achieved through the implementation of immediate projects and longer-term policies.

Based on the range of transport modes surveyed (as at 2001) as part of the traffic surveys, it is estimated that about 1,150 persons within resident population were engaged in the operation of boat and road services, comprising:

- 450 in passenger and freight waterborne transport including routine maintenance and servicing;
- 500 in the operation of motorcycles and car taxi services;
- 200 in the operation of public transport and freight delivery vehicles.

- **Roads Transportation**

There are four main types of roads systems that characterise the road network hierarchy. They include: (1) Regional road, (2) Primary road, and (3) Distributor and Local Roads. In Nigeria, Regional roads are designed for traffic between regions. The width can range from 45 meters to 60 metres. The primary roads are those that spill traffic off the regional road. The distributor roads (collector roads) are those that distribute traffic within the network. There are primary and minor distributors, each differing in their length and width. The local roads are those that serve the residential and industrial layouts. Others are the service roads and the cul-de-sac roads. The service road is important where a

layout adjoins a major road; the service road is then provided to prevent direct access to the major road. Cul-de-sac (closed, dead-end streets), should not exceed 135 metres long and should have a turning diameter of 15 metres. ¹¹

There is presently no direct road connection with the mainland despite the long-term proposal to build the Port Harcourt Link road. There is no island wide road network, the road system presently being limited to the urban areas around Bonny, Abalamabie and New Finima. Links with the interior, which include the Middle and Outer Cores, are provided exclusively by water-based transport. The modal split is likely to remain as it is until after the Link Road is constructed. However, after that it will be possible to construct new roads improving access to the villages of the Inner Core and the main settlements of the Outer Core. At present Bonny is physically isolated from the mainland a factor, which greatly suppresses potential traffic volumes. The implementation of the link road would undoubtedly increase traffic volumes in Bonny substantially to a point where the existing network would become congested through lack of capacity. However, the presence of a dedicated road hierarchy would enable any increase in the volumes of traffic anticipated to be distributed more evenly using primary roads to avoid congestion.

There is currently no defined road pattern / hierarchy for the road system in Bonny Island which is supposed to be the most developed and sophisticated area in the Kingdom. At Bonny, the road network consists of single two-lane, two-way carriageway road that interconnect Bonny Town, the largest settlement, with Abalamabie, Achiana, New Finima, squatter settlements in the south-west edge of the Island, the Labour Camp and the oil and construction complexes and their residential areas. The interconnecting road to the hinterland is proposed to enter Bonny through the Labour Camp area. On Bonny Island, the 'primary' roads are essentially single two-lane carriageways that act as major distributors for all categories of traffic movement between the urban areas of Bonny and the rest of the Island. They include King Pepple - Mission – Shell Road; King Perekule Road or New Road; Hospital Road; Akiama Road; New Finima Road; Mobil Road; TSKJ- to Water Well Road and NLNG Access Road. The Mobil Road was earth road in 2001 while the TSKJ

¹¹ (Obateru 2003).

road interconnecting the Water Well Road was under construction. Their width and pavement conditions vary significantly and there is no conventional segregation between vehicles and pedestrians. Apart from the NLNG, Mobil, TSKJ and Water Well access roads, the network is not generally suitable for heavy goods vehicle activity.

The new Finima road for instance has a width of 7.1 metres as against 45 meters to 60 metres recommended for secondary arterial roads. However, roads acting currently as primary distributors originated from Bonny Town in the North West (N.W.) the King Peple Road interconnecting the Mission Road; Shell road in the North West interconnecting King Perekule or New Road (North centrally) the Hospital Road (joining New Road at the roundabout); New Road interconnecting the Finima road in the North central. The Finima road then runs south easterly to connect the labour Camp roads; interjecting with the NLNG road at Agalanga, it heads south west to Finima Town.

The new Finima road is notably the longest in length of the interconnecting road network. It is equally worthy to note that the private access roads or the Limited access as they were referred to in the Bonny master plan, are roads that belong to the multinationals. Examples are the NLNG, the Mobil, TSKJ, and the Water Well roads constructed by the multinationals to facilitate movement. These roads are of special width and grade. Outlined in the table below are the characteristics of major roads on the Island.

S/N	Road	Location	Key Highlights
1	Oguede Road	North East (NE)	Wilbros road connects Oguede road to Abalamabie and Gas Line road
2	Abalamabie Road		
3	Wilbros Road		
4	Gas Line Road		
5	Akiama Road	North Central (NC)	Akiama road joins Hospital road which runs N.W. towards Aganya to join king Perekule / Shell road toward Mission road
6	Hospital Road		
7	Oduay Peple Road		
8	Ukpo Road		
9	King Jaja Road		
10	New Road		
11	NLNG Water Well Road		
12	King Waribo		

S/N	Road	Location	Key Highlights
13	Labour camp Road	South East (SE)	Labour camp road joins New Finima road at Labour camp junction and then runs Eastward to some villages. New Finima road runs southward interjecting the NLNG road at Finima round about at Agalanaga moves southwest to New FinimaTown
14	NLNG Road	South West (SW)	NLNG Road links NLNG RA to IA, whilw Mobil road takes access freom NLNG road top Mobil Unlimited company site
15	Mobil		
16	Mobil Air Strip Road		
17	TSKJ Road		
18	New Finima Road		
19	Pipeline Road	North West (NW)	New Finima road joins King Perekule road which joins shell road. Shell road bypasses L.a. road to the cemetery to join Mission road which leads to cold beach
20	Shjell Road		
21	L.A. Road		
22	Access Road		
23	King Perekule Road		
24	Mission Road		

Table 13: Bonny Island Major Roads

Air Transportation

There are presently two airstrip locations in Bonny Island- the Bonny Airstrip and the NLNG Airstrip (Formerly known as Mobil Airstrip). The Bonny Airstrip, located along Ikumbi- has not been developed and will require massive investments to be developed and operational. The NLNG Airstrip on the other hand is well developed with standard aviation / airstrip equipment. This facility currently provides services to only about 80 persons per day- which is the maximum capacity currently available. The services of the Airstrip are limited to NLNG staff, business associates and freight.

However, it is envisaged that as more investors are attracted into Bonny Kingdom, there will be a modest upsurge in demand for Air transport within this user group. The focus in the short to medium term should be on building on / developing road and water networks to the Kingdom. In the long term, as the Kingdom continues to experience growth and development plus the

desire to build a viable tourism industry, there will be a need for the establishment of an air strip. The air strip will provide another viable means of access to Bonny Kingdom for potential business and tourist visitors.

Water Transportation

Water transport presently provides the only viable transport links with the mainland for population (airstrip is privately owned by NLNG) - as such it is of vital importance to the continued well-being of the Kingdom particularly in the short to medium term. The only practical means of access to the greater part of the riverine areas of the Niger Delta is by water, mainly by small launches and canoes. At present private operators using motorised vessels and canoes, carry out regular commute to and from the riverine area. The traffic consists mainly of passengers with personal loads.

Jetties form the bulk of water-related infrastructure at Bonny. The main jetties include Cold Beach/Admiralty, NPA, Shell Sludge, Mobil Jetty, NLNG Jetty, New Finima, Coconut Estate, and Peterside jetties. A description of some of these Jetties are highlighted in Table 14

S/N	Jetty Name	Description
1	Admiralty Jetty	By far the most popular jetty in terms of passenger movements is the Admiralty Jetty. Its popularity results principally from its location close to the commercial and retail centre of Bonny and most of the larger as well as the government boats use it.
2	New Finima Jetty	This jetty functions well within its capacity although its integration into a developed public-transport system would encourage its wider usage.
3	Wilbros Jetty (Coconut Estate)	Presently outside the built up area of Bonny the jetty is poorly served by public transport and irregularly visited by passenger boats. Its use will increase as Bonny develops and the residential areas required to accommodate the growing population are constructed.
4	Peterside Jetty	The jetty facilities in Peterside require upgrading to improve safety. A single jetty remains adequate to accommodate the growth in population and movement, but the occurrence of strong currents at certain times of the tide requires that passenger protection be provided. It is likely that there would be an increase in passenger movement should the jetty be included within the regular route taken by the government boat service

Table 14: Some of the Existing Main Jetties - Bonny Island

A passenger Origin and Destination (OD) survey was carried out during November 2001 indicated that 320 passenger and 30 goods boats enter and leave the study area daily.

Converting this to passenger movements indicates that up to 5,000 people enter and leave from some of these jetties – this estimate must have grown significantly:

Some of the key challenges faced by transporters include:

- Sea piracy
- Poor quality of Jetty areas- lack of waiting halls, poor parking space
- Unsafe boats
- No waiting hall

2.4.10. THE ENVIRONMENT

Bonny has a number of physical assets that are intrinsically linked to its character and identity. Bonny's strategic location has been an influential factor throughout its history and must therefore be central to any consideration of its future. Indeed, a number of clear positives may hold the key to its future development. For example, the kingdom is set within a particularly attractive landscape and accessibility is ideally suited to tourism, whilst also an attraction to those who may seek to relocate there.

The greatest total precipitation in Nigeria is generally in the southeast, along the coastal area of Bonny, where mean annual rainfall is more than 4,000 millimetres¹²

The Bonny Harbour

The Bonny River is of great economic importance to Nigeria and it is one of the most stressed rivers of the Niger Delta. Several Oil Fields are located within the river system, these include: Orubiri field on Primrose Creek, Onne Field on Ogu Creek; Bomu, Bodo and Bonny Fields on the Eastern part of the Estuary. Also located within the river system are the NNPC Petroleum Refinery Plant near Okrika, the NAFCON fertilizer plant in Ogu and the Bonny Crude-Oil Tank Farm. Apart from these industrial uses, the Bonny River is also exploited for fisheries, shell fisheries and aquaculture.

¹² Source: National Bureau of Statistics – Annual Abstract of Statistics, 2010

The Bonny river system is situated on the eastern flank of the Niger Delta between lat. 4°25' and 4°50'N and long. 7°00' and 7°15'E. The river and its tributary creeks (Woji and Amadi creeks) rise locally from the higher coastal plains north of Port Harcourt. The Bonny Basin is bordered to the east by the Andoni Basin to the West by the new-Calabar Basin and to the North by the coastal plain sands. The basin has a total area of about 66,000ha; made up of 6,000ha of elevated beach ridges, 42,000ha of mangrove swamps and 18,000ha of surface area of river and creeks . The length from the upper Bonny river to the Bonny bar is approximately 80km. the width at the mouth of the estuary is about 3000 metres and narrows down to 200 metres upstream.

The Bonny Channel is one of Nigeria's most active channels. Located along the Bonny River, the channel is statutorily owned by the Nigeria Ports Authority (NPA). The Bonny Channel is dredged to a depth of 14.30 metres, and it has a width of 230 metres, having capacity for 480 LNG vessels a year.

There are about 384 ships coming into the NLNG port per annum- an average of 32 vessels per month with average length of 150 metres. About 80% of the vessels are LNG ships, while the others are for condensate and LPG. Tanker operations are supported by seven (7) tug boats coming in thrice every week, while barges, which come in twice a week, are used to transport goods, gears and spares.

The operations and traffic on the Channel are controlled by the Nigeria Ports Authority through the allocation of pilots and berths and the support of the Bonny Signal Station. Ships coming into the Rivers State call at Onne Free Trade Zone, Okrika Refinery, Port Harcourt Port, Bonny Island. Other supply boats call at various jetties within / along the Bonny River.

The Impact of Train 7

NLNG currently runs and operates six (6) trains producing 22 million tonnes of Liquefied Natural Gas. To support the economic and production activities of Train 7, the channel width will be increased by about 100% and the current NLNG jetties will be increase from two to three.

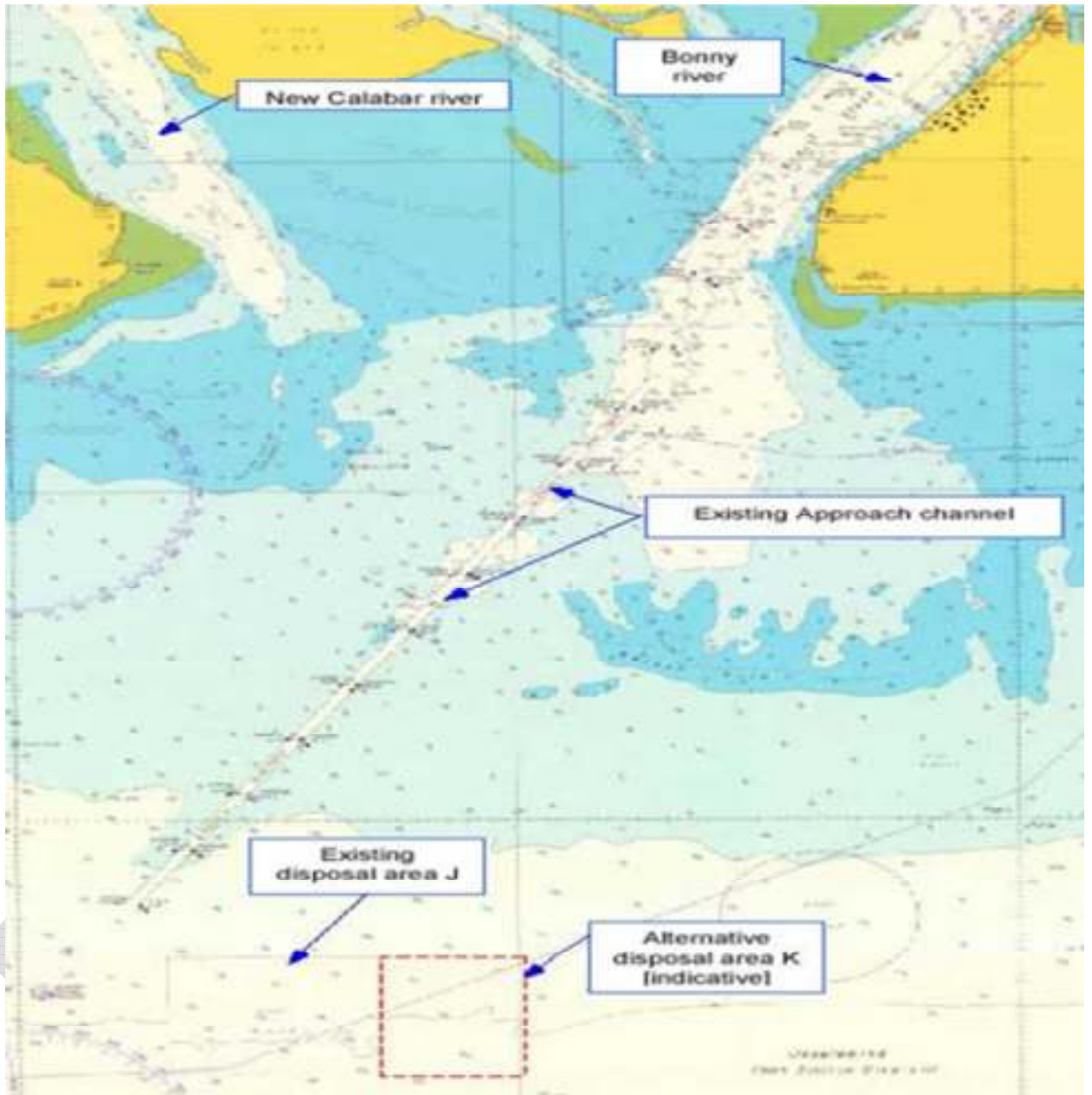


Figure 16: The Bonny River Channel

2.4.11. SECURITY

Bonny kingdom remains relatively safe in comparison with other regions in the Niger Delta. However, there are some specific characteristics, which raise the profile of security across the Kingdom:

- It is located on a major sea trading route and visited by ships from different parts of the world;
- It is the centre of major oil and gas activities in the Niger Delta;
- It is a major processing, storage and transfer centre for volatile and flammable materials;
- It is an area where previous political dissatisfaction / youth restiveness has manifested itself in violence.

Local security issues are presently dealt with by the Federal Police Authorities. They have a main police station close to the Bonny Local Government Area, which while is located strategically in the central part of the developing town is unlikely to be sufficient to provide the necessary civil security cover for either the urban area or the island as a whole. The JIC also provide additional security personnel – Joint Task Force – around Bonny Island. Situations of unrest are few and far between except in cases when there is some discontentment with the IOCs among certain groups. This usually leads to attempts to disrupt company operations. The nomination of group representatives have minimized these occurrence as disputes can be settled diplomatically using the strong traditional community establishments.

Furthermore, there is a Naval Base located in Bonny Town which also helps maintain a peaceful and conducive atmosphere. It should be noted however, that the welfare of all security personnel on the Island to by NLNG- this particularly includes feeding among other things. The location of a military base is the responsibility of the Federal Government and the Ministry of Defence. As the security apparatus for the area is largely under the control of the Federal Government, this plan is limited in addressing / proposing security network to be built across the Kingdom.

2.4.12. BONNY SWOT ANALYSIS

Based on the detailed current position assessment undertaken, the Strengths, Weaknesses, Opportunities and Threats (SWOT) for Bonny Kingdom were debated across all the key stakeholder groups. However, focus was more on those factors the community needs to exploit to in order to accelerate socio-economic development / growth as well as advance its competitiveness. Based on the sessions with the various stakeholder groups, the following SWOT has been documented for Bonny Kingdom:

Strengths	Weaknesses
<ul style="list-style-type: none"> • Plays host to Africa’s largest Liquefied Natural Gas company • Significant endowment in forest and aquatic resources • Presence of a natural harbour suitable / deep port • Availability of sizeable land mass / stable power supply • High quality of sand suitable for the glass making industry • Proximity to the only Oil & Gas Free Trade Zone and Port-Harcourt • Hospitable, peaceful and secure community • Beachfront / coastline suitable for tourism development • Well-structured community development organization • Availability of human capital 	<ul style="list-style-type: none"> • Limited skills acquisition opportunities / access to capital • Inadequate amenities & poor waste management system • High rate of unemployment • Poorly equipped educational and healthcare systems • Onerous process of obtaining land for commercial purposes • Poor visibility within investors community • High level of unemployment- lack of employment opportunities outside the oil and gas sector • Economy concentrated around a single industry (Mono-product economy / sole dependence on oil and gas) • Limited access to capital (microcredit) • Lack of an emergency response / evacuation plan for the Island
Opportunities	Threats
<ul style="list-style-type: none"> • Commitment by the Joint Industry Committee (JIC) to support the actualization of the updated Master Plan • Creation of support / ancillary industry within Bonny to serve the oil and gas sector • Waste recycling (Waste-to-Wealth) • Increased focus by the Federal Government on Niger Delta development, as well as tourism development • Expansion of NLNG (Train 7) will create a huge volume of direct and indirect jobs 	<ul style="list-style-type: none"> • Oil companies divesting from Nigerian market (the Niger Delta region) • Continuous erosion of coastal areas • Pollution of coastal waters by oil and gas industry shrinks alternative sources of livelihood • Youth restiveness in the Niger Delta region will continue to affect the perception of Bonny

How do we build on our strengths	How do we address our weaknesses?	How do we tap into existing opportunities?	How do we mitigate against threats
<ul style="list-style-type: none"> • Build capabilities and partnerships for commercial aquaculture • Leverage natural harbour endowment in building a maritime cluster • Explore commercial forestry and glass making • Leverage access to gas in attracting gas-dependent industries (petrochemicals, fertilizers, manufacturing, etc.) • Ramp up electricity generation capacity to improve access to power and support imminent future growth • Leverage proximity to State capital and access to African countries by pursuing an export-focused strategy • Improve accessibility to Port Harcourt through infrastructural development investments • Pursue an industrial development strategy focused on the development of manufacturing and processing industries 	<ul style="list-style-type: none"> • Reduce / eliminate barriers to business entry, and improve Bonny’s attractiveness as an investment destination • Improve accessibility to land and other industrial resources • Work with necessary institutions in crafting compelling incentives for investors • Improve the quality of healthcare facilities across the Kingdom • Revamp the educational system to support strategic human capital development • Develop a strong multi-modal transportation system • Diversify the economy by attracting strategic non-oil investments • Boost the growth of Micro, Small and Medium Enterprises • Provide ample opportunities for skills acquisition and capacity development 	<ul style="list-style-type: none"> • Develop a vibrant tourism industry • Partner with the Federal and State Government and regional development agencies in the actualization of tourism strategy • Attract ancillary / support service companies into Bonny to spark employment creation and technical training opportunities • Develop a manning / capacity building strategy to enable skills upgrade among Bonny indigenes for the employment opportunities ahead • Develop a community-wide waste management and conversion strategy • Set up anchor institutions to support the take-off of the recycling business on the Island • Explore opportunities for the establishment of industrial clusters (gas-based) 	<ul style="list-style-type: none"> • Diversify the local economy to reduce exposure to economic shocks and impact of divestments • Develop an evacuation plan for Bonny Kingdom and set up emergency response systems • Reduce pollution through Creek restoration and preservation • Promote a clean and healthy environment through sustainable waste management initiatives • Improve Bonny Kingdom’s brand image through strategic marketing campaigns and brand promotion

3. BONNY 2040: ENVISIONED STATE

3.1. BONNY 2040 ENVISIONED STATE

Based on the envisioned session held with the various stakeholder groups, the following envisioning statements were defined across certain areas:



Figure 17: Envisioning Statements from Stakeholder Groups Engaged – source: Stakeholder Envisioning Session Feedback

Following the insights and deliberations from the stakeholder envisioning sessions, a vision for Bonny Kingdom in 2040 was articulated to reflect these deliberations

Bonny Vision 2040

To build a diversified economy hosting significant non-oil and gas investments, with a highly skilled populace, low unemployment rate, strong infrastructural base and improved quality of life for its citizens

- The People of Grand Bonny Kingdom

The actualization of the vision is encapsulated in the following envisioning statements - Bonny Kingdom will have or become:

- Presence of high quality, easily accessible and affordable social amenities across Bonny Kingdom (Educational system; healthcare; infrastructure – access to stable power and potable water, efficient transportation network, etc.)
- A major premier tourist destination in the Niger Delta region attracting visitors from across various parts of the country and beyond leveraging its huge cultural heritage; expansive shorelines and bio-diversity
- A strong employment base creating jobs for the teeming population (particularly the Bonny Kingdom youths) through the development of a highly diversified and vibrant economy primarily driven by the non-oil sector
- A thriving maritime industry with a recognized sea port equipped with state-of-the art facilities capable of generating significant revenue and business opportunities for Bonny Kingdom
- A well-developed aquaculture industry with large-scale capital investments in the production and processing of sea foods ensuring Bonny Kingdom attains self-sufficiency as well as become a net exporter to markets within Nigeria and beyond

- An investment friendly community (with favourable incentives and a conducive environment for businesses to thrive) primarily geared towards the creation of an industrialized community
 - Industrial park / industrial clusters for its large-scale investments - gas based industries
 - Micro and Small and Medium Enterprises to support job creations
- An environmentally sustainable community capable of effectively balancing ecological and economics priorities to drive development in Bonny Kingdom - to create a community with minimal adverse effects to the environment

This Vision is an articulation of the long-term intent to ensure the rapid and sustainable growth and development of Bonny Kingdom over the long term. This aspiration shall be attained with the emergence of a socially, economically and environmentally prosperous community.

The overall vision will only be made possible in an environment with a peaceful, equitable, harmonious and just society is created and where every citizen has a strong sense of community identity and belonging, is truly valued and adequately empowered

3.2. ANALYSIS / IMPLICATIONS OF BONNY KINGDOM ENVISIONED STATE

1. *Presence of High Quality, Easily Accessible and Affordable Social Amenities across Bonny Kingdom*

Description	
The provision of quality social amenities will cut across healthcare, education, power, potable water, efficient transportation, etc.	
Rationale	Impact
<ul style="list-style-type: none"> • Social infrastructure and amenities are essential to creating sustainable communities • Lack of social infrastructure affects community wellbeing and impacts quality of life • Despite the attained development, there remains wide-spread infrastructural deficit across the kingdom 	<ul style="list-style-type: none"> • Improved quality of life • Improved productivity • Poverty reduction • Improved attractiveness of Bonny kingdom to investors
Imperatives	
<ul style="list-style-type: none"> • Attract private partnerships to drive infrastructural development • Strong advocacy and partnerships across all level of government and with regional bodies such as the NDDC • Foster partnerships with relevant international development organizations such as UNIDO, WHO, UN, World Bank, etc. 	

2. *A major premier tourist destination in the Niger Delta region attracting visitors from across various parts of the country and beyond*

Description	
Bonny has under explored its tourism potentials over the years. Now, it will develop the requisite infrastructure and attractions to position it as a major destination spot in the region.	
Rationale	Impact

<ul style="list-style-type: none"> • Bonny’s under tapped coastline and sandy beach • There are very few tourist destination locations in the Niger Delta region • Opportunity to easily become a prime destination in Rivers State given its proximity to Port Harcourt and accessibility to other communities 	<ul style="list-style-type: none"> • Job creation opportunities • Improved earning opportunity for local businesses
Imperatives	
<ul style="list-style-type: none"> • Private sector investment in the development of the tourism industry • Guaranteed security of investments • A well-defined tourism development strategy and project champion • Improvement in transport infrastructure and security • Investment in tourism assets and attractions 	

3. A strong employment base creating jobs for the teeming population (particularly the Bonny Kingdom youths) through the development of a highly diversified economy

Description	
<p>The diversification of the Bonny economy is critical to the job creation agenda. The attraction of new non oil and gas investments / businesses to the local economy will create demand for labour and help reduce the rate of unemployment</p>	
Rationale	Impact
<ul style="list-style-type: none"> • Bonny’s economy is driven primarily by Oil and Gas sector, giving limited opportunity for job creation • There is quite high youth unemployment in the Kingdom who if left unengaged may take to restiveness 	<ul style="list-style-type: none"> • Job creation • Sustained peaceful climate
Imperatives	
<ul style="list-style-type: none"> • Strong investment promotion drive • Creation of strong infrastructural base 	

<ul style="list-style-type: none"> Well trained / educated population 	
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4. A thriving maritime industry with a recognized sea port equipped with state-of-the art facilities capable of generating significant revenue and business opportunities

Description	
By building its own non-oil and gas deep sea port, Bonny will be able to attract more industrial investments (particularly export-oriented businesses.	
Rationale	Impact
<ul style="list-style-type: none"> Bonny has more suitable access to deeper water (12 metres) than other Nigerian ports¹³ The learning curve with the NLNG port project can be leveraged in the development process Bonny can also leverage its access to and strategic positioning along the channel 	<ul style="list-style-type: none"> Job creation
Imperatives	
<ul style="list-style-type: none"> Strong backing from the Federal Government and Nigeria Ports Authority Attraction of investment from a private port development company 	

5. An investment friendly community (with favorable incentives and a conducive environment for businesses to thrive) primarily geared towards the creation of an industrialized community (Industrial Park Initiative)

Description	
Industrial development is a key element which will help speed up urbanization in Bonny Kingdom. Creating or co-creating (in partnership with relevant government agencies) favourable incentives will help unlock an inflow of investments	
Rationale	Impact

¹³ Ecosphere 2003

<ul style="list-style-type: none">• Proximity to both gas supply and a pipeline network to facilitate the distribution of gas to power industries• Access to a wide range of geographical markets due to its strategic location• Availability of land, proximity to gas supply, and access presence of a natural harbour	<ul style="list-style-type: none">• Massive job creation
Imperatives	
<ul style="list-style-type: none">• Presence of critical infrastructure like the power stations and the gas pipeline that will support the park	

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3.3. STRATEGIC PILLARS FOR ECONOMIC GROWTH

The envisioned state will be achieved through a focus on four (4) strategic developmental pillars:



Figure 18: Developmental Pillars for Envisioned-State (2040)

1 Human Capital Development

Human capital is a critical driving force for economic success. The future of any country or community lies in the productive capacities, skills, and talent of its people. The economic breakthrough of fast growing Asian economies such as Japan, South Korea, and Taiwan, Hong Kong have shown importance of human capital to economic growth. Despite lacking natural resources, these countries have managed to grow faster than any other countries, because of their huge investments in and higher quality of human capital.

Human Capital Development will be built around MDGs attainment. It will focus on making Bonny's human resources more competitive in the labour market through sound and strategic

education and improved healthcare delivery systems. This will in turn help facilitate improvement in quality of life, and increase the employability of its teeming youth populace, enabling them to compete for employment opportunities within and beyond the Kingdom. While the gestation period for gaining any direct return on human capital investment may be quite long, it is important to note that this will become Bonny Kingdom's distinguishing factor in the years to come.

2 Economic Expansion & Diversification

The goal of the economic expansion strategy is to diversify the Bonny economy from its current position of heavy reliance on the Oil and Gas sector to a future state where new non-oil investments are attracted into the Kingdom with a sustainable framework for partnership and development. This is particularly important for Bonny Kingdom's mono-product economy base – the huge reliance and focus on a single industry is detrimental to the overall aspiration and growth of the community. Economic expansion becomes a critical pillar given the need to diversify Bonny Kingdom's economic base. The focus of the expansion will be on developing new industries across the Kingdom- supporting the growth of Micro, Small and Medium enterprises, expanding its aquaculture resources, exploring its untapped tourism potentials and igniting the manufacturing sector. If well executed, this strategy will induce the entrance of new investments into Bonny Kingdom which will in turn lead to significant (direct and indirect) job creation opportunities and consequently opportunities to increase the average household income across bonny and raise standard of living. Economic diversification will have huge multiplier / ripple effect which will be felt by the people in Bonny Kingdom

3 Infrastructure Development

The dearth of infrastructure across Bonny needs to be urgently addressed in order to ensure the realization of this envisioned state – the development / update of infrastructure is a critical element for socio-economic development. .Infrastructural development will cut across water supply, transportation, sanitation and waste facilities, flood protection and drainage. There are strong linkages between infrastructure investment and the key indicators of social wellbeing,

such as health care, water and sanitation, housing, human capital accumulation and electrification, are essential to address poverty challenges and advancing the growth potential in Africa. Infrastructure will help create inclusive growth as it will greatly improve equity of access across all socio-economic strata.

4 Environmental Sustainability

This will focus on environmental protection, preservation and biodiversity.

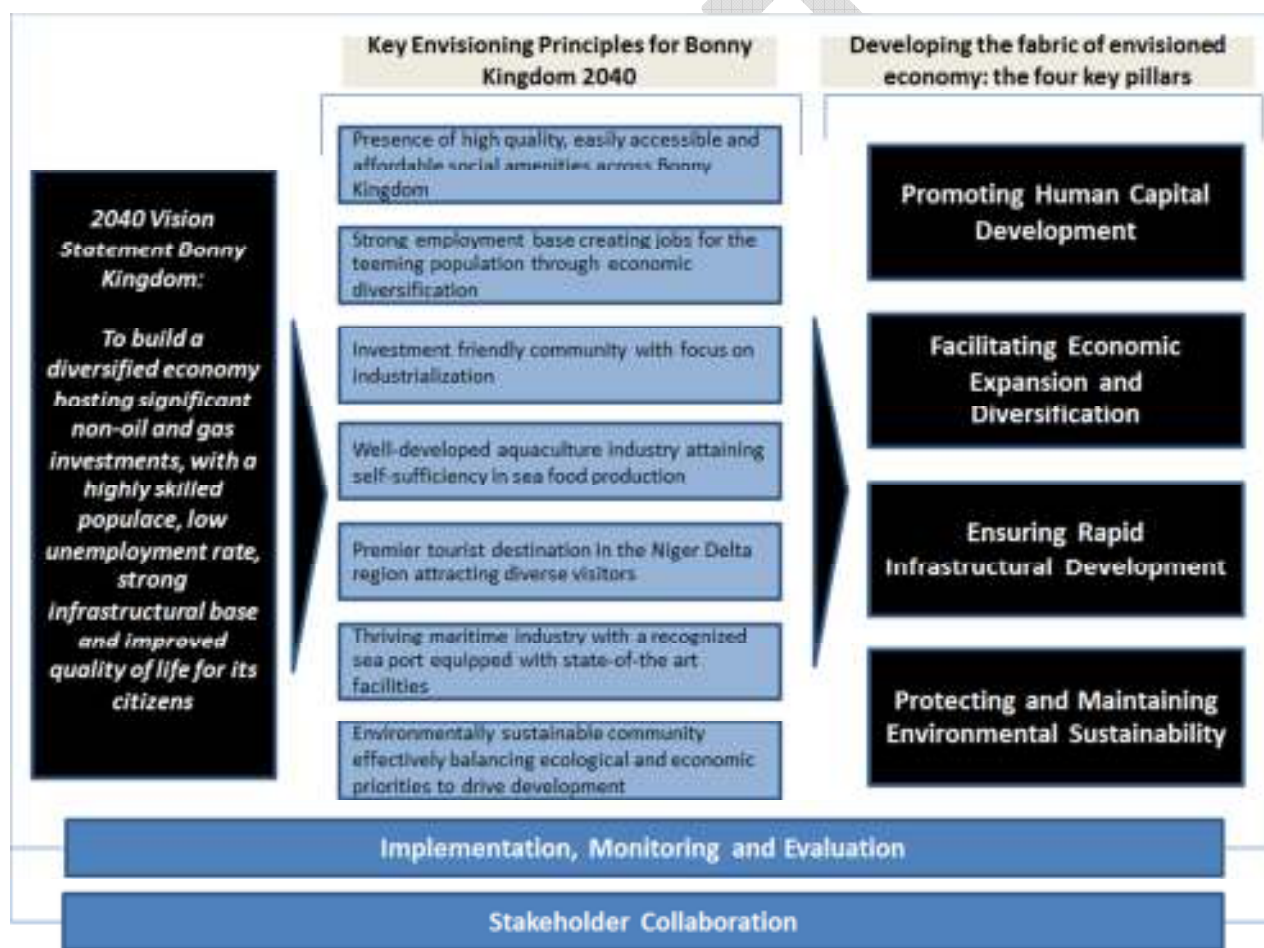


Figure 19: Strategic Framework for Bonny Kingdom Development

4. TRANSLATING THIS VISION INTO ACTION: KEY STRATEGIES

4.1. OVERVIEW AND CONTEXT SETTING

The economic strategy not only supports the actualization of the key elements of the envisioned state for Bonny Kingdom, but also seeks to explore current and emerging opportunities that each focus area offers. No single factor will serve as the sole catalytic force needed to spark the desired economic growth and expansion. This can only be achieved through a combination of complementary developmental forces by various developmental stakeholders. However it is important to note the following about the future development of Bonny Kingdom:

- While it desirable for there to be rapid and equal economic development across all Bonny Kingdom communities, the realization of such a desired goal might not be feasible. It is more practical to cluster development around priority areas where development can be accelerated and further spread out to other parts of the Kingdom
- In support of the above assertion, infrastructural / economic development initiatives will over the short and medium term be concentrated on the urban areas. It is expected that the economic activities generated in the urban areas will trigger associated multiplier effects on other communities in rural areas.

Bonny Vision 2040

To build a diversified economy hosting significant non-oil and gas investments, with a highly skilled populace, strong infrastructural base and improved quality of life for its citizens

- The People of Grand Bonny Kingdom

4.2. STRATEGIC OBJECTIVES / PRIORITIES FOR BONNY KINGDOM GROWTH AND DEVELOPMENT

The four (4) pillars identified above will be further actualized through the following strategic priorities:

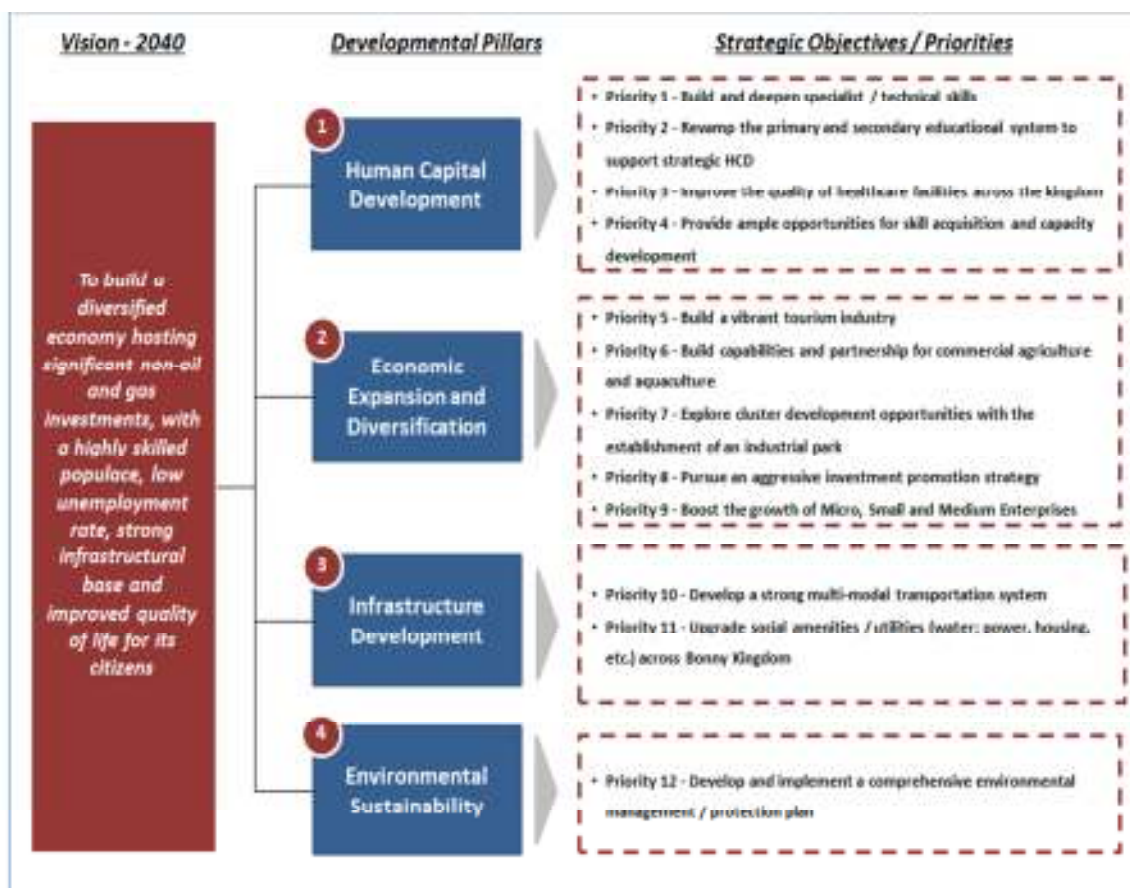


Figure 20: Strategic Priorities

4.3. HUMAN CAPITAL DEVELOPMENT STRATEGY

4.3.1. PRIORITY #1: BUILD AND DEEPEN SPECIALIST / TECHNICAL SKILLS

Technical and Vocational Education & Training (TVET), which was instituted to provide skilled manpower in applied science, engineering technology and commerce to operate, maintain and sustain the nation's economic activities for rapid socioeconomic development. TVET was designed to impart necessary skills and competencies leading to the production of artisans, technicians and technologists who will be enterprising and self-reliant, thus having the greatest potential to generate employment, reduce poverty and eliminate social miscreants. Some of the key challenges across the sector include:

- Technical and Vocational Education and Training
- Low quality of teaching and learning and low staff motivation
- Weak TVET opportunities at the non-formal sector
- Lack of integration of entrepreneurial and information and communication technology (ICT) skills in TVET curricula

As the Bonny economy transits from the primary stage of production to the secondary stage (processing / manufacturing), there will be a greater demand for technical / specialist skills. Formal education is not the only path to human capital development. To up-skill its labour, Bonny will increase its focus on Technical and Vocational Education (TVET). It will leverage its existing and future assets- Bonny Vocational Centre and the Federal Gas Polytechnic respectively in building the technical capacities of its labour force.

While there is a high unemployment rate in the country, statistics show there is likewise huge skills deficit particularly in the oil and Gas sector which is the forte of the Bonny Local Government economy. Like a number of other resource-endowed African countries, Nigeria is actively pursuing its local content policy; however there is an insufficient skills base to optimize this opportunity. It is evident that there will be an upsurge in demand in the Oil and Gas sector in Bonny Island over the coming years given the expansion of the NLNG trains (Train 7 addition).

Key Strategies

- Create Innovative Enterprises and Vocational Institutions in partnership with the private Sector
- Institute wide array of apprenticeship programmes that will ensure access to all youth requiring such training
- Enhance quality and access to tertiary education by expanding and modernising facilities in tertiary institutions to enable them to cope adequately with projected enrolment levels
 - Promote and expand open and distance learning systems in tertiary institutions to expand reach and access
 - Increase the carrying-capacity of existing tertiary institution (BVC)

Proposed Key Projects / Initiatives¹⁴

- Upgrade / expand Bonny Vocational Centre
- Establish a tertiary / full-fledged university on the Island (Federal / State or Private)
- Establish a Federal Polytechnic on Bonny Island

¹⁴ Details on proposed projects / programmes included in the implementation consideration section

4.3.2. PRIORITY #2: REVAMP THE PRIMARY AND SECONDARY EDUCATIONAL SYSTEM TO SUPPORT STRATEGIC HUMAN CAPITAL DEVELOPMENT (HCD)

Education is not only a basic human right but also critical tool / asset for achieving sustainable economic growth and development - therefore, human capacity development facilitated by strong learning systems is central to the attainment of Bonny Kingdom's Vision. Both Federal and State Policy on Education (which encompasses the Universal Basic Education Act) have not achieved the desired results, due to persistent constraints of under-funding, as well as inadequate and poor facilities, among others. The daunting task to expand educational access calls for a massive infrastructural upgrade, including the provision of more schools on an incremental basis, annually (to cater for the expected population growth). These schools must also be fully equipped with laboratories and other facilities, in order to deliver the required quality. The current state Government has an overall vision for the education sector across all LGA's within the state

***to provide free and qualitative education to the entire population of Rivers State and its mission to provide citizens of Rivers State with a standard and good education in partnership with private sectors, parents, and non-governmental organizations and competent teachers in a conducive learning environment.'*¹⁵**

Within the context of the vision statement, the objective of government in this sector is to raise the standard of education in the State from current decay, to a benchmark is comparable and consistent international expectations – achieving this vision will involve the following:

- Training, retraining and reorientation of teachers
- Rural areas to be made more attractive so teachers can accept posting in such schools
- Recruitment of qualified teachers in core subject areas - Mass employment of teachers in all subject areas
- Provision of better incentive for teachers
- Availability of guidance counsellors in schools

¹⁵ Source NLNG Bonny Kingdom Education Support Strategy

- Award of scholarships and bursary - ward of scholarships to deserving and indigent student
- Massive infrastructural development in the education sector - Equipping schools with libraries/laboratories and workshops - increasing the carrying capacity in all educational institutions (primary, secondary, technical and tertiary institutions)

It is important that the overall strategy for the education sector in Bonny closely aligned to this vision.

Goal and Objective for Education

To achieve a future where every Bonny Kingdom household can boast of competent professionals and specialists, it is necessary to increase participation in education to the school - the overall aim will be to ensure all student age population are able to complete a full course of basic education - 12 years of formal education consisting of 3 years of Early Childhood Care Development and Education (ECCDE), 6 years of primary schooling and 3 years of junior secondary schooling. This would be followed by at least 3 years of vocational training (informal/formal education) or senior secondary schooling.

Accordingly, the overall goals / policies related to the provision of educational facilities throughout the LGA are based on a 95% (100% primary and 90% secondary) enrolment rate by 2040. The table below indicates the key focus area across the various levels of education:

S/n	Level	Key Focus
1	Early Childhood Care Development and Education (ECCDE)	<ul style="list-style-type: none"> • Reduce cost of pre-primary education to parents to encourage mass participation • Provide integrated and child friendly centres in at least 50% of public schools • Encourage participation of the private sector and not-for-profit organisations in the delivery of ECCDE to expand access
2	Primary Education	<ul style="list-style-type: none"> • Ensure 100% retention and completion of primary education for both boys and girls • Reduce pupil-teacher ratio • Bridge rural-urban gap in enrolment and school attendance • Ensure completion and facilitate the onward progression of 95% to secondary

S/n	Level	Key Focus
3	Secondary Education	<ul style="list-style-type: none"> • Increase the transition rates of boys and girls from basic education to the post-basic education level • Facilitate the transition from basic education to post basic education of children with special needs such as the mentally and physically challenged
4	Adult and Non-Formal Education	<ul style="list-style-type: none"> • Provide non-formal basic education for adults and youths who never had the opportunity of formal education

Table 15: Areas of focus for education delivery at different levels

The table below indicates the anticipated demand for school places across the whole LGA.

Area or Zone	School Age Population		Primary		Secondary		Total	
	2006	School Age Pop.	Attendance 100%	School Age Pop.	Attendance 95%	School Age Pop. 2040	Attendance	
Bonny and Abalamabie	22,939	34,787	34,787	23,192	22,032	57,979	56,819	
Bonny Edge (Informal) and new finima	5480	45,337	45,337	30,225	28,714	75562	74,051	
Total Bonny Urban	28,419	80,125	80,125	53,416	50,746	133,541	130,870	
Middle Core	10,021	12,770	12,770	8,514	8,088	21,284	20,858	
Outer Core	18,085	17,609	17,609	11,739	11,152	29,348	28,761	
Inner West	4,619	9,529	9,529	6,353	6,035	15,882	15,564	
Outer West	17,146	17,045	17,045	11,364	10,795	28,409	27,841	
Total Others	49,871	56,954	56,954	37,969	36,071	94,923	93,025	
Overall	78,290	137,078	137,078	91,386	86,816	228,464	223,895	

Table 16: Demand for School Places by Area 2040

Source: Consultants Projections.

- The Forecast Attending School Population 2040 is based on an enrolment rate of 100% for primary schools and 95% for secondary schools
- For the purposes of this study, the school age population is the 5 – 15 age group - 60% of projected school age population assumed to be primary school and 40% for secondary schools

Based on the overall goal, it is expected that 98% of the total school age population (223,895) will be enrolled either in primary or secondary school. Based on the anticipated demand for spaces in 2040, it is imperative that a large scale development of educational facilities is embarked upon from the short to the long term. The development of educational facilities will incorporate the construction, expansion and upgrade of existing facilities.

Area Under Consideration	No of Existing Schools		Current school population		Forecast Attending School Population 2040		
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Total
Urban Bonny	16	6	14,153	5,002	80,125	50,746	130,870
Middle Core	7	1	4,991	1,764	12,770	8,088	20,858
Outer Core	5	-	9,006	3,183	17,609	11,152	28,761
Inner West	2	-	2,300	813	9,529	6,035	15,564
Outer West	2	-	8,539	3,018	17,045	10,795	27,841
Total	32	7	38,988	13,779	137,078	86,816	223,894

Table 17: Existing School – Current and Projected Demand for School Places by Area 2040

Due to the grossly inadequacy of the current number of schools across Bonny LGA to serve current and projected student population new schools are proposed across the LGA in the short to long term. Table 18 highlights the number of proposed new schools. All schools are expected to be upgraded as the current standards need to be improved upon.

Some of the proposed new schools will include both Primary and Secondary facilities. Increased demand for school places will be satisfied in the period up to 2040 by the

following phased actions. This Master Plan will capture the number of schools needed to be constructed in the short term only – additional schools to be constructed will depend on the enrolment rate achieved

Area Under Consideration	Number of schools to be upgraded		Number of schools to be built		Total number in the kingdom by 2040	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
Urban Bonny	16	6	64	44	80	50
Middle Core	7	1	5	7	12	8
Outer Core	5	0	12	11	17	11
Inner West	2	0	7	6	9	6
Outer West	2	0	15	10	17	10
Total	32	7	103	78	135	85

Table 18: Proposals Education Facilities 2040

Source: Consultants Forecasts.

Figures are highly indicative and subject to further analysis and available facilities at each education institution

All existing schools will be upgraded / expanded - The total of 32 Primary schools and 7 secondary schools

New constructions could be as many as 103 and 78 primary and secondary schools respectively

Areas	Proposals for Education Facilities (Short Term)
Urban Bonny	<ul style="list-style-type: none"> • The renovation and expansion of 16 existing Primary schools; • The renovation and expansion of 6 existing Secondary schools; • The construction of 4 new Primary schools; • The construction of 4 new Shared Secondary/Primary schools
Middle Core	<ul style="list-style-type: none"> • The renovation and upgrading of 2 existing Primary schools to Shared Secondary/Primary schools; • The renovation and expansion of 5 existing Primary schools • The renovation and expansion of 1 existing Secondary school; • The construction of 2 new Primary schools; • The construction of 3 new Shared Secondary/Primary schools.
Outer Core	<ul style="list-style-type: none"> • The renovation and expansion of 5 existing Primary schools;

Areas	Proposals for Education Facilities (Short Term)
	<ul style="list-style-type: none"> • The construction of 3 new Primary schools; • The construction of 7 new Shared Secondary/Primary schools.
Inner West	<ul style="list-style-type: none"> • The renovation and upgrading of 2 Primary schools to Shared Secondary/Primary schools • The construction of 2 new Primary schools
Outer West	<ul style="list-style-type: none"> • The renovation and expansion of the 2 existing Primary schools • The construction of 4 new Primary schools • The construction of 4 new Shared Secondary/Primary schools

Table 19: Short-Term Proposal for Educational Facilities across the LGA (Within 5 Years)

Note: Short Term Proposals adapted from Master Plan as defined in 2001

The primary level Bonny Local Government has one of the lowest numbers of teachers (only 2.89%) as compared with Eleme, Onyigbo and Omoku. At the Junior Secondary School level, Bonny records only 6.33% and 2.94% at the Senior Secondary School level. There is an urgent need to improve the teacher to student ratio in the short to medium term to adequately cater for the projected student population.

	Semi Urban	Primary		Junior Secondary		Senior Secondary	
		NO.	%	NO.	%	NO.	%
1	Bori	86	8.57	57	10.03	95	13.31
2	Omoku	104	10.36	34	5.98	50	7.00
3.	Ahoda	91	9.07	80	14.08	100	14.00
4.	Abua	8	0.79	28	4.92	19	2.66
5.	Buguma	54	5.38	19	3.34	32	4.48
6	Degema	80	7.97	15	4.64	9	1.26
7	Abonnema	47	4.68	42	7.39	21	2.94
8	Bonny	29	2.89	36	6.33	21	2.94
9	Eleme	156	15.55	92	16.19	20	2.80
10	Isiokpo	50	4.98	44	7.74	62	8.68
11.	Elele	103	10.26	77	13.55	114	15.96

Semi Urban		Primary		Junior Secondary		Senior Secondary	
		NO.	%	NO.	%	NO.	%
12.	Onyigbo	195	19.44	41	7.21	171	16.38
Total		1003		568		714	

Table 20: Teachers in Semi Urban Schools in Rivers State by Local Government

Source: NLNG Education and Community Empowerment Support Strategy (NECESS) For Bonny Island 2013-2017

Key Strategies

Public-Private-Partnerships in formal education shall be pursued as a viable mechanism to improve the effectiveness of our education system in a cost-effective manner, without compromising quality – the key strategies to be embarked upon include:

- Improvement in capacity and quality of existing educational facilities – the focus will be on producing a conducive learning environments via optimization the existing education facilities and building new ones where necessary - every educational institution will be equipped with the necessary infrastructure including access to quality libraries, Information and computing technology units, improved sanitation and hygiene systems, as well as the renovation of dilapidated structures to enable a conducive learning environment for the students.
- Development of adequate and appropriate manpower for the education sector – this will require a thorough assessment of the training needs
 - Embarking on training and re-training of all teachers to update their skills and competence.
- Provision of incentive scheme / packages for to improve welfare of teachers deployed to Bonny Kingdom – this measure shall aid in attracting and retaining teachers deployed to the Kingdom
 - Provision of suitable living accommodation
 - Provision of stipends

- Enforce mechanisms already in place for the implementation of compulsory enrolment and retention of children in primary and junior secondary schools
- Improve the Support System for Senior Secondary School Candidates to better facilitate performance in senior secondary examinations through improved learning systems and incentives
 - Establish / Strengthen Career Advisory Functions in all Secondary Schools - the goal is to help students develop the ambition to pursue post-secondary school education
- Enhance basic literacy and entrepreneurship skills through enhance enrolment and entrepreneurship education. This can be further enhanced via the design of adult education programmes/services
- Institute an Education Management Information Systems (EMIS) for effective planning and management - this requires rigorous and consistent data collection across all educational institutes across the LGA
- Institute a quality assurance system and body for quality control
 - Set up an Education Development and Monitoring Committee to Oversee Teacher Performance to ensure the provision of quality education
- Embark on sustained advocacy and sensitization on the values of education across the community to stimulate enrolment

Proposed Key Projects / Initiatives¹⁶

- Renovation / upgrade of primary schools and secondary schools
- Construction of new model primary schools and secondary schools
- Establishment of an Adult learning Centre
- Upgrade / refurbish Bonny Island Library
- Set up an Education Development and Monitoring Committee to Oversee Teacher Performance
- Education Enlightenment Programme

¹⁶ Details on proposed projects / programmes included in the implementation consideration section

- Develop and incentive scheme / package for teachers

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4.3.3. PRIORITY #3: IMPROVE THE QUALITY OF HEALTHCARE FACILITIES ACROSS THE KINGDOM

The poor healthcare situation in Bonny Kingdom is mainly attributable to various underlying factors, such as inadequate and poorly maintained facilities, very high patient to doctor ratio and inefficient service delivery. Nigeria in general records low Human Development Indicators (HDI) for health (especially for women and children) even within sub-Saharan Africa, and targets on the Millennium Development Goals (MDG) for child mortality, maternal mortality and nutrition are likely to be missed by wide margins. The desired goal for NV20:2020 is to place Nigeria in the HDI ranking of not less than 80 by 2020. These goals are well aligned to the MDGs for health:

- Reduction in the maternal mortality which ranges from 300 per 100,000 live births in the south-west of Nigeria to over 1,200 in the north-east of the country by 75% by 2020. (NDHS, 2008)
- Reduction in under-5 mortality from 189 per 1000 live births (2007, UNICEF) to 75 in 2015 and 50 in 2020
- Reduction in under-5 malnutrition from 53% to less than 20% (NDHS2008) by the year 2015
- Increased life expectancy of Nigerians from 47 years (2007 UNICEF) to 70 years by 2020
- Reduction in HIV/AIDs prevalence from 4.4 percent in 2006 to half by 2015

In Bonny Kingdom, an analysis of existing conditions concluded that there was an inappropriate distribution of facilities in the study area, which led to inadequate services being available to residents of the rural parts of the LGA. The strategic aim of the Master Plan will be to improve provision of quality and affordable healthcare primarily through the renovation / upgrade of existing facilities in the short-term.

To adequately address the lack of access to quality healthcare, particularly for those living in rural communities and other vulnerable groups, one of the strategic thrust shall be to enhance primary health care delivery. Universal access to healthcare would be increased via other mechanisms such as the National Health Insurance Scheme (NHIS) and the National Community Health Insurance, that provides FREE health services to vulnerable groups, including women and children, in all parts of the country.

The feature of the proposals for the Bonny Urban Area is that they are based on improvement and renovation of existing facilities rather than the construction of totally new ones. Facilities in the outer core are presently considerably under provided and new facilities are required to bring provision up to an acceptable standard. For the middle core, all existing healthcare centres are to be upgraded.

Areas or Zones	Type of Facility				Total number of facilities
	Existing		Proposed		
	General Hospital	Health Centre	Upgraded Existing Health Centre	New Health Centre	
Bonny Urban Area	1	2	3	1	4
Middle Core	-	5	5	-	5
Outer Core	-	-	-	3	3
Inner West	-	3	3	-	3
Outer West	-	1	1	1	2
Total	1	11	12	5	17

Table 21: Proposed Health Facilities by Type and Location

Areas	Proposals for Health Facilities (Short Term)
Urban Bonny	<ul style="list-style-type: none"> • The renovation and improvement of the existing General Hospital to include improved clinical facilities and conditions for staff • The renovation of the existing Health Centre including the addition of bed spaces and improved clinical facilities and staff conditions • The construction of a new Health Centre on the Bonny to Abalamabie Corridor • The establishment of adequate accommodation for all medical staff • The establishment of an ambulance service linking the General Hospital with outlying Health Centres

Areas	Proposals for Health Facilities (Short Term)
Middle Core	<ul style="list-style-type: none"> • Upgrading of the existing Health Centre at Burukiri to a Comprehensive Health Centre • General improvements and upgrading of the 4 existing Health Centres at Oloma, reens Iwoma, Dema Abbey, and Banigo
Outer Core	<ul style="list-style-type: none"> • The construction of 3 new Health Centres at Chobiekiri, Nanabie, and Iwokiri.
Inner West	<ul style="list-style-type: none"> • The completion and upgrading of the Health Centre at Kalaibama to a Comprehensive Health Centre; • The general upgrading of the existing but presently non-operational Health Centre at Peterside
Outer West	<ul style="list-style-type: none"> • The completion of the Health Centre at Kuruama: • The construction of a new Health Centre at Iwoma Kuruama

Table 22: Short-Term Proposal for Health Facilities across the LGA (Within 5 Years)

Note: Short Term Proposals adapted from Master Plan as defined in 2001

Key Strategies

In achieving sustainable and affordable healthcare for all by 2040, the following strategic initiatives need to be aggressively implemented:

- Provision of adequate healthcare facilities across the LGA particularly across the rural areas – the focus will be on upgrading existing PHC and constructing new ones across all wards. This will include the provision of the appropriate complement of staff
- Upgrade of secondary health care – comprehensive renovation of the Bonny General Hospital – specialist cover for a minimum of four major disciplines: Surgery, Paediatrics, Medicine, Obstetrics, Gynaecology, etc.
 - Re-equipping of the General Hospital with state-of-the art facilities
- Provision of adequate infrastructure and well maintained equipment through partnership with the private sector
- Development of adequate and appropriate manpower for the health sector – this will require a thorough assessment of the training needs, and the update

of in-service training programmes so as to ensure that health care service providers have the appropriate competences and attitudes

- Embarking on training and re-training of all health personnel such as biomedical engineers, medical specialists, nurses, midwives, laboratory scientists and other care providers to update their skills and competence.
- Provision of incentive scheme / packages for all medical practitioners deployed to Bonny Kingdom – this measure shall aid in attracting and retaining medical practitioners deployed to the Kingdom
 - Provision of suitable living accommodation
 - Provision of stipends
- Strengthening the health information system through the development of a comprehensive health database for the LGA to improve health data and promote research

Proposed Key Projects / Initiatives¹⁷

- Develop and incentive scheme / package for medical practitioners
- Establishment of new Health Centres
- The upgrading of the existing Health Centres to i to a Comprehensive Health Centre
- Refurbishment / upgrade of Bonny General Hospital

¹⁷ Details on proposed projects / programmes included in the implementation consideration section

4.3.4. PRIORITY #4: PROVIDE AMPLE OPPORTUNITIES FOR SKILL ACQUISITION AND CAPACITY DEVELOPMENT FOR THE YOUTHS

The declining quality of education, training and skills acquisition has posed serious impediments to the employability of the labour force in many respects across the entire nation. The issue is particularly critical across the Niger-Delta region due to years of youth restiveness. It is therefore a key priority area to ensure proper engagement of the youth population via the creation of various developmental opportunities. The deficit in educational quality has grossly undermined the competitiveness of the Nigerian labour force in national and global labour markets, making it difficult for qualified Nigerians to access jobs globally, despite the emerging global hunt for talents, especially in the ICT sub-sector. The inability of many of our youth to gain access to global centres of learning excellence for the furtherance of their education has further compounded the issue of unemployment at home¹⁸.

Key Strategies

In an effort to improve youth engagement and productivity across Bonny Kingdom, strategies need to be devised across six key focus areas – these are depicted in the table below:

Key Youth Development Areas	Goals / Objectives
Youth Empowerment	<ul style="list-style-type: none"> • Reduce unemployment rate amongst Bonny Kingdom Youths through job creation • Implement micro-finance schemes to support young entrepreneurs • Establish functional leadership and development centres in all local government areas
Youth, Education and Training	<ul style="list-style-type: none"> • Improve literacy and numeracy amongst youths • Provide training in technical and vocational skills
Youth and Health	Initiate programmes targeting key health challenges among young people such as reproductive health, emotional and mental health: <ul style="list-style-type: none"> • Educate and sensitise the youth on communicable diseases such as • Tuberculosis, Hepatitis, STDs, HIV/AIDs, etc • Reduce the rate of teenage pregnancies and child marriages

¹⁸ Nigeria Vision 20:2020

Key Youth Development Areas	Goals / Objectives
	<ul style="list-style-type: none"> • Sensitise the youth on the illicit use of drugs and its harmful effect on health
Youth and the Environment	Increase awareness on sanitation and pollution <ul style="list-style-type: none"> • Educate and sensitise the youth on the global climate change and how to harness alternative sources of energy
Youth, Leisure, Recreation and Community Service	Create avenues for recreation through leisure: <ul style="list-style-type: none"> • Encourage participation in sports • Establish recreational centres in all communities/ Local Government Areas
Youth Mentoring	<ul style="list-style-type: none"> • Develop and inculcate self-esteem and self-confidence through empowerment programmes amongst the youth • Establish youth mentoring programmes and role modelling

Table 23: Areas of Focus for Youth Development

It is imperative that specific strategies are defined to ensure provision of improved education targeted at improving youth employability – such strategies for enhancing education for employment include:

- Developing a more labour-market relevant curriculum. This requires reviewing the entire school curricula, especially senior secondary and tertiary, and making them employment
- Streamlining the existing skills and entrepreneurs development agencies into a consolidated and collaborate with national and international development organisations (NAPEP, NDDC, UNIDO, etc.), to develop skills and manpower for the productive sectors of the economy
- Assisting job-seekers by enhancing the information efficiency of the labour market and its institutions

Other youth labour driving initiatives will include:

- Developing a functional and effective Youth Empowerment Information System for Bonny Kingdom (closely integrate with the labour directorate of the Local Government) – this will be used for the following:

- Tracking and analysing the economy in terms of youth labour implications,
- Determining future youth training needs,
- Identifying the availability of labour,
- Exploring potential markets and opportunities to leverage
- Providing Accessible credits to the SMEs through the banking system (both commercial banks and microfinance institutions)
- Establishing a private sector driven Entrepreneurship Development programme – this will boost entrepreneurial activities amongst the youth

The key goal will be to facilitate direction intervention schemes designed to stimulate economic activity and alleviate poverty amongst the youth. It is therefore critical a collaborative / concerted effort is adopted in empowering the youth by the critical stakeholders (JIC, Government Regional and international developmental agency, etc.). In addition, some of the youth empowerment programmes being run by the JIC (particularly NLNG) should be sustained and enhanced - some key schemes undertaken by NLNG that are geared to have an impact on youth empowerment across Bonny Kingdom are:

1. NLNG Microcredit Scheme

Provides financial support to its beneficiaries - credit financing and capacity building activities are provided to beneficiaries to promote entrepreneurship and enterprise development. This scheme includes the following disbursement model:

- NLNG Direct Disbursement Model
- Agricultural Credit Guarantee Scheme
- Village Savings/Loans Framework

2. NLNG Youth Empowerment Scheme

NLNG YES is the acronym for the Nigeria LNG Youth Empowerment Scheme; it is a sustainable development initiative of the company specifically targeted at youths

within NLNG Host Communities to make them more economically and socially responsible and self-reliant, via business and vocational skills acquisition through technical and managerial training. The specific objectives of the NLNG YES are:

- To provide vocational /technical skills training for selected unemployed youths
- To expose them to skills required to start, operate and manage their businesses
- To facilitate the acquisition of basic tads for business start-up.
- To stimulate entrepreneurial development and achieve attitude re – orientation among selected youths.

Since its inception in 2004, over 750 youths in 7 annual cycles from various Host Communities have participated in the scheme so far. It also pertinent to note that a good proportion of those who completed the programme have successfully secured employment or set up their own self-sustaining businesses.

3. NLNG Agro Enterprise Development Action (N-AGENDA)

N-AGENDA (NLNG Agro-Enterprise Development Action) is an agriculture-based scheme targeted at empowering farmers and agro-entrepreneurs in NLNG Host Communities. The main objective is to build capacity and provide adequate support to agro entrepreneurs for self-reliance and economic sustainability.

Riding on the successes and lessons learnt during the pilot phase, N-AGENDA launched its full phase in 2009 with a corresponding increase in the number of beneficiaries and participating Host Communities. Currently over 400 farmers and agro-allied entrepreneurs actively participate in the scheme and Nigeria LNG Limited has also increased her support for the beneficiaries in areas of capacity building on modern farming practices, provision of planting materials, fertilizers and support packs.

Proposed Key Projects / Initiatives¹⁹

¹⁹ Details on proposed projects / programmes included in the implementation consideration section

- Develop and implement youth development plan
- Develop youth recreational / sports centre on Bonny Island

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4.4. ECONOMIC EXPANSION STRATEGY

4.4.1. PRIORITY #5: BUILD A VIBRANT TOURISM INDUSTRY

Tourism remains a viable tool for economic regeneration, growth, stability and employment creation. In 2012, one billion people travelled around the world for tourism purposes, resulting in revenue of \$2 trillion from the various activities engaged in by travellers on all trips. Of this figure, only about 52 million tourists came in to Africa (5.2%) with less than \$20 billion earnings.

There are opportunities to build a rich tourism industry in Bonny Kingdom. Bonny Island is currently the most diversified community in the Kingdom, housing people from different countries across the world and across the country- this being a function of NLNG's presence. However, there is major fun or leisure activity available on Bonny Island - also, beyond its rich cultural heritage, sand and beachfront (which is sub-optimally explored), and the Finima Nature park, there are potentials to build a viable eco-tourism centre across the Kingdom.

The tourism industry has the potential to spark the emergence of new businesses as well as strengthen the demand for goods and services produced by existing businesses. The Master Plan contains proposals, such as the establishment of well delineated areas for industrial, residential, open spaces / green areas, which will allow for improvements to the existing areas and making them more acceptable to visitors as well as environmental policies to safeguard the attractive Atlantic coast beaches. Together these and other environmental assets can be exploited to establish a tourism industry, which could over time generate relatively high levels of employment. While Bonny and some of the rural communities, which can establish individual tourism attractions, will benefit from tourism.

It is expected that direct employment in tourism activities will gradually increase to over the plan horizon. Additionally, tourism development will also help to reinforce employment for the range of activities within the service sector in general. The success of the industry will encourage small communities in the provision of leisure

opportunities associated with quality scenery, clean water, beach recreation, traditional activities or ecological areas to become involved and develop facilities for tourists. Eco-tourism has the added advantage of linking environmental protection with income and employment generation, ensuring that those environmental attributes that underpin tourism are maintained to the mutual advantage of all citizens.

The development of a strong tourism base in Bonny Kingdom will be driven by Public Private Partnerships (PPP) anchored on strong institutional support from the State and Local Government and traditional leadership. As a prerequisite to successful development, there is a need to develop a land bank which will be made available to investors. The area identified in the Master Plan is along the Atlantic coast toward the east of the island and comprises some 150 ha of land, which will be isolated from the surrounding land uses and be dedicated to the construction of low-density holiday accommodation / resort. It is anticipated the site will provide no less than 500 in 2040. The overall goal for its tourism industry will be to attract a minimum of 1,000,000 tourism arrivals, and creation of at least 10,000 (direct and indirect) by 2040.

Given the capital costs of building a standard tourist location, it is expected that the tourism industry may not take off until after 2020 - thus making it a medium term to long term project.

Key Strategies

The key strategies for building a successful tourism industry in Bonny Kingdom will be woven around the following:

- Establish a viable portfolio of tourism and leisure offerings that will enjoy visitation and business from both Rivers State and the Niger Delta regional markets (and, in the longer term, nationally and internationally)
- Position Bonny Island as a premier leisure and recreation destination in the Niger Delta region. This will portray Bonny as a “Fun City”, a preferred holiday destination. This will border on Year-round events / festivals, water sports, spa and wellness centre

- Position Bonny as one of the biggest sea foods markets in Nigeria - this will be complemented by the aquaculture strategy
- Strengthen the attractiveness of eco-tourism and nature based tourism assets
- Create a platform for tourism and leisure branding and Bonny Island brand positioning
- Attract a high base of short stay to (2-3 days) travellers in the medium and longer stay tourists in the long-term
- The tourism project will be developed by a Tourism Development Company. The private developer will develop a robust tourism development strategy, develop a strong business case for investment, attract investors to develop facilities and attractions, develop a strong brand identity for Bonny Island positioning and promoting it as a premier tourism destination in Nigeria

Key Imperatives

To make it an attractive / appealing tourist destination, there are certain key elements that need to be put in place. These will spur demand and aid in attracting and retaining tourist patronage. The development of robust attraction packages will not only help attract tourists, but will also encourage visitors to stay beyond a day, spend money and come back to Bonny. The main attractions in Bonny are the beach front, the nature park thus supporting eco-tourism. Accordingly, it is necessary suitable and adequate infrastructure and hospitality resources are made available to support the overall goal

- Infrastructure includes general infrastructure (such as quality of ports, roads and airports, health facilities, telecommunication facilities, security, water supply, sewage / drainage, power supply). Power remains a key strength for Bonny. However, the quality of water transportation is very poor which makes accessibility strenuous and an unpleasant experience.
- Hospitality Resources includes tourist infrastructure such as hotel and accommodation, restaurants, bars, ease of access to destination, excursions, etc. There are a number of hotels in Bonny Island.

To successfully attract the inflow of investors to build Bonny's tourism industry, the following imperatives will need to be put in place:

- Provision of basic infrastructure must be put in place particularly transportation. Connectivity must be made easier, safe and exciting. Accessibility is one of the factors that will make Bonny a very attractive destination
- Land for development must be made available for investors willing to develop the sector
- Security of investments must be guaranteed - while there are unavertable natural disasters, investors need to be certain that investments will not be vandalized by natives in the future
- The local authorities must work with state, regional and national tourism development agencies
- Develop human capital to support the tourism industry

Proposed Key Projects / Initiatives²⁰

- Establishment of a Bonny Kingdom Tourism Development Board
- Establishment of an Eco-Tourism Centre
- Embark on massive land reclamation projects to create / develop harbors and beaches
- Develop a world-class resort type facility (hotel; golf; spa etc.) - Bonny Island
- Establishment of an Arts and Cultural Centre

²⁰ Details on proposed projects / programmes included in the implementation consideration section

4.4.2. PRIORITY #6: BUILD CAPABILITIES AND PARTNERSHIP FOR COMMERCIAL AGRICULTURE AND AQUACULTURE

Artisanal fishing or subsistence agriculture is practiced over large parts of the LGA and it is likely that this will continue. The establishment of co-operatives would be commercially advantageous for these small producers, although it would be difficult to argue that this would greatly affect total numbers wholly employed in agriculture in the future.

AGRICULTURE

There is likely to be competition from a variety of uses for land capable of supporting agriculture. The best agricultural land is formed by the beach ridges, which are presently shared by the urban and industrial activities and where these are likely to be concentrated in the future. It is imperative there is a compromise between competing land uses, defined soil quality and environmental limitations. Before agriculture can be developed as an economic asset more information will be required about the quality of soils available: as incentives should be targeted to areas where development is most likely to succeed. At present agricultural activity is principally at the traditional level and food production remains fairly limited. Only when the process of artisanal agriculture has been strengthened at the village level, ensuring an adequate and varied supply of food to sustain the community, should the sector be considered capable of expanding into commercial agricultural production. Even then there will need to be incentives to encourage the additional efforts required to produce a regular and reliable marketable surplus.

It is estimated that there is up to 9,000 ha of potentially good quality agricultural land in Bonny suitable for commercial production, which is capable of supporting a wide range of crops including:

- Arable Crops: cassava, maize, plantain, cocoyam, beans, peppers, rice and vegetables
- Tree Crops: coconut, oil palm, mango, pawpaw, and cashew

Community groups and landowners may be able to establish cooperative based pilot farm projects similar to the coconut and palm oil and cashew estate outside Bonny or the SPDC demonstration farm. Such pilot schemes would require financial and technical support. Financial support may come from either existing government agricultural schemes or NGO private sector sources. Technical support could be provided through local universities or international charity organisations. Well operated pilot schemes, would be able to demonstrate profitability and act as an example of what could be achieved attracting further interest and investment. Units should be located initially to facilitate ease of access for products and should be in the range of 2 to 4 ha for arable farms and 10 ha for tree crops.

It may also be possible to establish similar pilot schemes for rice growing on the peaty areas within the mangrove swamps. Units of between 5 and 10 ha using the natural hydrological regime (i.e. diurnal flooding with tidal saltwater) but with efficient water control by dykes and good soil management to guide against acidity development could be economically feasible.

The possibilities for livestock farming are extremely limited as a result of the climate and local conditions. However it may be possible to establish a breeding and production programme for some previously indigenous exotic species such as fresh or saltwater crocodiles, which have been successfully bred on farms in similar circumstances. The meat of these animals and their skins are highly valued and make an excellent cash crop, however the expertise involved in rearing and maintaining them is very high. Such activities might be suitably located within the mangrove swamps or along the tidal creeks and inlets. Great caution would be required to avoid their escape and possible reproduction in the wild.

Forestry reserves have been identified and reflect the urgent need to preserve biodiversity. However there is no obvious reason why such areas cannot be worked in a sustainable fashion with logging being matched by replanting and sound management techniques. A minimum size for forest reserves is considered to be in the region of 3,200 ha. And this should be protected from invasive farming techniques, hunting and indiscriminate logging.

There is an increasing acceptance by government at all levels of the need to encourage and support both traditional and commercial agriculture. There are three levels of government involvement, most of which are presently limited in their capacity to implement real development. The various agencies and their responsibilities are listed in Table 24.

Agency	Responsibility
<p><u>Local:</u> Bonny Local Government. Department of Agriculture.</p>	<p>Practical control of all agricultural activities. Responsible for implementation.</p>
<p><u>State:</u> Ministry of Agriculture.</p>	<p>Development of State wide policy.</p>
<p><u>Federal:</u> Federal Mistry of Agriculture. Niger Delta Development Commission (NDDC).</p>	<p>Delta wide responsibility for water development, agriculture and related purposes. Delta wide responsibilities to oversee appropriate but rapid development of the Niger Delta.</p>

Table 24: Agricultural Agencies and their Responsibilities

Going forward, it will be imperative for all these agencies to collaborate and work together to develop the sector. Also, the need to leverage the assistance / technical know-how of International Development Agencies (IDAs) and local and global agricultural institutes.

Key Strategies

The necessary pre-conditions for viable commercial agriculture are as follows:

- Markets must be accessible to ensure that the increased output can be sold;
- Profits must be achievable and compatible with remuneration available elsewhere in the labour market - Realistic awareness of the commercial opportunities

- Clear knowledge of the requirements and sound knowledge of local growing conditions – enhanced farmer training and research capabilities (crop yield; disease control, etc.)
- Good infrastructure facilitating the movement of goods to the available markets – good transportation network
- Financial assistance to the commercial sector to initially stimulate rural development. This may mean working capital will be needed to build up stocks of saleable product and equipment. Further support might involve consumer credit, establishment of specialised storage facilities to preserve production and serve as marketing and distribution points
- Good quality and accessible agricultural extension services

Accordingly the overall agricultural strategy shall be geared towards ensuring the realization of these pre-conditions for commercial agriculture. A viable agricultural sector offers significant opportunities for job creation and reduction of poverty across Bonny Kingdom. A critical pillar for this strategy shall be the provision of support to small scale and rural farmers while sustaining the renewed focus on commercial agriculture – the NLNG Agro-Enterprise Development Action (N-Agenda) is a welcome programme and a right-step towards actualising the agricultural strategy for the Kingdom²¹

²¹ N-Agenda highlighted under the youth empowerment priority sub-section

AQUACULTURE

Aquaculture presents one of the biggest growth opportunities to Bonny Kingdom. Bonny is traditionally a fishing community with fishing constituting the principal occupation of its people. However, the volume of production and employment for the fishing industry has shrunk consistently over the last 10 years due to a number of factors. Research reveals that Bonny presently imports its sea foods from other communities. This portrays insufficient production capacity and volume.

Bonny is strategically positioned along the Bonny Estuary which makes it a great location for the cultivation of commercial fishery. However, the opportunity has been under tapped as Bonny only participates in the Smallholder Producer level of the fisheries value chain. Nigeria has a huge fish production deficit- for a total fish demand of 2.7 million metric tonnes in the country, Nigeria only produces about 800,000 metric tonnes locally while the 1.9 million metric tonnes deficit is imported. A major prerogative of the Ministry of Agriculture is to make Nigeria attain self-sufficiency.

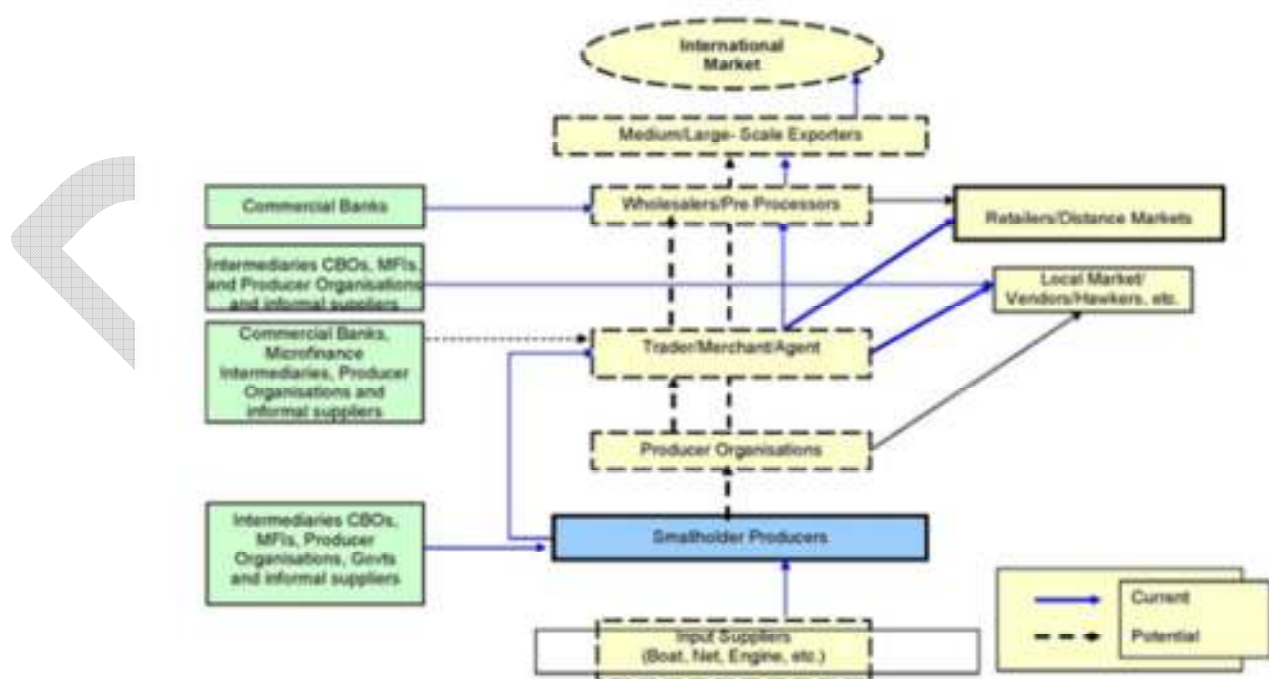


Figure 21: The Fisheries Value Chain

The future of fishing across Bonny Island requires adaptation to changing circumstances and the exploitation of new opportunities. Safeguarding the future is considered to require expanding the industry across three key dimensions:

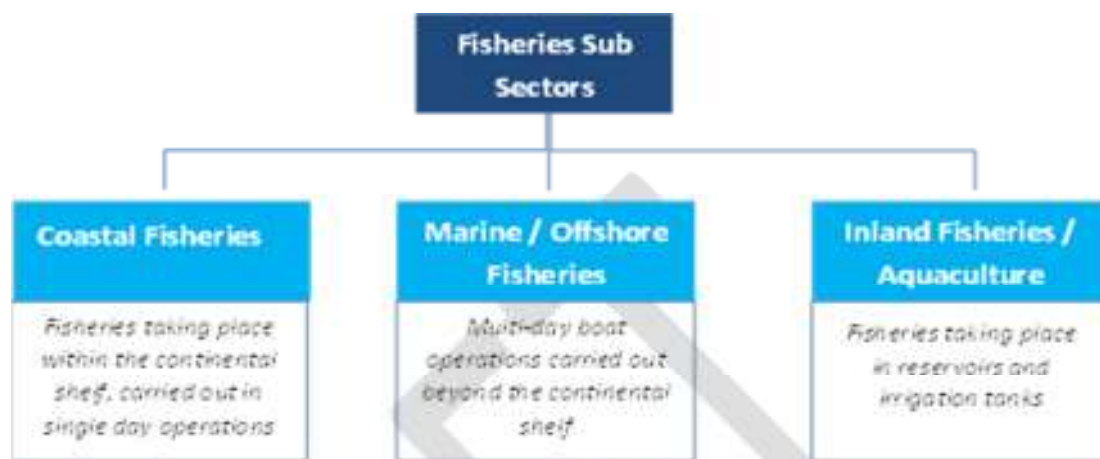


Figure 22: Fisheries Sub-Sectors / Opportunities

Opportunities also exist to re-establish the declining local fisheries through a managed programme of fish re-stocking and farming. This would complement the development of a coastal fishery and provide the market with a wider variety of fish species including exotics such as shrimp.

Coastal Fishing

The development of a major commercial fishery in Bonny is not considered feasible under the prevailing conditions. Under the circumstances emphasis should be placed on developing a moderately low capital-intensive coast artisanal fishery programme in conjunction with fish or shrimp farming and restocking within the tidal creeks and inlets. The establishment of any or all of these programmes will require direct, associated and supportive actions throughout the life of the Master Plan. The establishment of a coastal artisanal fishery programme will require the following conditions:

- Subsidised credit facilities for the purchase of boats and equipment

- Improved facilities for fish landing, handling, packaging, storage and processing
- Facilities for boat, engine and equipment repair
- The development of marketing and distribution networks

The provision of suitable craft and equipment is readily achievable as there are already established boat and canoe building skills available in the region. The immediate requirements relate to the availability of cheap, accessible and reliable financing to support initial purchases and technical support to adapt to the different conditions at sea.

Assistance in terms of finance and technical assistance can come from a number of sources, including:

- Government through training and research programmes, cost subsidisation, reductions on taxes relating to fishing equipment, imposition of taxes on imported fish
- Non-Government Organisations (NGO's) and cooperatives through the establishment of trust funds and micro-credit schemes
- Financial institutions and banks for commercial loans
- Community Development programmes of industries in the Study Area

As an essential prerequisite to making funding available from government, NGO's and other financial institutions will be an indication of project feasibility. Access to funding may be more improved through the establishment of private limited companies with community members as shareholders. Such companies might adopt a cooperative type of company constitution, which would limit the amount of money individuals could remove in profit. This would ensure the availability of financial capital to support the steady development of company assets in terms of boats and equipment.

Marine / Offshore Fishing

This involves deep sea fishing using heavy-duty fishing trawlers – such is a very capital intensive business which requires adequate man-power, skills and experience in order

to make it a profitable venture. In conjunction with the development of both new fisheries and farming there is an identifiable need to manage the fisheries to the benefit of all parties. Local interests must begin to advise both state and federal authorities of the need for close seasons for various fish varieties and even catch limits and net size controls where these are relevant. Agreed fishing regulation should be taken into consideration. The principal requirements for encouraging growth in the industry include:

- Targeted credit assistance through organised groups or co-operatives to purchase suitable equipment (trawlers, boats, engines, nets and other gear)
- Improved processing and cold store facilities
- Improved and dedicated marketing and transport facilities to supply regional markets
- Availability of technical assistance and vocational training

Overall, this is seen as a way of reducing over fishing in the creek areas as well increasing catches and the developing speciality high value items such as shrimp. Investment is likely to be slow in materialising and the growth in the industry therefore is unlikely to be spectacular in the short term. As a result it is considered the significant period of growth in fishing, particularly fish farming will occur in the long term – 2025 and beyond

Inland Fisheries / Aquaculture

There are two specific opportunities available to develop fish culture or farming in the areas within and around Bonny. These are:

- The construction of ponds on the tidal coastal swamps
- The establishment of containment areas or cages within the tidal creeks and inlets

Tidal swamps comprise some 59,000 ha of the study area and are inundated daily which enormous quantities of water. Site selection is dependent upon local conditions

as, regardless of technical suitability issues relating to access and security limit the amount of optimum locations. There are three areas involving the culture of finfish, shrimp, oyster and periwinkle should be concentrated and these are:

- The Fakpa-Otokolomabie Axis located in the Outer Core between Oloma Creek and Otokolomabie Creek
- Eferewari located in the north of the Outer Core on the Opobo Channel
- The Kalaibiyama-Kuruama Axis in the Outer West area

As with the development of artisanal coastal fishing there are a number of pre-requisites to establishing fish farming, they would include:

- Available finance at competitive rates
- Storage facilities
- Distribution networks and improved transport links with markets
- Strengthening the skill base

The processes involved in establishing such enterprises are similar to those suggested for the artisanal programmes: that is through the establishment of limited companies operating as cooperatives. In certain cases it may be possible that village groups or families could form the basis for such enterprises.

Sites for speciality activities such as shrimp farming are more limited. Potential exists where adequate amounts of clean seawater can be obtained and space is available to construct safe and secure ponds. Sites close to Lighthouse village offer some promise although the areas around both Fakpa and Eferewari are also suitable. Farming shrimp does however have more exacting and essential requirements including

- Specialist skills; particularly strong in Malaysia and the Philippines
- High protein foods not presently available locally and including Artemia eggs which are only obtainable from South East Asia



Figure 23: Location of Area for Fish Farming

Key Aquaculture Strategy

- **Focus on Large-Scale Fishery**

The aquaculture strategy focuses not only on helping Bonny Kingdom attain self-sufficiency but more on making it an exporter of aquaculture foods. This presupposes the development of large-scale commercial / industrial fisheries capacity. Two levers will be utilised in actualizing this strategy: Wild / Capture Fisheries and Aquaculture / Farm Fishing. Capture fisheries will be operated at two levels: near-shore and inland fisheries, and highly industrialised capital-intensive fisheries, which generally operates in deep water

In the short term, focus will be on strengthening the capacity of local smallholders through enterprise and infrastructural support. Within this period, effort will be on re-organizing the fisheries industry and making it attractive to internal and external investors

- **Set up A Fisheries Investment and Management Company**

The rationale for setting up this institution is to strengthen the fisheries sector in Bonny Kingdom and help mop up larger profits along the fisheries value chain. The institution will become a guaranteed off taker for fish produced across the kingdom (to required quality standards). The institution in off-taking this supply will work on promoting the products to large-scale, intermediate and small-scale buyers across the country. Profits generated by the company will be re-invested back into business to enhance growth. This will help keep the profits in Bonny Kingdom. The company will be headed by experienced professionals who will carry out detailed feasibility studies, develop business plans and source funding for start-up as well as continuous expansion of the business. It is expected that Bonny Kingdom will be able to attract investors to its aquaculture industry in the future. However, the work of the Fisheries Company will go a long way in making the industry attractive at such a time. Also, with such an institution, Bonny Kingdom can hold stakes / shares in some of the investments that will come into the Island in the area of aquaculture. The company will focus on delivering the following benefits:

- Ensure fair and competitive farm gate prices and establish linkage between farmers and the markets - especially domestic and regional thus increasing income for small holders and their families
 - Significantly improve fishers and fish farmers' access to credit
 - Increase productivity by providing access to best practice research and high quality input
 - Expand the fisheries industry pie for Bonny Kingdom by creating an attractive investment opportunity for future investors
 - Provide more sophisticated infrastructure such as cold storage and processing facilities, thus promoting longer shelf life of fisheries products
 - Develop and strengthen fishers associations and cooperatives
 - Facilitate the improvement in the quality of fish production across the Kingdom thus enhancing market attractiveness
 - Work with key stakeholders in the provision of adequate fisheries related infrastructure
 - Attract support from international development agencies in building Bonny's fisheries sector
- Develop supporting infrastructure for fisheries and aquaculture
There is poor quality of facilities for fish landing across the Kingdom. There is a need to improve the equipment utilized by fishers in the Kingdom. While the cost of large-scale processing, and creation of storage facilities may be prohibitive to individual fishers, centralized equipment will be provided which will be accessible to the community for use.

Proposed Key Projects / Initiatives²²

- Set up a company to invest in and build a profitable fisheries sector in Bonny
- Establish smallholder producer associations and cooperatives
- Build a fish landing jetty / centre and provide improved facilities for sorting / handling /packing of fish at landing centres

²² Details on proposed projects / programmes included in the implementation consideration section

- Set up a fish processing plant with cold storage facilities
- Implement a fisher financing scheme which will be made accessible across the Kingdom to enable purchase of improved fishing equipment and working capital
- Establish working relationship with major IDAs and private investors focused on fisheries development on the continent
- Work with in carrying comprehensive surveys on fisheries and aquatic resources to provide an accurate basis for fish / fish habitat assessment, planning, and management
- Deepen research capability to facilitate discovery and optimum utilization of Bonny Kingdom's fisheries resources
- Develop and deploy training programmes for all fishing smallholders across the kingdom
- Expand Bonny Kingdom's capacity for boat production

4.4.3. PRIORITY #7: EXPLORE CLUSTER DEVELOPMENT OPPORTUNITIES WITH THE ESTABLISHMENT OF AN INDUSTRIAL PARK

Industrial park development is one of the major initiatives which will help open up the Bonny economy for new investments. A specific / designated area will be zoned for industrial activity, and equipped with power, roads, and utility services to facilitate the desired industrial growth. Infrastructure to be provided at the park will include:

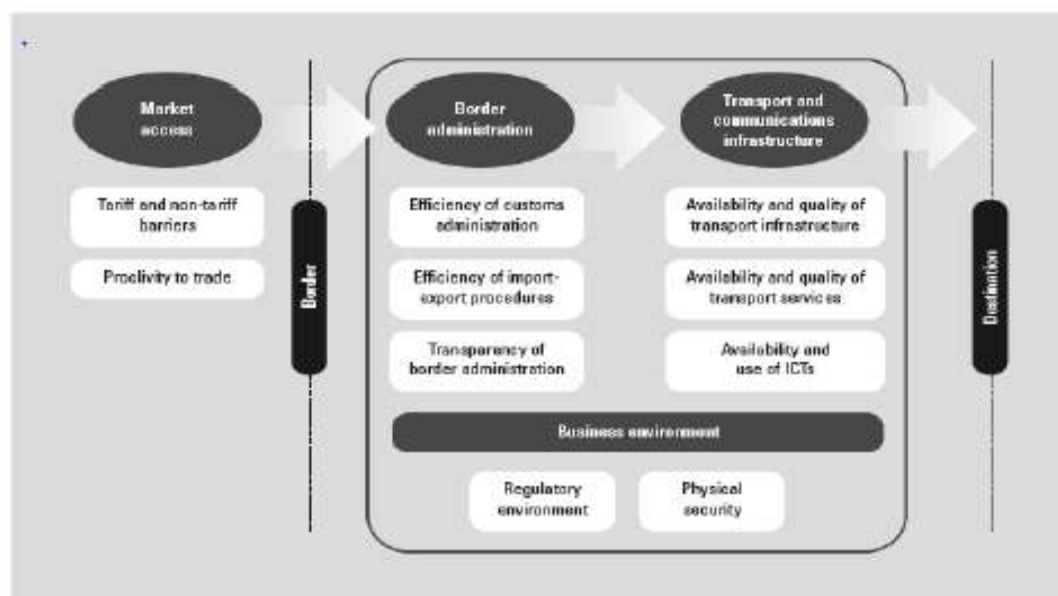
- Developed Land/Plot
- Water Distribution
- Sewerage Collection and Treatment
- Internal Roads
- Electricity
- Communication Network
- Effluent Treatment and Disposal Facilities for treated effluents
- Any other Service Required

The industrial park is a is to provide special policy incentives and infrastructure in the specified geographic location to firms that can attract foreign direct investment, create jobs, and export to markets within or beyond Nigeria. Necessary infrastructure including roads, high-power electric supplies (often including three-phase power), railroad sidings, large-volume water supplies, port facilities and communications architecture. Providing such strong infrastructural base will help reduce per-business expense of successful infrastructure.

The development of an industrial park is one of the key drives to shift Bonny's economy out of traditional agriculture (including aquaculture). The industries attracted to the industrial zone will be aligned to the community's comparative advantage, endowments and strengths. It will also be backed by strategic infrastructure to support the target industries. The industrial zone will be managed by a private entity which can bring to bear deep expertise and having the requisite capacity to execute- financial, technical, and track record.

While there are various usage options for the industrial park, focus will be more on setting up a park whose users are gas-dependent industries. The Bonny Industrial Park

will focus on attracting companies involved in such activities as petrochemicals, fertilizer production, plastics production and processing, metals fabrication, etc. This strategy in line with Nigeria’s efforts to become the regional hub for gas-based industries.



Source: Lawrence et al., 2006.

Figure 24: Trade Facilitation Framework

Source: The Global Enabling Trade Report 2008

Key Success Factors

To successfully set up the industrial park, the following key success factors must be put in place:

- **Strong Government Backing:** The support of the three levels of government (Federal, State and Local) is necessary to create an enabling business environment for new investors in Bonny Kingdom and remove business barriers.
- **Creation of Compelling Incentives:** Attractive incentives must be put in place to attract entrance of investments / partners into the industrial park

- **Public-Private Partnership:** A privately-owned, managed, and operated should be encouraged. But they could start as public-private partnerships, with public provision of off-site infrastructure such as roads and public-private funding of on-site facilities. Governments can provide direct financial support or guarantees to build infrastructure and facilities in the zone
- **Secure Gas Availability:** For the promotion of a gas-based industrial park, it is important that gas be available for potential investors. NLNG must indicate willingness to supply gas (at global prices) to prospective investors seeking to establish their companies on the Island. However, the forecast quantity demanded must make for a commercially viable level of demand

Proposed Key Projects / Initiatives²³

- Develop industrial zone / park on cluster – gas-based industries
- Develop sea-port at industrial park site
- Construction of an embedded thermal power plant – 100MW
- Develop gas-based industries

²³ Details on proposed projects / programmes included in the implementation consideration section

4.4.4. PRIORITY #8: PURSUE AN AGGRESSIVE INVESTMENT PROMOTION STRATEGY

The economic diversification drive of Bonny Kingdom's will be hinged on the attraction of investments across various sectors. Accordingly, it shall be critical to embark on strategic promotion of key assets / investment opportunities to a myriad of potential investors within and beyond Nigeria (foreign and local investors). The realization of the developmental aspirations of Bonny shall require the attraction of viable investments across various critical sectors capable of spurring the much desired growth – it is expected such investments will stimulate economic activity, job creation and ultimately wealth creation across Bonny Kingdom. Bonny needs to attract new investments into the area to create job opportunities for its teeming workforce, and help achieve further industrialization.

Accordingly, a strategy for engaging / attracting investments into Bonny Kingdom will need to be clearly defined. Investment promotion will be woven around the priority sectors identified for development. These sectors will be capable of promoting wealth creation by having a high positive impact (multiplier effect) on the local economy. For Bonny Kingdom, such sectors include but not limited to:

- Tourism
- Agriculture and Aquaculture
- Gas-Based Industries - petrochemicals, Fertilizers, etc.
- Infrastructure
- Transportation

To successfully drive the investment promotion strategy, it is imperative that a body is tasked with the role of defining and executing such a strategy. To this end, the Bonny Kingdom Foundation²⁴ will be saddled with the role of championing the Kingdom's investment drive. In carrying out this role, the Foundation shall engage or work closely with other relevant national and regional agencies. Another key aspect will be the marketing of Bonny Kingdom as a premier investment destination – in-depth marketing communication shall be developed showcase Bonny Kingdom's strategic investment opportunities and investor value propositions (tailored to each stakeholder group).

²⁴ Details of the Bonny Kingdom Foundation are contained in the Implementation Consideration section

In attracting investments to Bonny Kingdom, the Foundation shall partner with a broad base of stakeholders – such stakeholders will include the Nigerian Investment Promotion Commission (NIPC), Nigeria Export Processing Zones Authority (NEPZA), Niger Delta Development Commission (NDDC), the Rivers State Government and the Organized Private Sector (OPS). It will also work with international organizations that possess requisite investment promotion expertise such as the United Nations Industrial Development Organization (UNIDO) and the United Nations Conference of Trade and Development (UNCTAD).

Key Strategies

The overall goal will be to encourage massive investment across various sectors in Bonny – this will require massive investments in infrastructure and human capital in order to create an enabling environment for domestic and private investment. The key strategic initiatives to be embarked upon will include:

- Investing massively in Bonny Kingdom infrastructural base – road network, power, transportation, etc. to attract investments
- Projecting Bonny Kingdom to investors as the preferred investment destination in the Niger Delta region, and thus attract new medium and large scale investments into the area over the planning period
 - Formulation of a investment promotion strategy
 - Identification, aggregation and articulation of investment opportunities available in Bonny Kingdom\
 - Development and deployment of communication and promotional tools / materials
- Exploring possible investment opportunities across Bonny Kingdom and sharing potential benefits / returns on investment
 - Articulation of value propositions for prospective investors through the creation of compelling incentives
 - Organization of land parcels which can be purchased or leased by investors

- Pro-active targeting potential strategic investors

Key Imperatives

- Address the onerous process of obtaining land for commercial purposes
- Presence of adequate and efficient infrastructure – transportation network, utilities, etc.
- Availability of a skilled workforce, local suppliers and resources,
- Minimisation of barriers to business entry / operations

Proposed Key Projects / Initiatives²⁵

- Establishment of the proposed Bonny Kingdom Foundation
- Development of Bonny Kingdom Investment / Marketing Brochure
- Launch (formally) the updated Bonny Kingdom Master Plan

²⁵ Details on proposed projects / programmes included in the implementation consideration section

4.4.5. PRIORITY #9: BOOST THE GROWTH OF MICRO, SMALL AND MEDIUM ENTERPRISES

In an effort to stimulate job creation across the Kingdom, it is imperative that Small and Medium Scale Enterprises are adequately empowered across Bonny Kingdom – the SME's are expected to be the engine of growth and key employer of labour as Bonny transits from an economic base of primary production to a secondary production base.

The overall strategy in this regards will be geared towards the facilitation of Light Industries development across Bonny Kingdom. To provide the opportunity and stimulus needed to establish and develop a light industrial base in Bonny is one of the main objectives of the Master Plan to assist diversification away from traditional activities. Light industrial activities generally occur in areas of population concentration and it is expected therefore that the future (medium term) developments will occur in Bonny and New Finima. A number of small sites up to half a hectare have been designated in both places in order to stimulate the growth of these important activities. It is essential that some form of central business advisory service is available to assist start-up situations in order to maximize the survival rate of new ventures in the early years of development. It is envisaged that the range of activities might be expanded beyond those referred to previously to include, for example: more sophisticated metalworking and machining, plastics processing, conversion of paper and board, furniture making, etc.

It is anticipated that the numbers employed in light industrial activities will increase throughout the life of the Master Plan with an expected level of significant jobs created by 2040. Accordingly, a major thrust in the medium term will be to encourage cash flow consideration over collateral in SME lending, so that a larger percentage of business-owners, entrepreneurs and new entrants can benefit from the Micro-credit Fund. Some form of guarantee fund to provide alternative funding sources for small businesses and farmers

Key Strategies

The overall success of growing and empowering SMEs is the availability and accessibility to funds - consequently, in order to provide adequate access to micro-credit by the year 2020 and ensure that the citizens actualise the benefits and poverty is reduced to the minimum, the following strategic initiatives must be executed:

- Accessible credits to the SMEs through the banking system (both commercial banks and microfinance institutions)
- Develop a Micro-finance Fund to enhance the provision of cheaper funds at subsidized interest rates to borrowers
- Promote simplified credit administration to ensure viable disbursement of funds to qualified applicants
- Enhance accessibility to micro finance institutions by ensuring their fast spread across the LGA.
- Promote capacity building for micro-entrepreneurs, such as the facilitation of training, mentoring, monitoring and regulation. Also develop microfinance support infrastructure elements and facilitate good corporate governance practices and standards in SMEs, in order to give confidence to financiers.

Proposed Key Projects / Initiatives²⁶

- Establishment of an SME Fund
- Establishment of light industries to stimulate job creation
- Construction of new markets and upgrade of existing markets

²⁶ Details on proposed projects / programmes included in the implementation consideration section

4.5. INFRASTRUCTURAL DEVELOPMENT STRATEGY

4.5.1. PRIORITY #10: DEVELOP A STRONG MULTI-MODAL TRANSPORTATION SYSTEM

Currently, there is heavy dependence on water transportation for commuters and haulage of products – raw, processed and finished – particularly from Port-Harcourt to Bonny. This is due to the absence of a link road linking Bonny Island to mainland Port-Harcourt – the commercial nerve centre of the south-south geo-political zone. Going forward, an inter-modal transportation network effectively creating synergies and viable accessibility options to the Kingdom is to be developed. An efficient transportation network is one of the critical pillars upon which the overall growth and development of the Kingdom is to be hinged upon.

To this end, concerted efforts will be made to encourage investments in other means of transportation in order to ensure effective transportation of commuters and goods. The overall goal will be for Bonny Kingdom to create an integrated and sustainable transport system that will be safe, reliable and cost efficient. The transport system will incorporate different modes of transportation in order to adequately convey necessary materials - inputs and resources - that are required by primary industry, manufacturing industry and market as required and also create viable avenues to export such in either a raw or processed state.

Towards achieving a sustainable transportation sector, effective policies and programmes will be put in place - with the active participation of both the public and private sector - to adequately cater for the special needs of Bonny Kingdom - linking of Bonny Island to mainland Port-Harcourt; creating a ring-road to serve /connect other communities within the LGA; construction of jetties / quays / seaports for an industrial complex; facilitate inter-modal road transportation network; aviation facilities to handle cargo and serve the tourism sector.

The transport surveys carried out in 2001 indicated that significant numbers of people regularly commute from Bonny to their places of work in Port Harcourt on either a daily or weekly basis. It is estimated that these correspond to about 1,500 persons. Employment growth in the provision of these transport services will be closely

correlated to the growth in population. The increases in commuting from Bonny to Port Harcourt or elsewhere will be directly dependent on the following factors:

- The availability and quality of employment in Bonny
- The availability and differential rates of pay for employment elsewhere
- Improved transport cost, conditions and facilities.

Overall Transport Strategy

- Integrating transportation with local environment with the capability of moving people and goods safely - (road, aviation and maritime)
- Improving public transport services in both urban and rural areas
- Improving transport safety – reducing number of fatalities
- Developing the required institutional capacity to deliver on transport mandates, while creating and strengthening relationships with crucial stakeholders and role-players
- Attaining a modal and complementary shift from water to road transportation through integrated transport networks

Within the planning horizon, the three viable means of transportation will be road, water and air.

Road Transportation

There is already an established public road transport system operating in Bonny, but it is unconventional, does not serve all members or areas of the community equally. Public road transport is presently dominated by the use of the motorcycle taxi, which is cheap and convenient but responsible for chaotic road conditions and restricted in its area and type of operation. It is not capable for example of carrying heavy loads, is difficult for the old and disabled to use and cannot access difficult terrain. There is a clear need to provide a regular scheduled public bus service for operation within those parts of the LGA which have access to the road network.

Key Strategies

In the short to medium-term however, the transport strategy will concentrate on the following:

- Establishing and protecting a corridor for the Port Harcourt Link Road;
- Developing the Bodo – Bonny Link road (inclusive of Bonny ring road)
- Providing public road transport for goods in rural communities across the Kingdom
- Introducing traffic management system to manage the anticipated influx from the development of the link road
- Improving the following:
 - quality of the road network in the urban areas
 - pedestrian facilities throughout the LGA
 - access between the villages of the Inner Core
 - public transport

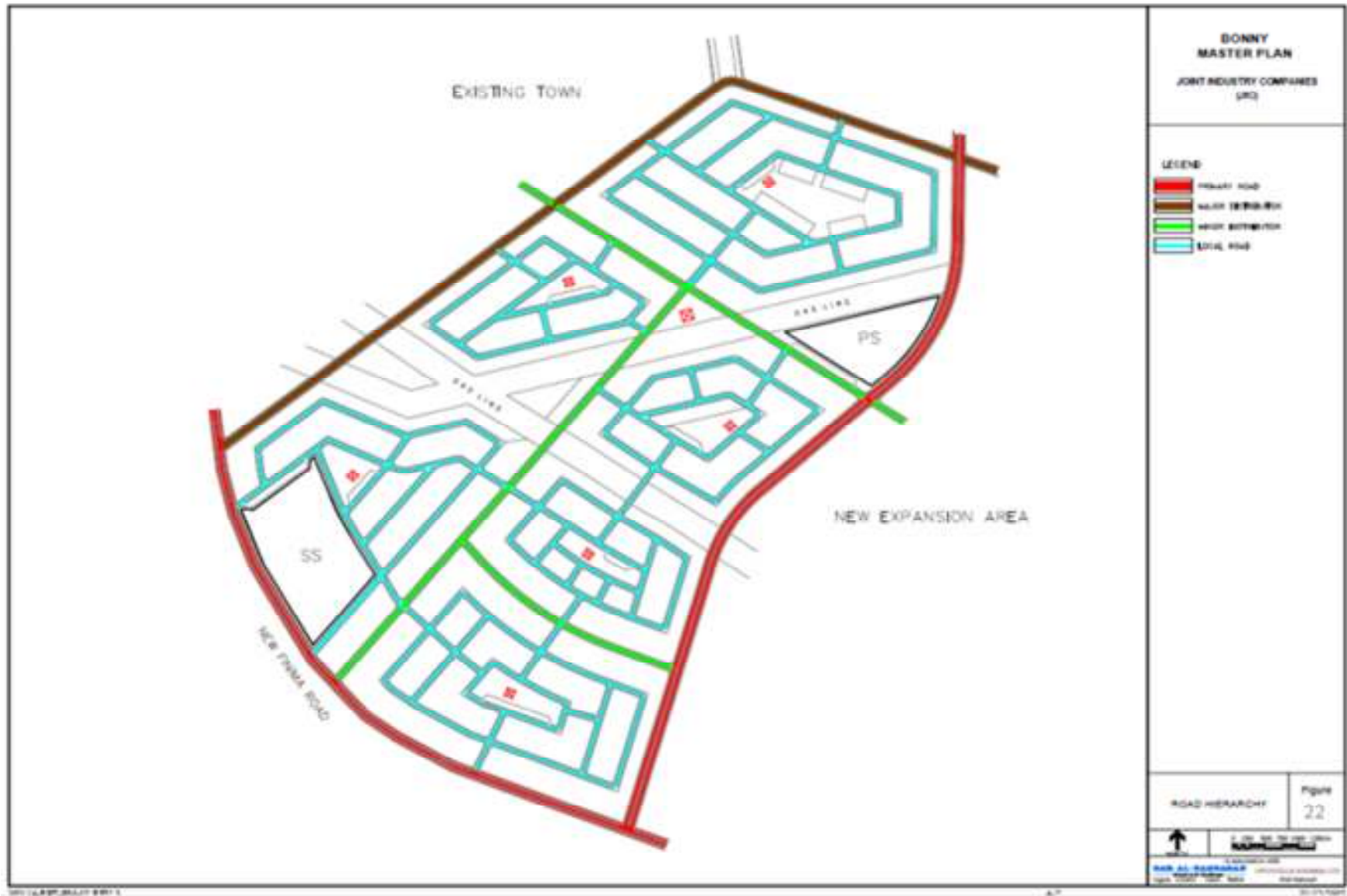


Figure 25: Road Hierarchy

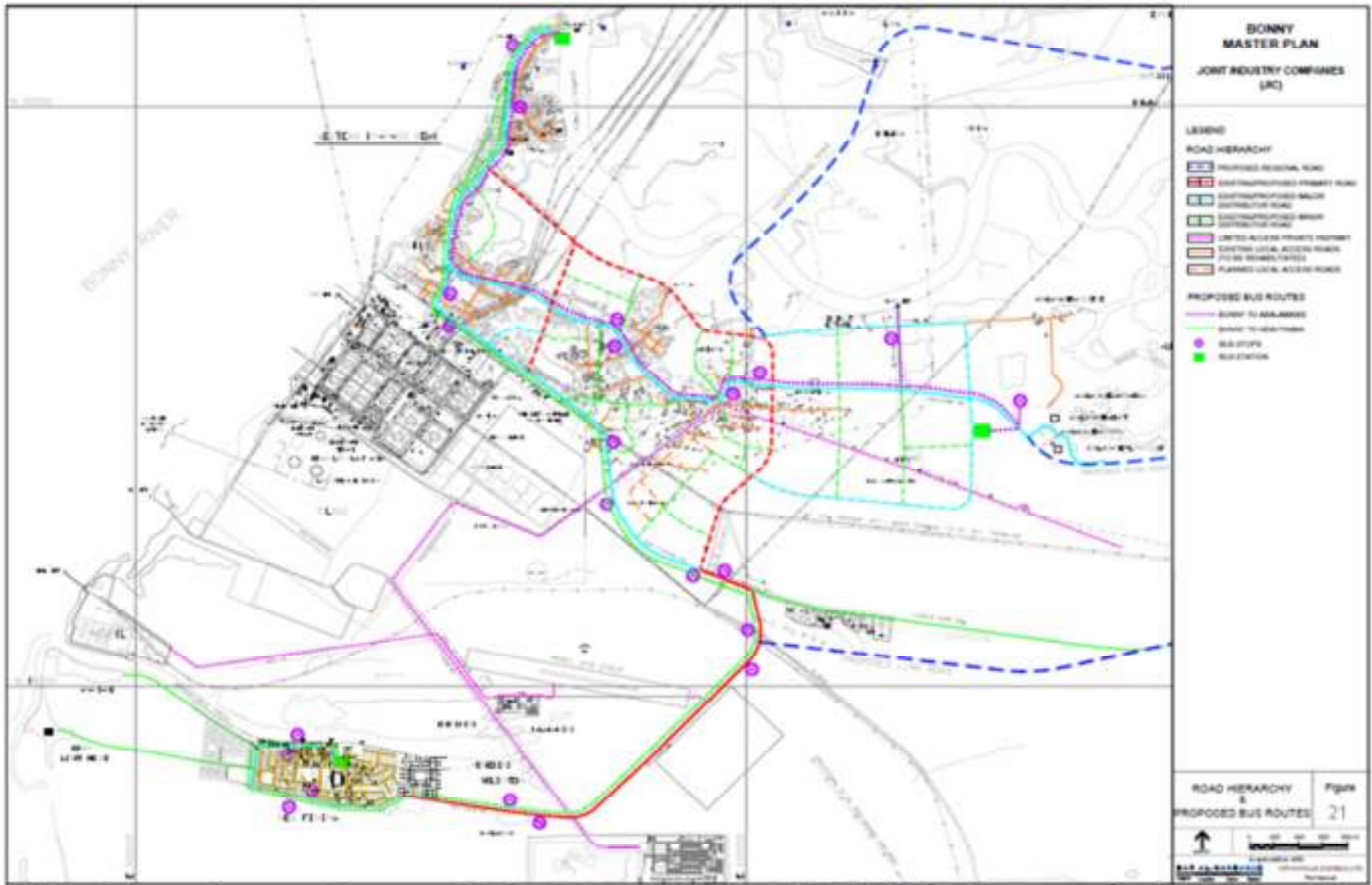


Figure 26: Road Hierarchy and Proposed Bus Route

Water Transportation

This mode of transportation is characterized by inefficiencies due to the poor state of water transport infrastructure; weak regulatory environment; the high cost of hiring and maintaining boats / jetties, etc. it is imperative that this mode of transportation is complemented by other viable means and enhanced to improve overall service delivery and safety.

Key Strategies

- Modernize /improve and increase boat / ferry operations – this will involve the construction of new jetties – they will include such facilities as:
 - A dedicated passenger quay capable of safe use at all stages of the tide
 - A goods quay capable of accommodating coastal vessels of up to 1,000 tonnes having a maximum draft of some 4.3 meters
 - Cranes and other equipment capable of the safe lifting of a 20 tonne container as well as loose cargoes
 - A dredged approach channel to accommodate the coastal vessels of not less than 5.5 meters in depth;
 - An area for circulation, parking of cars and goods vehicles and storage buildings or commercial offices;
 - A clear system of approach roads and an on-site circulation system.

The proposed improvements to the various jetties would enable the delivery of cargo and other goods to be made more easily throughout those areas of the LGA accessible from the main jetties and to a lesser extent from those within the Inner Core. The need for the new jetty is based on satisfying the following requirements:

- Improving operating and safety conditions for passengers
- Providing a goods facility of sufficient size to allow direct deliveries of material without the need to tranship into smaller boats at Port Harcourt
- Reducing congestion in the area around the jetty and improve safety for all users
- Increasing the value of presently unused swampland

There is a need for safer boats to operate between Bonny and Port Harcourt and for this service to be regular, reliable and economical. A new quay constructed to a high standard and capable of dealing with both goods and passenger traffic should be established on reclaimed land to the south of the present Admiralty Jetty.

It should be noted that public transport does not easily fall into any specific area of responsibility. The services described above should be operated by the private sector charging market rate fares. Fares could be regulated and compensation paid to any operator if the state government considered social considerations required it. In order to encourage a private sector operator to commence the services described an assessment must first be made of the requirements of individual operations in terms of the equipment required, regularity of service and rates to be charged. Secondly the operator must be reassured of the potential profit and security and should be offered a monopoly or concession over a determined period of time.

Air Transportation

The transport strategy for air transportation is focused on the long term after key improvements have been registered in the road and water transportation network.

Key Strategies

- Completing / upgrading the Bonny Kingdom airstrip – terminal building, expanded run-ways to accommodate mid-sized jets, air transport facilities (radars; control towers, cargo handling unit etc.)
- Seeking strategic partnerships with relevant private and public agencies for air transportation
- Creating of adequate link roads to the air strip

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4.5.2. PRIORITY #11: UPGRADE SOCIAL AMENITIES / UTILITIES (WATER; POWER, HOUSING, ETC.) ACROSS BONNY KINGDOM

Similar to other communities, Bonny Kingdom is not immune to the dearth of infrastructure . As highlighted in the 2009/2010 Global Competitiveness Report, the biggest challenge to doing business in Nigeria today is the state of its socio-economic infrastructure, including transport, power, telecommunications, ICT, and water. The current infrastructure base is grossly inadequate in capacity and quality to cater for the anticipated population and economic growth.

Rapid investments various areas are required to urgently redress the situation. Going forward, the government, working closely with the private sector, will focus on building a modern, efficient and effective infrastructure network, while taking the necessary steps to protect the environment. It is expected that the build up in infrastructure capacity will be driven mainly by private capital through Private-Public Partnership (PPP) arrangements.

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Power Supply and Distribution

The Bonny Utility Company has largely been successful in the distribution of power generated by NLNG and Shell across Bonny Island. However, the hinterlands and other sections of the Kingdom still rely on diesel powered generators to meet their power needs – such reliance is expensive and has adverse effects on the environment (pollution). With the key initiatives defined in the plan, the power demand across Bonny kingdom is projected to increase significantly based on the growth of the local economy

	2015	2020	2025	2030	2035	2040
Urban Bonny and Abalamabie	11.53	18.31	34	41.9	59.29	84.33
New Finima	2.8	5.71	16	22.18	34.16	52.34
Bonny Edge and Contractors	1.5	2.25	5	8.39	11.82	13.6
Bonny Urban Sub Total	15.83	26.27	55	72.27	105.27	150.27
Middle Core	2.02	2.95	3.31	5.14	7.99	12.41
Outer Core	2.02	2.61	3.85	5.98	9.29	14.43
Inner West	0.4	0.55	0.69	1.08	1.68	2.6
Outer West	1.14	1.38	2.13	3.3	5.13	7.98
Rural Areas Total	5.58	7.49	9.98	15.51	24.09	37.42
Total Power Demand Forecast (MW)	21.41	33.76	64.98	87.78	129.36	187.69

Table 25: Projected Power Demand 2040s

It is therefore imperative that that adequate provisions are made to ensure ample power supply and distribution network to all parts of the Kingdom.

As expected, electricity will be private-sector driven and investment in the sector will only be made on a purely commercial basis with the Government providing the legal and regulatory policy / oversight. Notwithstanding, adequate provision shall be made to ensure that the entire population of the Kingdom has access to stable / reliable power within the planning horizon.

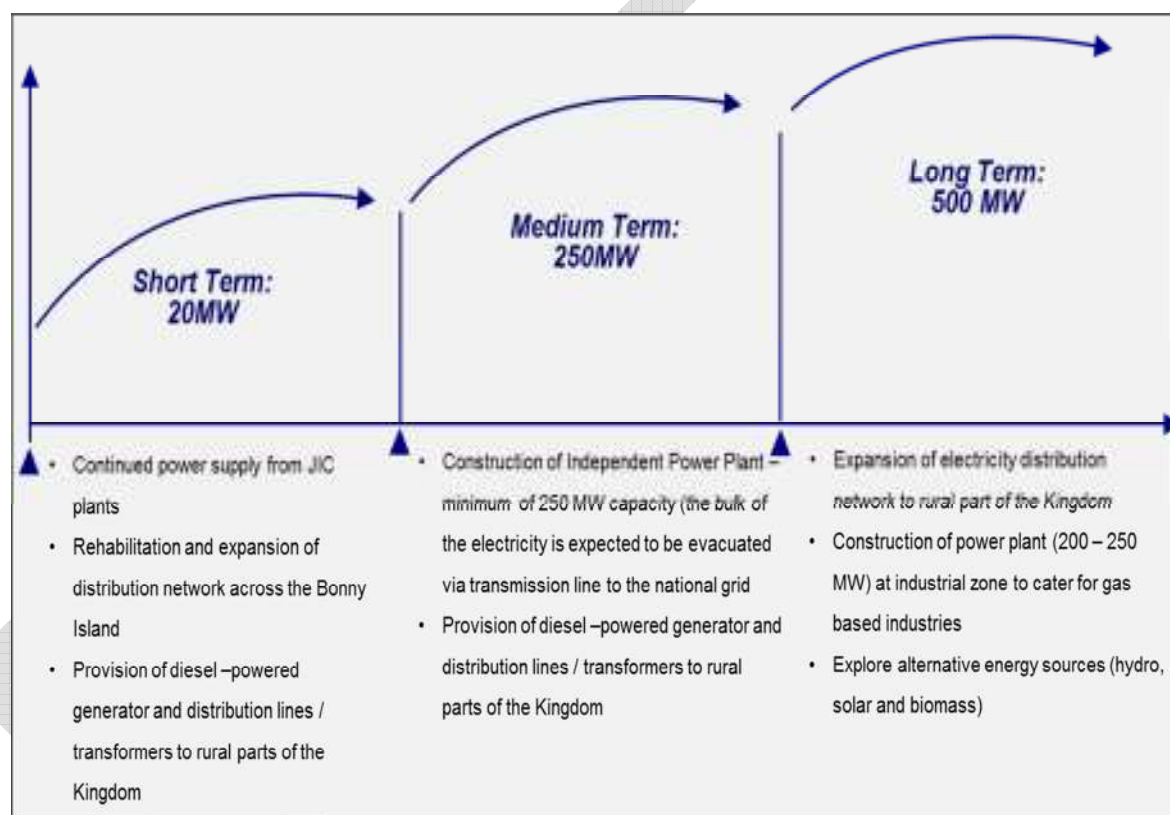


Figure 28: Strategic Roadmap for Power Supply – Bonny Kingdom

The financial implication of meeting these targets is enormous and it is proposed that the significant capacity expansions envisaged for the power sector will be done in phases and undertaken largely by potential investors.

Key Strategies

The strategic objective for power across Bonny Kingdom in the long term is to ensure that the sector is able to efficiently deliver sustainable, adequate, reliable and affordable power across the entire Kingdom. Some of the key initiatives shall include the following:

- Construction of two new power plants in the medium and long term
- 250 MW IPP – bulk of power to be evacuated to the national grid (medium term)
- 200 – 250MW power plant dedicated solely for the industrial park (Long term)
- Provision of diesel-powered generators in the short to medium term to rural areas of Bonny Kingdom
- Enhancement and expansion of the distribution network to distribute electricity across the Kingdom
- Extension and optimisation of the gas infrastructure grid network to support and facilitate the construction of gas-fired power plants in Bonny
- Forging strategic alliance with relevant stakeholders – such as the Rural electricity Agency, Transmission Company of Nigeria, River State’s Ministry of Power

Accessible and Affordable Housing

Shelter is one of the most basic human needs – however affordability of this need serves as major barrier to home ownership. Affordability refers to the supply and availability of housing (financial reach). As with Nigeria, Bonny is experiencing rural-urban shifts in population (in an uncontrolled / unplanned manner) thus putting a strain on existing infrastructure. Recent trends in Nigeria have shown that most of the modern type buildings have been built in site and service areas mapped out by Government. Others are prime areas obtained and developed by a property development company. If this trend continues, three major consequences would result:

- New residential development would tend to be of a relatively high standard and would be accessible to only a small segment of the population: those people housed by institutions or those who are relatively wealthy
- Most of the population increase would be restricted to the older areas or their extensions, and the problematic conditions now existing there would tend to be repeated and perhaps magnified by overcrowding;
- Free-market sophisticated building practices and modern appliances and utilities, being readily accessible to the wealthier groups of the population, will allow these groups a maximum degree of choice in the quality, comfort and privacy of their dwelling. At the same time, the absence of actual help and technical guidance in construction will result in poor qualities and services for the housing of the less wealthy groups of the population.

A major encumbrance to meeting the housing needs of the populace is the high cost of housing, and availability of land which precludes low-income earners from having access to suitable shelter. The key priorities will therefore be to meet the effective demand for housing, make housing finance available to the low to medium income earners, and provide the legal and regulatory framework that will attract private investors to develop affordable housing products for that market.

Achieving affordable housing will help raise home ownership and improve the Kingdom’s Human Development Index (HDI) ranking, reduce poverty in households and increase productivity.

Policies for the Provision of Low-Cost Housing

As the scale of future residential development needed to satisfy demand precludes its solution by private initiatives alone, government intervention is imperative, both to devise a policy for housing and to create an administrative agency to implement this policy.

Government involvement in this field can range from a low-cost building programme, the most directly and costly form of intervention, to the adoption of more indirect methods, such as the organization of self-help housing schemes, core housing schemes and other methods that will enable families in lower income groups to secure healthy accommodations. Three potential programmes have been formulated to indicate various possible approaches for the provision of low-cost housing.

Programme	Description
Minimum Government Intervention	In this case, the Government will build the main roads and reserve the main pedestrian pathways and the greens on which it will provide a communal sanitary core (consisting of showers, toilets and communal water supply mains) for every residential cluster. Largely private-sector driven
Active Government Policy	The Government will pursue a more active policy, by providing core housing schemes and organizing professional teams to aid in the provision of self-help housing. The extent of such aid would cover the provision of an economical service core (toilet + kitchen + shower); the rest of the unit will grow from this service core and will be recorded in instalments from the prospective dwellers. Such a solution would be advantageous to those income groups who cannot afford to rent fully constructed houses. For the Housing Agency, this approach would ensure adequate housing standards with a minimum capital outlay.
Full Government Provision	This involves the construction of an economic house for rent by families in the medium income range. This type of housing can be devised as a model for private contractors or can be used for demonstration in a limited project undertaken by a Housing Agency. If the Housing Agency should decide to encourage the provision of such contractor-built, economical houses, it should also device adequate

Programme	Description
	measures for the financing of such projects.

Table 26: Government Intervention in Bonny Kingdom Housing Sector

Provision of Residential Development

The criteria used to select land for residential development area are as follows:

- Economy of drainage of sewage and storm water;
- Proximity to the existing and proposed employment centres (Industry, Commercial and Government Centres);
- Use of land with reduced liability to flooding;
- Avoidance of land suitable for farming or forest;
- Avoidance of land, which is costly to develop for reasons of terrain and soil problems.

Some of the areas designated for future housing development in the Master Plan shown in the figure overleaf:



Figure 29: Strategic Land Zoning Plan

Zones	Recommendations	Description
1	Improvements to the Existing Areas	There are areas within the existing residential areas where opportunities exist to increase the number of houses without damaging the fabric or standard of the areas in which they are located. Action should be initiated to upgrade them as a single project to improve existing conditions and provide the capacity for additional housing. To achieve these conditions individual areas should be provided with clean and reliable water supply; adequate sanitary facilities; clear road network; stormwater network.
2	Infill and Consolidation of the Existing Urban Fringes	The present urban area forming Bonny Town is clustered around the Admiralty Creek and along the various roads leading south and east. The existing urban fringes include large areas, which are undeveloped and some with very low residential densities. The Master Plan will utilise the urban fringes to accommodate a significant population postponing the need for green field development and enabling land presently in other economic use to remain so until later in the phasing programme when it is required for housing.
3	Green Fields Developments	These are presently outside the existing urban areas and will require comprehensive development.

Table 27: Recommendations for Provision of Residential Accommodation

Key Strategies

The key strategic initiatives for the housing sector will include the following:

- Developing an effective land administration system to make land ownership available, accessible and easily transferable
- Forging strategic partnership with relevant authorities / agencies - Federal Mortgage Bank of Nigeria; financial institutions; etc.
- Providing incentives and the necessary legal and regulatory environment to attract Public Private Partnership (PPP) in mass housing development.
- Reducing the cost of production of houses by developing and promoting appropriate designs and production technologies for the housing sector

- Rehabilitating all existing professional, technical and vocational training centres and building new ones to ensure sustainable production of skilled manpower for the housing industry
- Providing adequate funding for R&D to improve the availability and affordability of building materials and technologies. As well as, commercializing the products of R&D of the Nigeria Research Institute, and other allied institutes
- Designating sufficient space for housing for various income groups and persons with disability
- Providing targeted subsidies and housing finance credit guarantees to facilitate home ownership by lower income groups/ people with Disabilities
- Working with states and local governments to produce and implement a unified and integrated infrastructure development for housing, open up new layouts and provide sites and services for the private sector to develop affordable and decent mass housing.

Information and Communications Technology (ICT)

In order to ensure that Bonny Kingdom is able to benefit from the exponential growth witnessed in the telecommunication sector (since the turn of the millennium) and not left out in the technological age, the overall goal will be to promote development of local capacity to leverage ICT in developing an industrial based economy and ensuring the availability of affordable ICT infrastructure and services.

Nigeria is the largest mobile market in Africa and one of the largest in the world - with low PC and fixed-line penetration, a significant proportion of subscribers utilize mobile devices. Since the liberalization of the telecommunications sector, Nigeria has become one of the biggest and fastest growing telecom markets, attracting huge amounts of foreign investment and job creation (as hundreds of companies providing virtually all kinds of telecom and value-added services have since entered the market).

Nigeria has made remarkable progress in the facilitation of Nigerians' access to Information and Communications Technology (ICT) to date.

S/N	Key Statistics	Results	Comments / Notes
1	Subscriber Base	129 Million (Feb. 2014)	Largely made up of GSM subscribers - As at February 2014
2	Tele-density	92.14% (Feb. 2014)	<p>Tele-density calculation based on population of 140 million</p> <ul style="list-style-type: none"> Ratio of mobile subscriptions increased from 68.49 in 2011 to 71.54 per cent in 2012, adding that the ratio would increase to 97.69 per cent by 2015 Tele-density ratio had increased in fixed line access from 0.51 per cent in 2011 to 1.5 per cent in 2012 - It also said the ratio was expected to increase to 10 per cent by 2015.
3	Rural Penetration	40% (2012)	<ul style="list-style-type: none"> Access of rural population to ICTs increased from 1.5 per cent in 2011 to 1.65 per cent in 2012. Mobile phone coverage in the rural areas stands at 40 per cent in 2012 60 per cent rural penetration expected by

S/N	Key Statistics	Results	Comments / Notes
			2015

Table 28: Key ICT Data

Source: Federal Ministry of Communications and Nigerian Communication Commission (NCC)

Nigerian Communications Commissions (NCC) survey, with the theme: “Assessment of the level and impact of telecommunications penetration in rural Nigeria”, showed that only about 25 per cent of the country’s rural dwellers do not have access to telephone lines presently. The report explained that 72 per cent of rural dwellers without access to telephones had to travel a distance of less than one kilometres to make calls, 23 per cent had to travel a distance of between one kilometres and 5 kilometres.

With the liberalisation and subsequent demise of the state-owned Nigerian Telecommunication Limited (NITEL), the sector is now private sector driven and dominated by four major GSM operators (MTN; Airtel; Globacom and Etisalat).

S/N	Technology	%
1	Mobile GSM	97.8
2	Mobile CDMA	1.86
3	Fixed (Wired / Wireless	0.28

Table 29: Technology Market Share - 2013

In a bid to sustain the momentum / growth experienced across the sector, a new National ICT Policy was recently released. The National ICT Policy was developed to complement the development goals of Nigeria’s Vision 20:2020, centred on making the nation a knowledge-based and globally competitive one. As such, the policy would help to reposition the nation’s information technology sector and accelerate the growth of the industry. This will involve the creation of an enabling environment for the rapid expansion of ICT networks and services that are accessible to all at reasonable cost. The new ICT policy for accelerating national development: challenges and opportunities,”

said technology is a source of, and an enabler of development. She highlighted that in terms of welfare, applications designed to facilitate effective delivery of education, health, security and other basic needs have helped to increase social welfare.

Despite the successes across the sector, there are still some inherent challenges hindering development – such challenges include but not limited to the following:

- Destruction of ICT infrastructure (due to vandalism)
- insecurity and inadequate electrical power supply for operations
- Local participation in key ICT areas is sub-optimal due to inadequate skills and an unsupportive enabling environment.”

There are significant opportunities available across the sector and with the right strategy, Bonny Kingdom can overcome some of this challenges and effectively utilize ICT as a key development enabler and a clear source for job creation

Key Strategies

In line with the recently approved National ICT Policy, the Bonny Kingdom ICT strategy will be targeted a capacity development building for attaining rapid socio-economic development. Due to the liberalization of the ICT sector, the private sector is expected to take the lead in the realization of this strategy. The key strategic initiatives will include the following:

- Deployment of ICT infrastructure and telecommunication services to rural and underserved urban areas across Bonny Kingdom
- Development of a world-class ICT training and research centre to help in building capacity
- Review of the education curricula at all levels to integrate ICT assisted learning and introduce a working knowledge of basic computing (Primary-secondary and tertiary institutions of learning) with a view to increasing the computer literacy rate/penetration

- Provision of regular and affordable access to internet resources in all educational and research institutions with particular focus on basic and post-basic education

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Water Supply and Distribution

Several plans and programmes have been developed towards the attainment of the MDG targets on water and sanitation – the percentage of Nigerians with access to improved sanitation facilities and improved water sources have however remained poor. Today, a significant amount of people in Bonny do not have access to potable water - in order to bridge the water deficiency gap across the entire Kingdom and ensure access to pipe born water, significant investments in water infrastructure need to be made in the short to long term.

To this end, the JIC has made significant investments in ensuring water supply across Bonny Island in particular – provision of water treatment plants, water kiosks, boreholes, etc. at strategic locations. In the urban areas for central treatment plants and water kiosks to serve the population – there is the need to establish a piped network to serve customers through standpipes or a direct domestic supply. In the larger communities within rural areas there is the need put in place measure to ensure the rapid deployment of boreholes, treatment plants, elevated tank and limited piped system serving a number of standpipes or a village well and small reservoir. In the smaller rural communities a borehole is likely to supply a single standpipe or village pump.

Key Strategies

The key initiatives to improve access to potable water for all residents of Bonny Kingdom by 2040 include:

- Encouraging Private Sector Participation (PSP) and Public Private Partnership (PPP) in the provision of water supply and sanitation schemes
- Investing heavily in water supply and distribution assets /. Infrastructure
 - Rehabilitating, constructing and modernising existing water supply and sanitation schemes, distribution networks and facilities for optimal operation, so as to meet the increase in demand owing to population growth

- Enlightening the citizenry and corporate organisations on public hygiene
- Ensuring performance monitoring and evaluation programmes for sanitation undertakings

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4.6. ENVIRONMENTAL SUSTAINABILITY

4.6.1. PRIORITY #12: DEVELOP AND IMPLEMENT A COMPREHENSIVE ENVIRONMENTAL MANAGEMENT / PROTECTION PLAN

The Bonny Local Government Area (Bonny LGA) and, in particular, Greater Bonny Island, have experienced very rapid growth in recent years as a result of continued industrial development in the area. This growth is expected to continue in the future because of the many strategic advantages that Bonny possess - It is widely recognised that orderly and efficient development over the next 26 years can only be achieved by the adoption of a Master Plan to guide development throughout the Bonny Local Government Area. The overall strategy for Bonny Kingdom's environmental strategy is detailed in an Environmental Management Plan (EMP).

The EMP is intended to be a process for identifying and addressing the consequences (and associated social and economic effects) of existing, new or revised policies, plans and programmes. It may also be applied both at the level of broad policy initiatives, and to more concrete programmes and plans that have physical and spatial reference. The EMP will be implemented as part of the Master Plan implementation process. The EMP is designed to be operated within and comply with existing local and national byelaws, together with all the international protocols, agreements and conventions.

The overall goal of the EMP is to promote a strategic and dynamic process to ensure that the resources and environment of Bonny Island are managed in a sustainable manner, while co-ordinating resource use and achieving the best possible compromise between different competing interests and thereby maximising the benefits of development. In this context proposed project objectives are as follows:

- Decide on environmental concerns that require detailed study and action plans
- Identify natural areas and resources that should be given high priority for protection, preservation and restoration
- Propose policy measures aimed at protection of the environment against degradation

- Define a community evacuation strategy²⁷

The implementation of the EMP will be a four-phased approach:

Phase I:

Phase I includes the establishment of an Environmental Unit. The Environmental Units first task will be to develop a database of the existing environmental conditions for the whole LGA. Current information is inadequate and it is considered vital to establish the baseline conditions of the island to allow appropriate analysis of the whole LGA environment. The Environmental Unit will be critical in helping the community to mobilise and form environmental groups who can perform monitoring and provide assistance and advice to the Environmental Unit.

Phase II:

This will involve the development of an Educational and Public Awareness Programme and the establishment of Protected areas and Reserves. Phase II should be implemented within 6 months of the creation of the Environmental Unit. The Environmental Unit will be responsible for the implementation of Phase II. The main components of Phase II are:

- Protected Areas and Reserves;
- Education and Public Awareness Programme

Phase III:

This will involve the stimulation and creation of investments and economic instruments to support key EMP initiatives / action plans. Phase III should be implemented within 10 months of the creation of the Environmental Unit. Bonny LGA and the JIC should be jointly responsible for the implementation of Phase III.

²⁷ The communication evacuation strategy is one of the proposed initiatives / programmes to be undertaken within the life span of this master plan

Phase IV:

The final phase of the Initial EMP implementation, will involve the Implementation of new policies and the enforcement of existing policies. Phase IV should be implemented within 12 months of the creation of the Environmental Unit. Bonny LGA, DPR and RSEPA should be jointly responsible for the implementation of Phase IV.

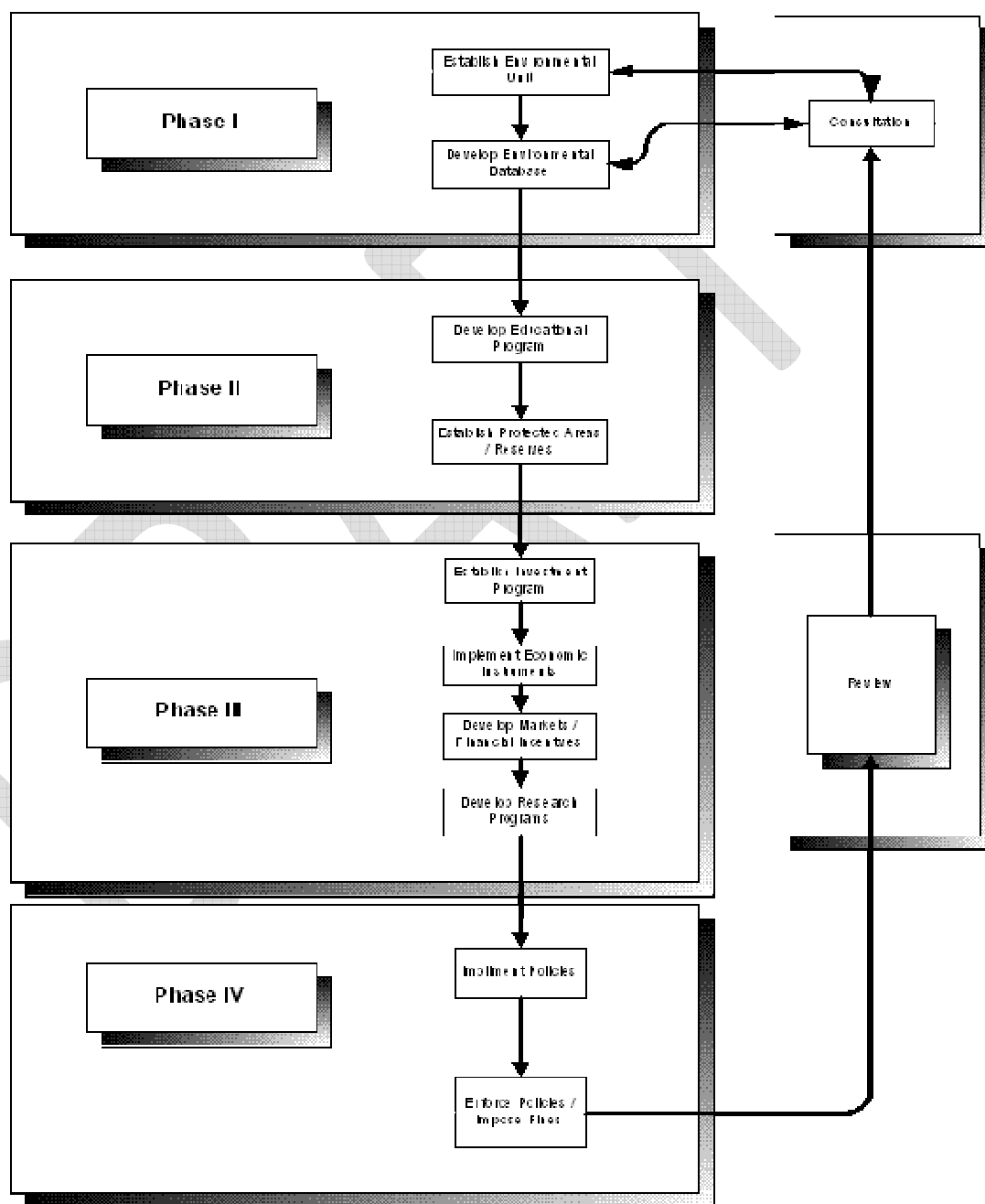


Figure 30: Phasing Arrangements for the EMP

Review Process:

It is necessary for a review phase to be in place to ensure the EMP meets the set objectives. Review should be undertaken by the Environmental Unit and should involve consultation with all stakeholders. The EMP will require regular evaluation of the works undertaken and processes adopted by stakeholders and the involvement and support of civil society. Involvement will also be necessary if the future EMP is to reflect local needs and be responsive and adaptive to changing circumstances. As a consequence it will be necessary to establish a mechanism for public consultation that can be adopted for future EMP development and monitoring

Additional details of the EMP at included in Appendix A

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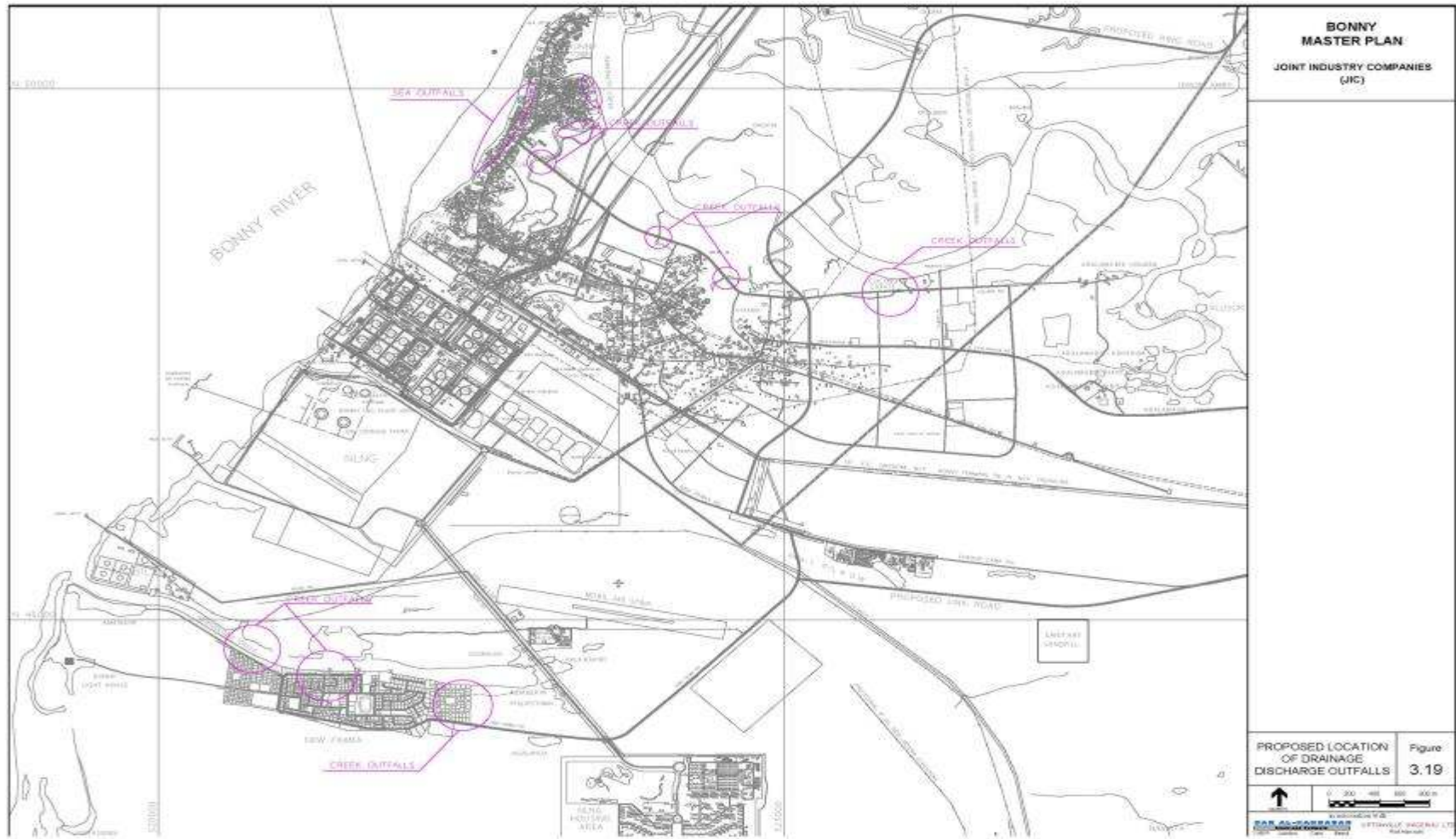


Figure 32: Proposes Location of Drainage Discharge

5. IMPLEMENTATION CONSIDERATIONS

5.1. OVERVIEW

This section will focus on the key implementation considerations for this Master Plan- it will involve the definition of the following:

- Execution / coordination framework to champion the actualization of the plan
- Key initiatives and action plans
- Robust implementation strategy and a Monitoring and Evaluation (M&E) framework to track and measure outcomes / performance.

The success of this Master Plan will be heavily dependent on the quality of the implementation frameworks and processes utilized for execution as well as the deployment of an effective monitoring and evaluation system. Given the long planning horizon for this plan, it is important that there is a strong implementation mechanism that will tirelessly drive the actualization of the desired end state over the next 26 years and beyond. There will also be need for a suitable legal framework to support the operationalization / implementation of the plan.

Having developed two Master Plans in the past which have not translated into the desired socio-economic development for the Kingdom, it is imperative that the initiatives proposed in this update Bonny Kingdom Master Plan be driven by suitable process owners who will work with clearly defined Key Performance Indicators (KPIs). It is also expedient that in developing an implementation approach for this new Master Plan, pitfalls / factors which hindered the execution of the current and inaugural Master Plan be taken into cognizance and mitigated.

The Bonny Kingdom Master Plan is a document for the whole of the kingdom and its implementation will depend to a very large extent on the establishment and maintenance of an appropriate agency to own and champion this plan. Such an agency shall have the overall accountability for its (Master Plan) implementation. Notwithstanding, this plan cannot be single-handedly funded or executed by any agency / entity - therefore, multi-stakeholder collaboration across the public and private sectors must be engendered to achieve stellar performance.

5.2. MASTER PLAN EXECUTION STRATEGY

5.2.1. OVERVIEW

In achieving the envisioned state for Bonny Kingdom, a holistic and well-structured approach needs to be adopted – such an approach will encompass various critical but distinct initiatives geared towards this envisioned goal. Consequently, a multi-phased implementation roadmap is defined for Bonny Kingdom over the 26 year plan horizon (2015 – 2040). This roadmap details and sequences the key initiatives required to achieve the overall goal - in sequencing the key initiatives to be embarked upon, the roadmap is broken down into three (3) key phases:

- Short Term (within 5 years) – Establishing Catalyst for Growth
- Medium Term (Year 5 – 10) – Accelerating Implementation of Growth Plans
- Long Term (over 10 years) – Embedding and Sustaining Growth and Development

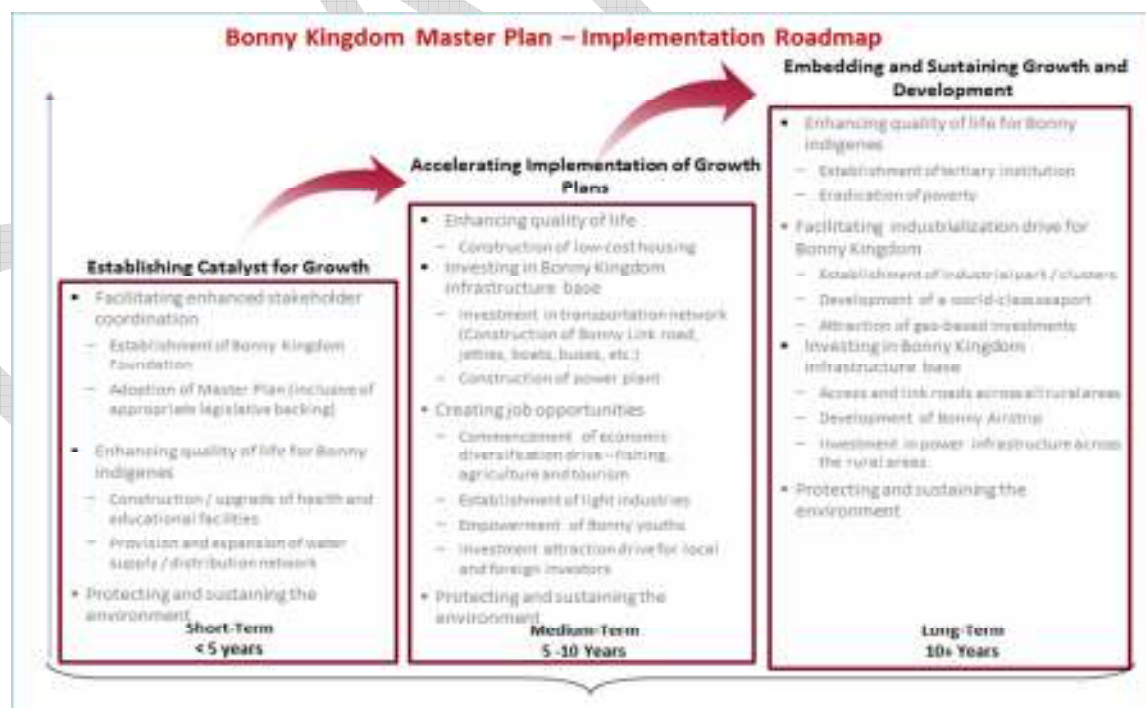


Figure 33: High-Level Implementation Roadmap

The diagram above depicts the high-level implementation roadmap with some key initiatives across the three phases – this is merely a guide for the execution of the initiatives defined (a detailed description of the key initiatives / programmes are included in subsequent sections)

5.2.2. MASTER PLAN IMPLEMENTING AUTHORITY – BONNY KINGDOM FOUNDATION

Overview

An implementing authority will be established to drive the overall socio-economic development of Bonny Kingdom and shall be owned by the entire Community (governed by a Board of Trustees). It will be tasked with three (3) key activities including Project/Program Intervention which will drive the execution of programs in line with the Master Plan; Stakeholder Coordination which will guide terms of partnerships and collaboration with developmental partners and Fund Generation which will drive fundraising activities to source funds for implementing initiatives.

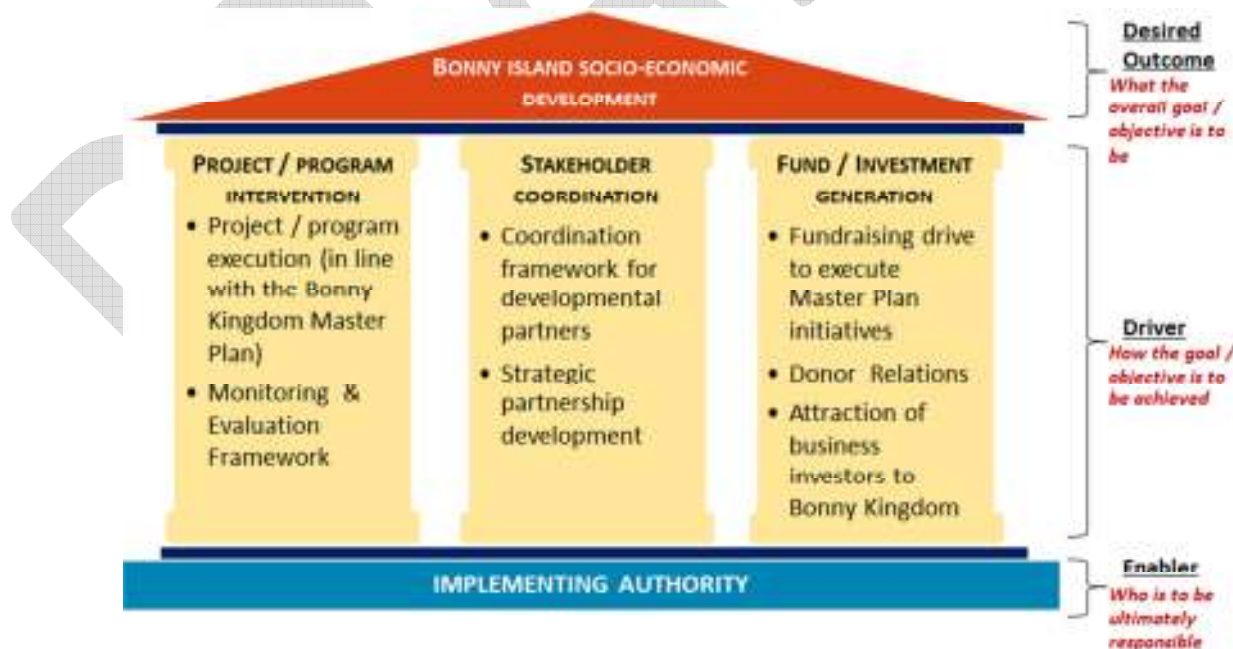


Figure 34: Operational Framework of the Implementing Authority

Foundation Mandate and Objectives

The Implementing Authority shall be charged with the primary mandate of championing and coordinating the socio-economic development of Bonny Kingdom in a systematic manner through the formulation and execution of developmental plans. In delivering on this mandate, it will assume the following roles and responsibilities:

- Coordinate development efforts of all key stakeholders across Bonny Kingdom with regard to the implementation of the master plan and other socio-economic development initiatives
- Serve as the implementing authority responsible for the execution of the updated Bonny Kingdom Master Plan
- Define and update plans / strategies (on a continuous basis) for the socio-economic development of Bonny Kingdom
- Execute necessary developmental programs / projects
- Monitor, track and evaluate the delivery of initiatives in the Master Plan and provide periodic updates and progress reports to all stakeholders on the milestones in the Master Plan
- Partner with relevant stakeholders to support the execution of key socio-economic initiatives
- Attract new business investments into Bonny Kingdom through strong investment promotion and business prospect cultivation
- Act as custodians of the Master plan and effect necessary update (as deemed fit)

Operating Model²⁸

The Foundation's operating model will be as described overleaf:

²⁸ The key details of the Bonny Kingdom Foundation are articulated in a detailed operating model report

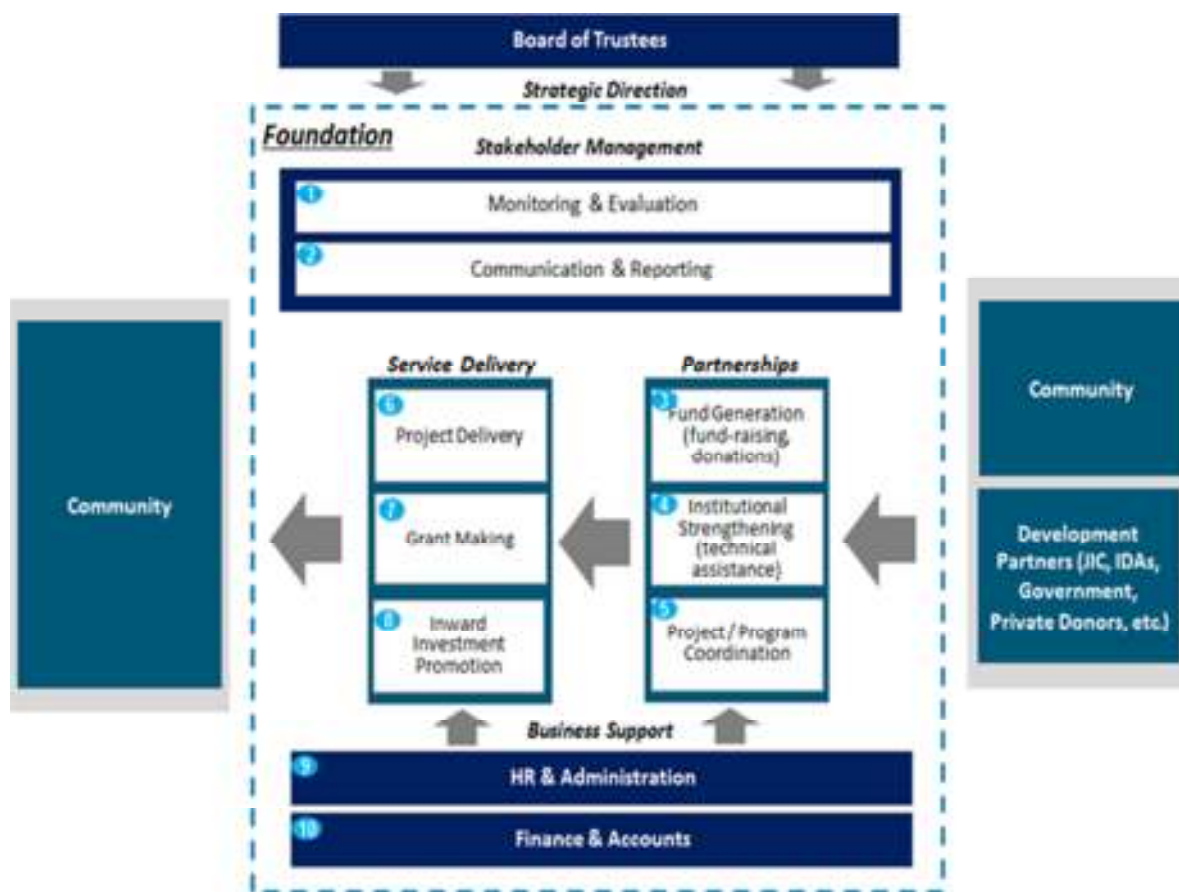


Figure 35: High-Level Operating Model - Implementing Authority

S/N	Key Elements	Description
1	Monitoring & Evaluation	The Foundation shall deploy a robust monitoring and evaluation framework to ensure adequate assessment of the overall outcomes / impact of all projects / programs embarked upon by the developmental partners towards the development of Bonny Kingdom
2	Communication & Reporting	In a bid to ensure buy-in of critical stakeholders, the Foundation shall put in place a mechanism that promotes regular communication. The communication will be in form of key updates / feedback in respect of Bonny’s social development, and regular reporting
3	Fund Generation	The Foundation will source its funds from various developmental partners and other donors via fundraising campaigns and Master Plan sponsorship drive

S/N	Key Elements	Description
4	Institutional Strengthening	The Foundation's internal capacity will be developed through support from development partners in form of technical assistance
5	Project / Program Coordination	The Foundation will work in collaboration with development partners to identify projects and programs which the latter will deliver. These projects can either be from the Master Plan or any other developmental project chosen by the partners. It will also be deeply involved in promoting inward investment into Bonny Kingdom
6	Project Delivery	The Foundation will undertake direct intervention by executing projects or programs (largely from the Master Plan) either on behalf of donors or itself. Procurement / Contract Award: The Foundation will also put in place a transparent and credible process for the identification and selection of vendors to execute projects and programs
7	Grant Making	At its discretion of the Foundation (subject to Board approval), the Foundation will provide funds in form of grants to support the socio-economic development of Bonny
8	Inward Investment Promotion	The Foundation will work with other relevant stakeholders in promoting Bonny Kingdom as an attractive investment destination and seek to attract the inflow of new investments which will help diversify the community's economic base
9	HR & Administration	This will constitute back-office support for the Foundation and will involve general office admin and employee productivity / engagement
10	Finance & Accounts	This will constitute back-office support for the Foundation and will involve general accounting and financial reporting

Accordingly, to efficiently and effectively carry out the implementation of the Bonny Kingdom Master Plan, the critical skills and capabilities highlighted below must be embedded in the Foundation



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5.2.3. STAKEHOLDER PARTNERSHIP FRAMEWORK

The implementing authority will work with diverse stakeholders across and beyond the Kingdom in executing the Master Plan initiatives. Each stakeholder will be providing critical support to the implementation process. The Master Plan execution cannot be left to a single body / agency to solely implement as all stakeholders must forged strategic partnership to realise the envisioned state – therefore there shall be need for deep and constant interactions amongst all stakeholders with the Bonny Kingdom Foundation acting as the coordinating authority.

Some of the Key stakeholder groups will include but not limited to the following:

- **Bonny Traditional Leadership** (HRH the Amanyano of Bonny Kingdom and his Chiefs-in-Council)
- **Private Sector** (Joint Industry Committee- NLNG, SPDC, Mobil; and other private investors)
- **International Development Organizations** (UNIDO, UNDP, World Bank, etc.)
- **Federal, State and Regional Institutions / Agencies** (Federal Government, Rivers State Government, Niger Delta Development Commission (NDDC), etc.)
- **Community-Based Organizations / Civil Society** (Bonny Kingdom Development Committee, Bonny Youth Federation, Finima Development Committee, Titled Citizens Assembly, Finima Youth Council, Bonny Graduates Forum, Bonny Bureau of Employment, Finima Women Association, etc.)
- **Professional Bodies** (Nigerian Institute of Surveyors, Nigerian Society of Engineers, etc.)

In carrying out its operations, the implementing authority shall coordinate the developmental efforts of various stakeholders - taking into cognizance their diverse profiles and potential roles.

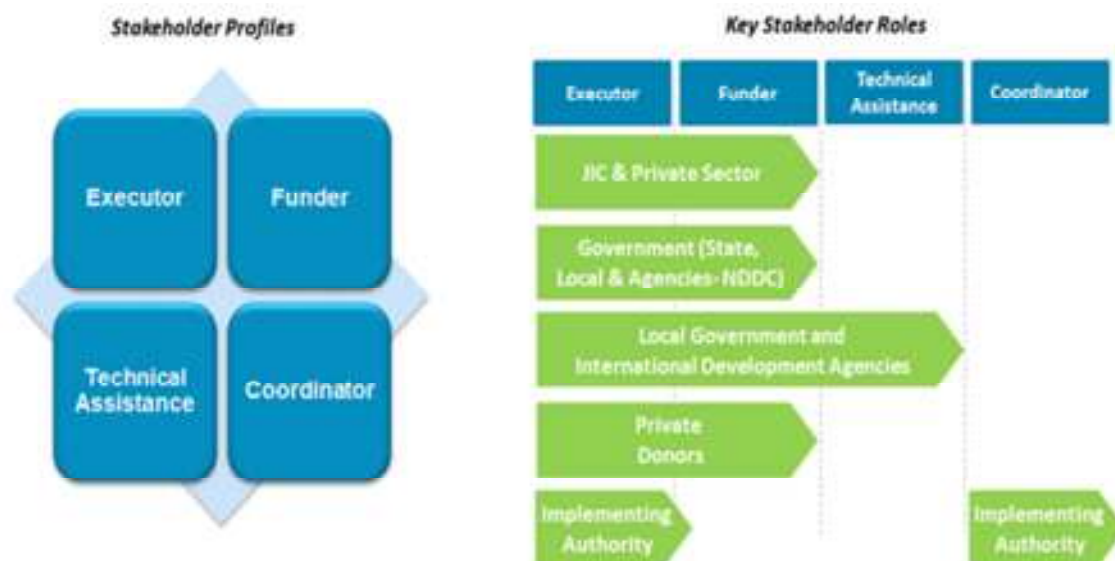


Figure 37: Stakeholder Roles for Bonny Kingdom Master Plan Implementation

- Executors: These are stakeholders that implement project / programs for the socio-economic development of Bonny kingdom
- Funders: These are stakeholders that provide funding support to a third party developmental partner for onward project / program execution
- Technical Assistance Providers: These are stakeholders that provide non-financial support- such as consulting assistance, training, staff secondment and information exchange
- Coordinator: To facilitate the socio-economic development of Bonny Kingdom through the coordination of all stakeholders

5.2.4. MASTER PLAN LEGAL FRAMEWORK

To successfully implement / actualise the Bonny Kingdom Master Plan critically depends on the enactment of necessary legislation to support the institutional framework and also to back up some of the recommended initiatives. This Master Plan needs to be backed up by a bye-law recognised at the Federal, State and Local Government levels. While the bye-law can be enacted by the Local Government it is important that such accorded power to the implementing authority be recognised by the Rivers State Government. The bye-law shall directly enable Master Plan implementation and be structured to achieve the following:

- Recognition of the Bonny Kingdom Foundation as the implementing / coordinating authority and custodian of this Master Plan
- Adoption of this Master Plan as a planning / policy document backed by law – the implication of this is that developmental efforts of all partners shall emanate from projects / programmes defined in this plan
- Establishment of an appropriation framework dealing with public finance and expenditure with a view to achieving a more bottom-up approach to budgeting and greater involvement of communities and stakeholders in the budgeting process for this Master Plan²⁹

The implementing authority is neither a competition nor replacement for the local government. Rather it is only a vehicle that is being created by the community to proactively drive its own socio-economic development. While the Local Government will not be expected to cede its constitutional role to the implementing authority, it will be required to endorse the existence of the implementing authority as a developmental partner in the Local Government Area. Also, the Master Plan will be the focal point and blueprint for socio-economic development- guiding the investments of all stakeholders including the Local Government.

The bye-law will also support the implementing authority's power to raise funds among private institutions as well as specify the level of financial support / intervention that will be provided by the Local Government in the implementation process.

²⁹ *Financing strategy for the Master Plan is included in subsequent sections of this plan*

5.2.5. MONITORING AND EVALUATION (M&E) FRAMEWORK

In terms of overall M&E and implementation responsibility, the Bonny Kingdom Foundation will be responsible for championing these – prompting greater levels of accountability. The M&E framework would embed a purpose-driven and result oriented mind set by ensuring all activities are directly linked to clearly identified objectives and targets. As a result, the Bonny Kingdom Foundation will be able to better define and communicate their strategies, measure and monitor performance and report progress in order to manage and improve overall performance.

The primary objectives of the M & E framework are as follows:

- Develop a standardized approach for measuring performance across all levels with a view to promote goal attainment
- Set performance targets and ensure full accountability and clear responsibility for delivering strategic objectives
- Enhance focus on strategic goals – alignment of clearly articulated measures of performance - including improved social and economic outcomes
- Manage the attainment of performance standards or targets through regular monitoring and reporting – reporting performance on a regular basis to key stakeholder groups (internal and external)

The overarching goal of this framework shall be to support the overall aspirations and meeting the expectations the Community.

The M & E framework shall be sequential in nature and constitute five (5) key components as depicted below:



Figure 38: *Monitoring and Evaluation Framework - Illustrative*

Strategic Planning

The strategic planning phase entails defining/refining clear strategic objectives / goals and identifying the key business value drivers that are critical to successful strategy execution.

Operational Planning

This phase entails setting overall performance targets across the planning horizon - it will also involve developing the appropriate operational plans to meet the pre-defined targets – it is imperative that this operational plan is directly linked to the budget of the various developmental stakeholders.

Progress Evaluation and Reporting

This phase entails the process of collating and analysing performance data and reporting the outcome of performance reviews by comparing actual performance against predefined targets, measures and expectations. An effective impact reporting approach

will foster trust / confidence amongst stakeholders (particularly external stakeholder groups) and improved accountability. Regular review of overall goal attainment will be carried out with a view to devising corrective actions where actual performance falls short of expected target

Sample KPIs

Developmental pillars	Priorities	Measures and Targets
Human Capital Development	Build Deep Specialist Skills	Technical and Vocational Education Training (TVET) <ul style="list-style-type: none"> • Increase in the number of local residents trained in industrial/technical programming
	Revamp the Educational System to Support Strategic Human Capital Development	Improved literacy level and High rate of school and university completion Increase in school enrolment rate <ul style="list-style-type: none"> • Increase in student teacher ratio • Reduction in the number of school drop-out
	Improve the quality of healthcare facilities in the kingdom	<ul style="list-style-type: none"> • Access to affordable and quality healthcare • Decrease infant mortality • Enhanced life expectancy
Economic Expansion and Diversification	Develop a vibrant tourism industry	Robust attraction centres <ul style="list-style-type: none"> • Increase in the number of attraction centers in and around the kingdom • Substantial infrastructural development • Increase in the level of labour absorption into the tourism industry • Increase in the inflow of foreign currency as a result of an increase in the level of foreign investment • Increase in the level of labour absorption into the tourism industry
	Build Capabilities and Partnership for Commercial Aquaculture	Large scale sea food production <ul style="list-style-type: none"> • Sea food sufficiency and significant reduction in volume of sea food imports • Increase in number of workers in the sea food industry • Increase in the number of sufficiently well improved fishing fleet • Increase in the number of available sea food processing facilities
	Explore cluster development opportunities	Economic integration <ul style="list-style-type: none"> • Increase in productivity as a result of industrial synergies • Increase in exports as a result of increased

Developmental pillars	Priorities	Measures and Targets
		productivity of the industry <ul style="list-style-type: none"> • Increase in labour absorption of the industry in focus
	Pursue an aggressive investment promotion strategy	Economic diversification and Priority sector development <ul style="list-style-type: none"> • Increase in the share of non-oil productions to total output of the economy • Increase in the amount of foreign direct investment in oil and non-oil sectors (tourism, aquaculture, petrochemical etc.)
	Boost the growth of micro, small and medium enterprises	Job Creation and Productivity <ul style="list-style-type: none"> • Reduction in unemployment rate • Eradication of poverty • Increase entrepreneurship measured by increase in the number of SME
Infrastructural Development Strategy	Develop a strong multi-modal transportation system	Easy accessibility of the kingdom from anywhere in the world <ul style="list-style-type: none"> • Presence of road networks linking the island to the rest of the kingdom • Presence of road networks linking the kingdom to the major cities in Nigeria • Increase in the number of jetties present in the Kingdom • Increase in the number of youths employed in the transportation sector • Reduction in transportation cost
	Upgrade community facilities	Infrastructure base development <ul style="list-style-type: none"> • Ease of conducting business in Bonny • % Population with access to potable water • % Population with access to power
Environmental Sustainability	Environmental management plan	Reduced environmental pollution <ul style="list-style-type: none"> • Air, water and land pollution index • Reduction in land resource degradation • Reduction in renewable resource depletion • Presence of competent waste disposal companies • Increase in the number of waste disposal facilities • Improved waste recycling strategies

Table 30: Sample Key Performance Indicators

Note: These are purely indicative and by no means exhaustive in nature

5.2.6. FUNDING STRATEGY

Based on preliminary estimates of the key initiatives in this Master Plan, a total amount of approximately \$5 billion (USD)³⁰ will be required within the 26 year planning horizon. Considering the current economic position of the nation, this is a monumental amount. As this plan is multi-phased, the entire amount is not required immediately – however, there should be a clearly defined funding strategy. The funding strategy shall seek to:

- Identify funding sources and mix
- Devise strategies to ensure sustainable funding means for the Master Plan

Total Yearly Allocation to Rivers State Government (2009 – 2013)

	2013	2012	2011	2010	2009
Yearly Allocation	N155 billion	N189 billion	N245 billion	N227 billion	N246 billion
Capital Budget*	N46 billion	N56.7 billion	N73.5 billion	N68 billion	N74 billion

Total Yearly Allocation to Bonny LGA (2009 – 2013)

	2009	2010	2011	2012	2013
Yearly Allocation	N1.2 billion	N1.6 billion	N1.9 billion	N2 billion	N2.2 billion
Capital Budget*	N350 million	N491 million	N556 million	N600.5 million	N661 million

Source: Federal Ministry of Finance - Federal Accounts Allocation Committee

Note: Allocation contained in the table above are only from the Federation account – does not consist of state or local Government Internally Generated Revenue. Also, assumptions were made based on the capital budget (typically over 70% of Government expenses is on recurrent / administrative cost – accordingly 30% was assumed as the amount available to fund capital projects)

From the above it is clear that the Government alone cannot fund this plan alone and there is a huge funding deficit which needs to be bridged in order to actualise this plan. A significant chunk of the amount is expected from private investors particularly in funding the industrialisation drive of the Kingdom. The Government will focus on providing a conducive business environment

³⁰ Indicative / preliminary estimate – final estimates to be based on detailed costing analysis for all initiatives defined

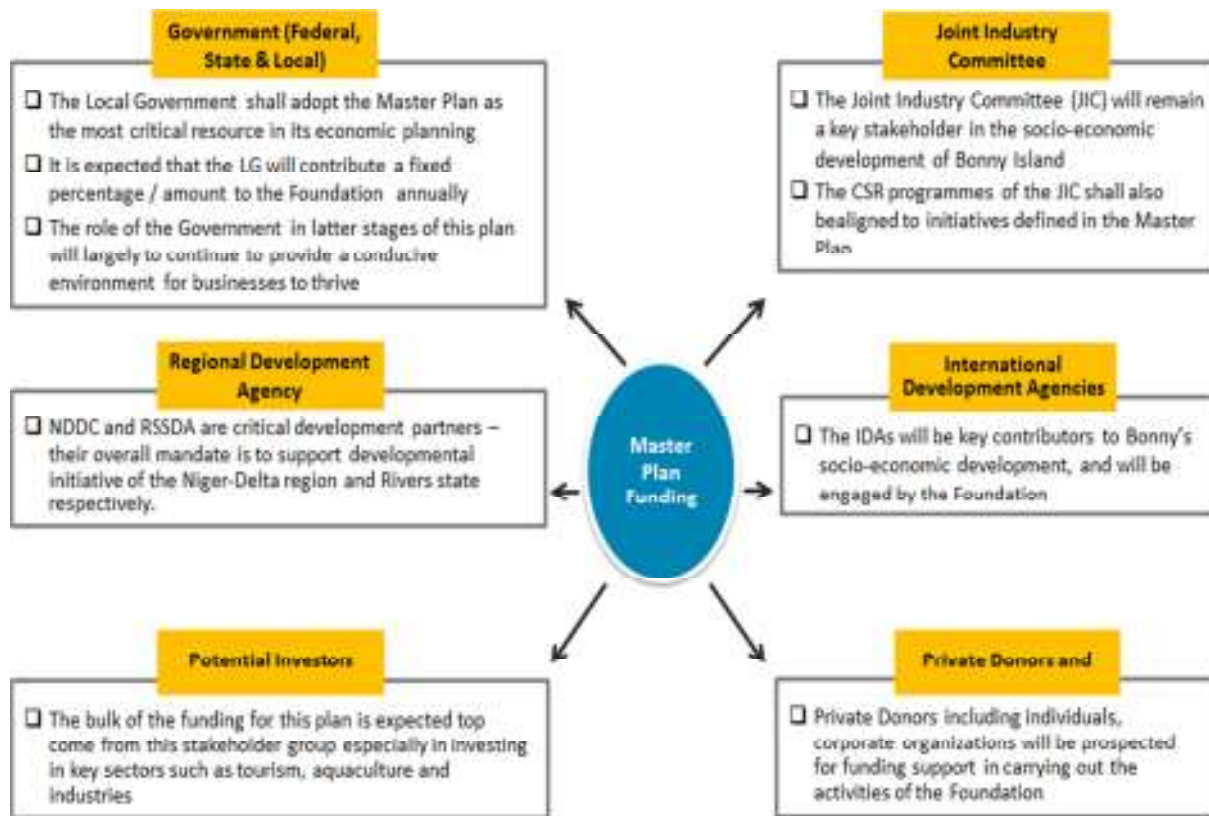


Figure 39: Funding Framework

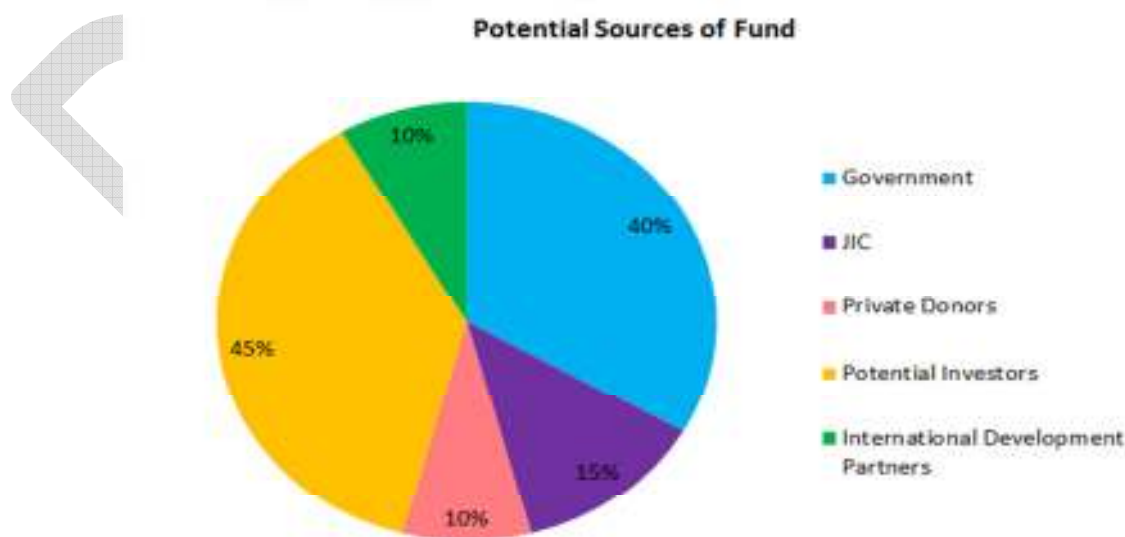


Figure 40: Indicative / Illustrative Sources of Master Plan Funding Mix

In funding this Master Plan, the Foundation is not expected to always be a recipient of the funds – the ultimate goal of the Foundation is to ensure the key initiatives defined in this Master Plan are executed in order to actualise the envisioned state. Accordingly, the Foundation shall focus on getting buy-in and commitment from the key stakeholders on initiatives defined in this plan. Notwithstanding, the Foundation is also at liberty to use donor funds to implement projects or programmes as defined in this plan.

Success Imperatives

- Funding commitments and Master Plan backed by legislation
- All developmental projects / programmes to be embarked upon by stakeholders pulled from the master plan
- Wide-spread sensitization and marketing of the Master Plan by the Foundation
- Adoption of innovative funding mechanism – capital market (debt instruments / municipal bonds issuance), minimum commitment (via legislation) of capital allocation to fund Master Plan, etc.

5.2.7. BONNY KINGDOM - MASTER PLAN PROJECTS / PROGRAMMES (SHORT, MEDIUM AND LONG TERM)

The projects and programmes highlighted in this section have been identified based on the following assumptions:

- Project /. Programmes are not exhaustive – they represent the key initiatives to be embarked upon based on the strategic direction
- Estimates are based on assumption and are indicative – detailed design / costing shall need to be undertaken to get a more accurate cost for the initiatives
- The responsibility for these initiatives shall be agreed upon by all stakeholders – with the Bonny Kingdom Foundation acting as the facilitating body

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		High-Level Description		Preliminary Cost Estimate (USD)	Timeline
Focus Areas	Priorities	Programs/Projects			
Human Capital Development	Build deep specialist / technical skills	Establish a Federal Polytechnic on Bonny Island	The establishment of a tertiary institution on Bonny Island - the Federal Government has already reached an advanced stage in the establishment of a Polytechnic on Bonny Island. The Polytechnic is expected to come on stream in 2014. The integration of specialist vocational courses (aquaculture, forestry, food processing etc.)	N/A - Ongoing project already being executed by the Federal Government	Short-Term
		Upgrade / expand Bonny Vocational Centre	Expansion of BVC capabilities (in terms of capacity, course offerings and delivery) - Program offerings to focus on specialised courses (short courses, advanced diplomas and online courses)	\$5 Million	Medium - Term
		Establish a tertiary / full-fledged university on the Island (Federal / State or Private)	The establishment of a university on Bonny Island – this will complement other existing vocational / technical centres on the island	\$30 Million	Long - Term
	Revamp the primary and secondary educational system to support strategic HCD	Establishment of an Adult learning Centre	Creation of a remedial academy school system for adults unable to read or write – thereby improving literacy education. The centre will help in educating / improve reading, writing and arithmetic abilities of adults learners in the society	\$0.5 Million	Medium - Term
		Upgrade / refurbish Bonny Island Library	There is need to upgrade the library so that it is adequately equipped with books – supported by the right technology and meeting the needs of the users	\$0.25 Million	Short - Term
		Set up an Education Development and Monitoring Committee to Oversee Teacher Performance	The committee will aid assessing (gap / training needs of teachers) and training of educators; of primary schools improving the Support System for Senior Secondary School Candidates through the establishment of career advisory functions in all Secondary Schools	Minimum funding requirement of \$1.5 Million over the plan horizon	Short to Long Term (Continuous basis)
		Education Enlightenment Programme	Creation of wide-spread awareness on the importance of primary and secondary education – the objective of the programme will be to improve enrolment rate across the Kingdom	Minimum funding requirement of \$1.5 Million over the plan horizon	Short to Long Term (Continuous basis)
		Develop and incentive scheme / package for teachers	An incentive package to attract / encourage adequate and competent (the right calibre of teaching staff) to Bonny Kingdom	Minimum funding requirement of \$5 Million over	Short to Long Term (Continuous basis)

			High-Level Description	Preliminary Cost Estimate (USD)	Timeline
Focus Areas	Priorities	Programs/Projects		the plan horizon	
		Renovation / upgrade of primary schools and secondary schools	<p>Bonny Island:</p> <ul style="list-style-type: none"> The renovation and expansion of 16 existing Primary schools; The renovation and expansion of 6 existing Secondary schools; The construction of 4 new Primary schools; The construction of 4 new Shared Secondary/Primary schools <p>Middle Core Area:</p> <ul style="list-style-type: none"> The renovation of 2 existing Primary Schools to Secondary Schools The renovation and expansion of 5 existing Primary and 1 existing Secondary School <p>Outer Core Area:</p> <ul style="list-style-type: none"> The renovation and expansion of 2 Primary Schools <p><i>Note: A minimum standard for primary and secondary school needs to be defined – requisite infrastructure; classrooms; teaching staff; etc.)</i></p>	\$100 Million	Short Term
		Construction of new model primary schools and secondary schools	<p>Bonny Island:</p> <ul style="list-style-type: none"> The provision of sites for 2 new Shared Secondary/Primary Schools The provision of sites for 4 new Primary Schools <p>Middle Core Area:</p> <ul style="list-style-type: none"> The construction of 2 new Primary schools The construction of 3 new Shared Secondary/Primary Schools <p>Outer Core Area:</p> <ul style="list-style-type: none"> The construction of 3 new Primary Schools The construction of 7 new Shared Primary / Secondary Schools 	\$100 Million	Short Term

Focus Areas	Priorities	Programs/Projects	High-Level Description	Preliminary Cost Estimate (USD)	Timeline
			<p>Construction of model primary and secondary schools in the kingdom</p> <p><i>Note: A minimum standard for primary and secondary school needs to be defined – requisite infrastructure; classrooms; teaching staff; etc.)</i></p>		
	<p>Improve the quality of healthcare facilities in the kingdom</p>	<p>Develop and incentive scheme / package for medical practitioners</p>	<p>An incentive package to attract / encourage adequate and competent (the right calibre of medical practitioners - doctors, nurses, midwives, lab technicians, etc.) to Bonny Kingdom. This will aid in increasing the number of medical practitioners in the kingdom</p>	<p>Minimum funding requirement of \$5 Million over the plan horizon</p>	<p>Short to Long Term (Continuous basis)</p>
		<p>Establishment of six (6) new Health Centres</p>	<p>The establishment of six (6) new health centres across the Kingdom - Chobiekiri , Namabie, and Epelemantubo-Hart and 3 new Health Centres across the Outer Core Area. These health centres will require the provision of the following facilities:</p> <ul style="list-style-type: none"> • Provision of adequately qualified medical staff; • Provision of a properly equipped operating theatre; • Provision of x-ray facilities, laboratory and other supporting medical apparatus • Staff quarters for essential medical personnel <p><i>Note: this is not exhaustive but an indicative guide as to the required facilities – further needs assessment to be carried out to determine requisite infrastructure</i></p>	<p>\$60 Million</p>	<p>Short to Medium Term</p>
		<p>The upgrading of the existing Health Centres to i to a Comprehensive Health Centre</p>	<p>The upgrading of the existing Health Centres at Burukir, Oloma, ishile Ogono, Greens lwoma, Dema Abbey and Banigo. The upgrading the Health Centres will involve the following actions:</p> <ul style="list-style-type: none"> • The establishment of at least 10 residential medical bed spaces; • The employment of at least 2 additional resident doctors across each centre • Provision of a properly equipped operating theatre; • Provision of x-ray facilities, laboratory and other supporting medical apparatus; 	<p>\$30 Million</p>	<p>Short to Long Term</p>

Focus Areas		Priorities	Programs/Projects	High-Level Description	Preliminary Cost Estimate (USD)	Timeline
				<ul style="list-style-type: none"> Staff quarters to ensure availability of round the clock services - staff quarters for essential medical personnel <p><i>Note: this is not exhaustive but an indicative guide as to the required facilities – further needs assessment to be carried out to determine requisite infrastructure</i></p>		
			Refurbishment / upgrade of Bonny General Hospital	The refurbishment project will also include the expansion of hospital capacity and installation of state-of-the-art medical equipment. This will also include the establishment and operation of an LGA wide ambulance service to link the local Health Centres with Bonny General Hospital and regional	\$15 Million	Short to Medium Term
		Provide ample opportunities for skills acquisition and capacity development	Develop and implement youth development plan	The development and implementation of a strategic plan to adequately equip / empower the youths (also career advisory centre). It will involve the development of a youth acquisition centre for the teeming youth population across Bonny Kingdom. This centre shall work closely with the LGA’s employment bureau to reduce unemployment across the Kingdom	\$5 Million	Short - Term
			Develop youth recreational / sports centre on Bonny Island	The provision of a site for open air recreation centre – this will allow for recreational and sporting activities. Facilities such as swimming pools, track and field; indoor sport centre, recreational park, etc. to be included	\$10 Million	Medium - Term
Economic Expansion & Diversification	Build a vibrant tourism industry	Establishment of a Bonny Kingdom Tourism Development Board	Engage and on-board a Tourism Development company to lead the tourism industry development drive in Bonny kingdom. This will also involve the wide-spread awareness campaign (creation of a single source tourism related website; state of the art trip planning tools and a comprehensive list of destination & events). The success of this will also require partnering with relevant marketing / PR agency to promote tourism in Bony to the outside world – such an agency will also be tasked with the yearly promotion of cultural / traditional festivals / carnivals across the Kingdom (boat regattas, etc.)	\$5 Million	Short to Long Term (Continuous basis)	
		Establishment of an Eco-Tourism	The creation of this centre will promote tourism by	\$7.5 Million	Medium -	

Focus Areas		Priorities	Programs/Projects	High-Level Description	Preliminary Cost Estimate (USD)	Timeline
		Centre	enabling visitors to experience the pristine, and relatively undisturbed natural areas of Bonny Kingdom – it will directly benefit the community economically. The centre is to be established on 1,000ha of land close to the Atlantic Coastline (Outer Core). This will also include the upgrade Finima Nature Park and creation of other Bio-Diversity parks		Long - Term	
		Embark on massive land reclamation projects to create / develop harbours and beaches	The is the need to identify the suitable areas to site such projects across the Island	TBD	Medium – Long Term	
		Develop a world-class resort type facility (hotel; golf; spa etc.) - Bonny Island	The establishment of a world-class resort strategically located by the pristine beach front is bound to attract numerous tourists to the Kingdom. The resort is to be equipped with state-of-the –art facilities and capable of accommodating over 200 guests (at the very minimum)	\$50 Million	Long - Term	
		Establishment of an Arts and Cultural Centre	This will involve the establishment of a cultural museum to showcase rich history and culture of Bonny Kingdom thereby providing an opportunity to enhance the public's understanding, involvement and appreciation of Bonny Kingdom’s culture – this will be done through interactive videos, programmes, seminars and exhibits	\$0.5 Million	Medium - Term	
Build capabilities and partnerships for commercial agriculture & aquaculture	Set up a world-class fishing company	The company will drive the investment in the sector and build a profitable fishery company – this company will be an all-inclusive company and may be made up of the various producers across the Kingdom (producer associations and cooperatives). A technical partner with the requisite know-how shall be engaged. Part of this initiative will also involve the definition of a comprehensive aquaculture strategic plan to ensure the overall objective / long-term vision for the sector is realised	\$1.5 Million	Short - Term		
	Implement a financing scheme for the fishing sector	This will serve as some form of intervention fund to develop the sector and ensure there is adequate funding for the implementation of the strategic aquaculture strategy for Bonny Kingdom. The fund will be provided by various developmental partners and administered by reputable financial institutions. The fund will enable	\$25 Million	Short - Term		

Focus Areas	Priorities	Programs/Projects	High-Level Description	Preliminary Cost Estimate (USD)	Timeline
			purchase of improved fishing equipment and working capital		
		Acquisition of trawlers for deep sea fishing activities	The acquisition of trawlers will ensure deep ocean fishing capabilities are made available – this will also involve adequate training of resources to effectively engage in trawling business	\$3 Million	Medium - Term
		Establish Fishery Processing Centre	This initiative is designed to ensure processing (value addition; preservation, etc.) fish through the provision of the necessary infrastructure. Such infrastructure will include the following: <ul style="list-style-type: none"> • Build a fish landing jetty / centre • Provide improved facilities for sorting / handling /packing of fish at landing centres • Set up a fish processing plant with cold storage facilities 	\$2.5 Million	Medium - Term
		Establish Bonny Kingdom’s fisheries resources Research Centre	The centre will ensure that research capabilities are deepened and aid in the discovery and optimization of Bonny Kingdom’s fisheries resources. This will include carrying comprehensive surveys on fisheries and aquatic resources to provide an accurate basis for habitat assessment, planning, and management. The requisite training of man-power will also be part of the initiative	\$2.5 Million	Medium - Term
		Establish agriculture loan scheme	This will serve as some form of intervention fund to develop the agricultural sector on the island – the success of such a sector is dependent on the availability of accessible link roads. The fund will support the development of the sector (livestock; cash / food crops) and ensure there is adequate funding for the implementation of the strategic agricultural strategy for Bonny Kingdom. The fund will be provided by various developmental partners and administered by reputable financial institutions.	\$10 Million	Medium - Term
	Explore cluster development opportunities with the establishment of an industrial park	Develop industrial zone / park on cluster – gas-based industries	Identification of strategic location for the siting of an industrial park (heavy industries) across the Kingdom – this will include Site clearing; permits, etc. In addition, a n industrial park administrator company shall be established and tasked with the responsibility of	\$50 Million	Medium Term

		High-Level Description		Preliminary Cost Estimate (USD)	Timeline
Focus Areas	Priorities	Programs/Projects			
			maintaining the facility and attracting potential tenants and investors to the park		
		Develop sea-port at industrial park site	This will involve the construction of a sea port within the industrial complex thus facilitating the inward and outward movement of goods / products	\$500 Million	Long Term
		Construction of an embedded thermal power plant – 100MW	For the efficient operations of the industrial complex, it is imperative that a dedicated power plant is set up for the complex. This will ensure regular / uninterrupted power. Any excess power may be sold to BUC for onward distribution	\$100 Million	Long Tem
		Develop gas-based industries	The development of various gas-based industries across the industry park by the various tenants / investors – this may include but not limited to Petrochemical plants, fertilizers plants, etc. The type of investments will be based on the investors and the incentives being offered by the industrial park administrator	TBD	Long Term
	Pursue an aggressive investment promotion strategy	Establishment of the proposed Bonny Kingdom Foundation	<p>A key role to be performed by the proposed Bonny Kingdom Foundation shall be to champion the investment drive for the Kingdom. The Executives of the proposed Foundation shall embark on investment drives / roadshow activities to promote investment opportunities across the Kingdom.</p> <p><i>Note: Proposed cost is only an indicative set-up cost required for the Foundation and initial investment roadshow costs – cost also includes detailed socio-economic survey to be undertaken for Bonny Kingdom</i></p>	\$2.0 Million	Short to Long Term (Continuous basis)
		Development of Bonny Kingdom Investment / Marketing Brochure	This will involve working with a reputable Brand Management Company (BMC) in developing marketing themes, messages and materials for Bonny Kingdom, and in the articulation and execution of a marketing plan. The contracted company will also develop a distinct brand image / identity for Bonny Island / Kingdom. This will go a long way in attracting the much needed investment into Bonny. This will also include the development of a website for Bonny Kingdom- this will project Bonny as a community open for business and provide information to	\$0.3 Million	Short - Term

Focus Areas		Priorities	Programs/Projects	High-Level Description	Preliminary Cost Estimate (USD)	Timeline
			Launch (formally) the updated Bonny Kingdom Master Plan	potential investors from any part of the world Organize a high profile launching ceremony for the Bonny Kingdom Master Plan- attracting a diverse stakeholder base which will include the Federal Government, Rivers State Government, Regional and National International Development	\$0.3 Million	Short - Term
	Boost the growth of Micro, Small and Medium Enterprises		Establishment of an SME Fund	In an effort to stimulate job creation across the Kingdom, it is imperative that SME's are adequately empowered – SME's are expected to be the engine of growth and key employer of labour as Bonny transits from an economic base of primary production to a secondary production base. The fund shall be administered by reputable and qualified micro finance institutions	\$60 Million	Medium - Term
			Establishment of light industries to stimulate job creation	<ul style="list-style-type: none"> • 4ha site for light industry and workshops on land adjacent to the Eastern by-pass • 5.7ha for light industry and workshops uses located on the New Finima Road • 5.8ha for light industrial and workshop uses located to the south of the Greenfield development 	\$30 Million	Short to Medium Term
			Construction of new markets and upgrade of existing markets	The definition of a site for new sites for markets across the Kingdom and in line with stipulated minimum standard – building od shopping complexes / stalls. Also, existing markets may need to be upgraded to meet pre-defined standards <i>Note: It is imperative a minimum standard is set for markets across the Kingdom</i>	\$5 Million	Medium Term
Infrastructure Development	Develop a strong multi modal transportation system	Construction of massive road networks across the Kingdom	This will involve the completion of the Bonny – Bodo road project (inclusive of the ring road project) and necessary access roads. Also, the improvement of road junctions along the principal roads and upgrading of the local road network. <ul style="list-style-type: none"> • Completion of the access / link road between the island and mainland Rivers State (Bonny – Bodo Link Road; ring road) • Completion of the Bonny Eastern by-pass and the 	\$250 Million	Medium to Long Term	

Focus Areas	Priorities	Programs/Projects	High-Level Description	Preliminary Cost Estimate (USD)	Timeline
			upgrading of various existing roads to establish a Western by-pass <ul style="list-style-type: none"> Establishment of a network of footpaths and bridges to link individual settlements through the creek systems 		
		Deployment of Traffic Management System	With the attendant traffic expected from the creation of a link road to the mainland, the traffic management system should be introduced to reduce traffic congestion, improve safety and provide pedestrian facilities. This will also include the use of road information signs, traffic lights and markings to reduce uncertainty for road users and increase road safety	\$0.75 Million	Medium to Long Term
		Establishment of Bonny Kingdom Mass Transit System (Bus)	This initiative will involve the following: <ul style="list-style-type: none"> Construction of Bus routes and bus stops at strategic locations across Bonny Island - The establishment of a public transport bus route through the area providing improved access to Bonny Town, New Finima, Abalamabie and intervening points Provision of 20 high capacity buses (50 people) - The provision of high capacity buses to ply the dedicated bus routes to be created across the island. It is expected that the number of buses shall be gradually increased over the planning horizon to cater for the growth in commuters Construction of a Bus station / terminal on Bonny Island - With the development of the access road to the mainland, a bus station / park will be need to ferry commuters and goods to and fro the island 	\$3.5 Million	Medium - Term
		Construction of Jetty on the Admiralty Creek (Bonny Island)	This project will provide a new landing quay to replace the existing congested Admiralty Jetty and provide a commercial and mixed use development on 10ha of reclaimed land to the south of the existing Admiralty	\$2.5 Million	Medium - Term
		Construction of 6 new Jetties across the Middle core Area	The establishment of strategically located jetties in Georgekiri, Henri Long John, William Jumbo, Christy Wilcox, Benstowe and Epelema in addition to the existing ones in Oloma, Burukiri, Greens Iwoma, Otobie, Ada Allison and Coconut Estate to encourage transport between the villages and Bonny Town, which remains the	\$6 Million	Medium – Term

Focus Areas	Priorities	Programs/Projects	High-Level Description	Preliminary Cost Estimate (USD)	Timeline
			regional centre		
		Purchase mass transit Ferries	This will involve the purchase of five (5) mass transit ferries. These ferries will be utilized to convey passengers and goods from the Island to Port-Harcourt in particular. It will also involve the establishment of a dedicated company to manage the overall operations on a commercial basis	\$3 Million	Medium to Long Term
		Develop/ upgrade Bonny Airstrip	The development / upgrade of the existing Bonny air strip will provide another viable means of access to the island. This will involve the development of an airport terminal, a run-way to accommodate a medium-sized jet (with the possibility of expansion for larger body aircrafts)	\$20 Million	Long - Term
	Upgrade social amenities / utilities (water; power, housing, etc.) across Bonny Kingdom	Connect water pipelines to individual homes (Bonny Island)	This will involve the direct connection of water pipes to residential and commercial facilities from the central water distribution system being operated by BUC. This will also include the completion of ongoing JIC water distribution projects	\$75 Million	Short – Medium Term
		Construction of water kiosks across the Kingdom	This does not include the urban areas as this is already covered under ongoing JIC water projects across Bonny Island. The creation of water kiosks across other parts of the island will be geared towards meeting globally acceptable standards of water consumption per individual	\$75 Million	Short - Term
		Construction of a 250 MW power plant on the island	The bulk of the energy to be generated by the power plant is expected to be evacuated to the national grid. Based on the projected electricity demand of Bonny Kingdom, a sufficient amount of power shall be reserved to meet the Kingdom’s demand. This will include connecting all within Bonny Island to the power grid	\$300 Million	Medium - Term
		Acquisition of additional power supply units for the rest of the Kingdom (Middle and Outer Core, etc.)	This will include the acquisition of power generation units and distribution facilities across the rest of the Kingdom (not including Bonny Island) to meet the projected energy demand (40MW approx.). These facilities are to be deployed on a commercial basis	\$50 Million	Long - Term
		Establishment of a housing scheme for Bonny Kingdom	The housing scheme will be geared towards the provision of homes for all Bonny indigenes – creating an opportunity for home ownership through a mortgage scheme. The scheme will focus on the utilisation of vacant	\$50 Million	Medium - Term

			High-Level Description	Preliminary Cost Estimate (USD)	Timeline
Focus Areas	Priorities	Programs/Projects			
			land to provide residential accommodation for the teeming population. It will also involve the following key initiatives: <ul style="list-style-type: none"> • Definition of a strategic Housing Action Plan for Bonny Kingdom • Establishment of a Housing development authority • Development of a Research capability on low-cost building technology and materials 		
		Completion of various housing estate / projects on Bonny Island	The completion of the following projects: <ul style="list-style-type: none"> • JIC / NLNG Housing projects • Federal housing estate in Bonny (a public private partnership) 	TBD	Short Term
		Development / construction of 2,000 Low cost housing units in Bonny Island	The establishment of residential neighbourhoods across Bonny Island – assuming six persons per household, this initiative will accommodate a total of 12,000 residents by 2040. Due to land constraints – high-rise building may be a favoured approach	\$100 Million	Medium to Long - Term
		Development / construction of 500 Low cost housing units in Bonny Island	The establishment of residential neighbourhoods across the middle and outer core areas – assuming six persons per household, this initiative will accommodate a total of 2,500 residents by 2040	\$25 Million	Medium to Long - Term
Environmental Sustainability	Develop and implement a comprehensive environmental management / protection plan	Protection of Bonny Kingdom’s eco system	The establishment of a committee or Environmental Unit (EU) responsible for the following: <ul style="list-style-type: none"> • Enacting and enforcing laws against wildlife activities • Utilizing laws, licenses and other agreements to protect wildlife • Simplifying wildlife protection guidance to make it easier for people to comply with the law The other project / programmes under this initiative will include: <ul style="list-style-type: none"> • Development of a recycling plant in Bonny Island • The construction of a Sewage Treatment Plant on land adjacent to Admiralty Creek • Procurement of tipper truck for waste disposal and management • Procurement of incinerators 	\$250 Million	Long - Term

			High-Level Description	Preliminary Cost Estimate (USD)	Timeline
Focus Areas	Priorities	Programs/Projects			
		Development of a community evacuation strategy for Bonny Kingdom	<ul style="list-style-type: none"> Shoreline protection / land reclamation activities The plan will highlight key strategies to adopt in the event of a gas-related emergency situation in Bonny – the response time to emergency / threats; responsible parties, etc.	\$0.5 Million	Short - Term

6. APPENDICES

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6.1. APPENDIX A: ENVIRONMENTAL MANAGEMENT PLAN

Creation of Environmental Unit

The environmental unit will be the link between the environment and the stakeholders and will undertake a wide variety of tasks. It should comprise a core unit of staff with key environmental knowledge and skills employed on a full-time permanent basis to ensure continuity of the EMP implementation. The environmental units aim and key responsibility is to coordinate actions directed toward achieving the sustainable environmental management of Bonny LGA.

It is proposed that the EU is comprised of a minimum of three professional full-time members of staff and representatives of BECC, Rivers State ministry of Environment and Natural Resources and the JIC.

More specific responsibilities are listed in the table below:

Responsibility	Description
Implementing EMP	Details already defined earlier in this section

Responsibility	Description
Database Creation and management	Details already defined earlier in this section
Monitoring mitigation measures	Details already defined earlier in this section
Review / Reporting	<p>If the planning process is to evolve and improve it is important that the processes and policies are subject to review. That the strengths and weaknesses of the Plan formulation process are highlighted, lessons learnt clearly identified and recommendations for change identified.</p> <p>A review programme is therefore proposed:</p> <ul style="list-style-type: none"> • Assess ease of compliance with resource management policies and highlight any issues arising from achieving compliance in the Planning Process. Including definition of any areas of non-compliance. • Recommendations for strengthening institutional frameworks and legal authority for management. • Recommendations for strengthening program administration and management. • Recommendations for promoting and sustaining participation of key stakeholder groups in the planning process. <p>Reporting:</p> <p>The EU will report to the Bonny LGA, local communities, the JIC and any other stakeholders at a public environmental general meeting (EGM) held yearly. Reports of the MIS and the Monitoring programs should be presented to the stakeholders at the EGM and should be available for public viewing at all times.</p>
Education / Public Awareness	<p>Environmental awareness programmes will be developed specifically to:</p> <ul style="list-style-type: none"> • Provide stakeholders with the information necessary to assist in their inclusion in the Planning process. • Promote dissemination of environmental information to all parties including good practice guidelines and BAT. <p>The programme design will be based on the findings of a national workshop undertaken to gain a consensus on the target audience, format, content, and scope of the materials to be produced and disseminated through the media (print, electronic, seminars, workshops, lectures, etc.)</p> <p>The production of the identified public awareness materials focusing on issues of concern and the dissemination of the materials will be the responsibility of the EU.</p>
Training	<ul style="list-style-type: none"> • Estimating and communicating the impacts of ecological and socio-economic trends on the BI resource base. • Issues and options for the institutional design of a resource

Responsibility	Description
	management programme. <ul style="list-style-type: none"> • Impacts, management issues and management techniques for such activities as tourism, habitat degradation and water pollution. • Linking management initiatives at the local and national level. • Promoting a learning-based approach to resource management. • Fostering private-public sector partnerships.

Table 31: Responsibilities of the Environmental Unit

ENVIRONMENTAL MONITORING AND DATA MANAGEMENT

Management Information System (MIS)

There is a general lack of up to date consistent environmental information available for the LGA as a whole. Specific area information does exist but relates predominantly to the petroleum facilities and their immediate vicinities and as such have a very narrow focus. In addition, the monitoring programmes implemented in response to project based EA needs are also narrow in focus and ignore wider but appropriate non project contexts. This lack of LGA wide data results in confusion about the exact present and future potential condition of the environment within the LGA. Therefore it is considered essential that a database of environmental information is created and maintained to provide an adequate environmental baseline in which an effective monitoring program can operate. A comprehensive monitoring system would provide an inventory of and categorise issues defining their nature, extent and priority. The implementation of the MIS and the Monitoring Programme will be the responsibility of the Environmental Unit.

Sector	Current Data Status	Data Requirements
Fisheries	Available research is largely inconclusive in determining the state of the fisheries	<ul style="list-style-type: none"> • Effects of oil and gas activities on fish catches <ul style="list-style-type: none"> • Fishery Productivity, e.g. environmental condition of breeding areas, monitoring of changes in catches (volumes, species) and monitoring catch practices
Water Hyacinth	Minimal data availability	<ul style="list-style-type: none"> • Location of Hyacinth in relation to BI • Potential for growth in BI waters
Sewage	Good basic understanding of current	<ul style="list-style-type: none"> • Destination of sewage produced by industrial community

Sector	Current Data Status	Data Requirements
	issues	
Pollution from Oil and Gas Industry	Adequate in and around oil and gas facilities. No formal data for remaining LGA	<ul style="list-style-type: none"> Coordinate existing JIC monitoring of key public health parameters at major urban areas to provide integrated reporting
Municipal Solid Waste	No adequate available data regarding types, volumes or disposal methods	<ul style="list-style-type: none"> Survey; Waste Types, Waste Volumes and Disposal Methods
Industrial Solid Waste	No adequate available data regarding producers, waste types, volumes or disposal methods	<ul style="list-style-type: none"> Survey; Waste Producers, Waste Types, Waste Volumes and Disposal Methods
Toxic and Hazardous Waste	Adequate. However, JIC data should be disseminated local communities	<ul style="list-style-type: none"> JIC should consider extending the reporting from their own internal recording procedures to include EU so as to provide local communities with data regarding what waste is produced and how it is disposed
Agricultural Land Degradation	Not yet a problem for BI. However, there is potential for future degradation	<ul style="list-style-type: none"> Establish current agricultural land uses
Riverbank Erosion	Adequate	<ul style="list-style-type: none"> N/a
Coastal Erosion	Absence of detailed modelling of coastal processes, estuarine hydrology and monitoring of the coastline	<ul style="list-style-type: none"> Model of coastal processes, and estuarine hydrology
Forests / Mangroves	Lack of Data on biodiversity and individual resources	<ul style="list-style-type: none"> LGA wide survey of forest biodiversity
Industrial Effluents	Adequate in and around oil and gas facilities. No data for remaining LGA	<ul style="list-style-type: none"> Test for effluents to discover nature, source and extent of any potential pollution
Sea Level Rise	Little data exists regarding sea level rise on Bonny Island	<ul style="list-style-type: none"> Measure existing sea level on and LGA wide scale
Flooding	There is no monitoring or assessment of the extent or significance of salinisation and no mechanism by which to receive early warning of potentially serious future problems	<ul style="list-style-type: none"> Research project into biological (salinisation) and socio-economic change induced by dredged channels / cuts

Sector	Current Data Status	Data Requirements
Industrial Air Emissions	Adequate in oil and gas facilities. No data for remaining LGA	<ul style="list-style-type: none"> Build Airshed Model

Table 32: MIS Data Requirements (not exhaustive)

Monitoring Plan

For all identified environmental issues for which mitigation measures have been defined, clear indicators for monitoring and evaluation purposes have been developed as shown in the table below:

Sector	Key Recommendations	Indicators	Monitoring Frequency	Responsibility
Forestry	Ban Export of Log wood from Bonny Island	Destination of felled wood	Daily	Port Authority
Waste	Achieve 10 % reduction by volume of waste generated	Monitor volume of waste recycled	Yearly	Env. Unit / JIC
	Monitor all closed sites to ensure potential contamination is not affecting the groundwater and potentially dangerous gases are appropriately managed	Contamination levels, e.g. methane, VOCs	6 months	Env. Unit
	Monitor waste deliveries to site	Number of deliveries Approximate volumes	Monthly	Env. Unit
	Monitor industrial waste streams	Types of Waste	Daily	JIC

Sector	Key Recommendations	Indicators	Monitoring Frequency	Responsibility
	Community monitoring of waste collection and illegal dumping	Number of collections Frequency and location of illegal disposal	Daily	LC
Oil and Gas Production	Ensure compliance with regulations	Check against policy	Monthly	Env. Unit
	Promote community monitoring of vulnerable facilities	Localised spills, contamination incidents	Daily	LC
	Reduce Gas Wastage	Monitor gas flaring results	Annual	Env. Unit
Water Resources	Monitor water sources for contamination including saline intrusion	Water course contamination levels	6 months	Env. Unit
Air Pollution	Undertake regular independent monitoring	Air quality	6 months	Env. Unit
Biodiversity Conservation	Monitor endangered species	Types and Numbers	6 months	Env. Unit
Control of exotic species	Monitor water hyacinth infestation	Location and Extent	Daily	LC
Sustainable fisheries management	Monitor fish catches	Types and numbers	Monthly	Env. Unit

Table 33: Monitoring Plan

INSTITUTIONAL ARRANGEMENTS

Given the current conditions within Bonny LGA, institutional strengthening activities will be necessary and are likely to involve the following areas.

Enforcement of Existing Legislation

Existing legislation is in place to reduce the potential for environmental degradation within the LGA. However, as stated earlier there are some serious issues in the legal system preventing regulations and legislation from ensuring the appropriate management of the environment. Although there has not yet been serious degradation of the environment it is considered likely, given the current development of the LGA, that potentially significant degradation will occur sooner rather than later. In particular, there is a general lack of enforcement of regulations and legislation, widespread corruption and under funding and resourcing of departments involved in the protection of the environment. As long as this situation continues, the possibility of sustainable growth within the LGA will not be attainable.

Environmental Impact Assessment

There is an increasing realisation of the importance of recognising cumulative effects and the need to assess their significance and manage them in 'real world' situations. To date, Environmental Assessment has focussed on large development projects and on a project-by-project basis. Thus a large number of smaller activities proceed without assessment. The cumulative and synergistic effects of small, incremental changes can be extremely difficult to detect and to deal with. Cumulative impact assessment is a fairly recent extension of impact assessment, which investigates the combined effects of multiple activities.

At the fundamental level most elements of the process of cumulative impact assessment are similar to conventional impact assessment. The most important difference is the inclusion of larger spatial scales in the analysis and these may translate into regional patterns of change - examples of cumulative effects include long-range transport of environmental pollutants, groundwater depletion and pollution, and linkages between fisheries and wetland losses. Thus cumulative impact assessment provides for a more comprehensive and holistic evaluation framework than conventional EIA.

Financing Framework

The EMP addresses activities and services that will be delivered by a range of institutions and its implementation will impose additional costs on the system. While international agencies may support some EMP activities, the longer term operational financing will have to be internally generated. The mechanisms need to be put in place as soon as possible to cover the

transitional and later periods of local financing. It should be noted that the ability to recover costs may require a change in law.

The following principles should be included in any financing framework:

- Financial transparency in collection, auditing and distribution is essential, with revenues raised clearly seen to be recycling back to the budgets of the organisations providing services
- Users should where possible pay in full for all physical resources they use, including the costs of the management of these resources and the pollution that they may produce
- Prices of services and supplies (waste management, for instance) should reflect true economic costs, including costs of sustainable environmental management where appropriate (Polluter Pays)
- Local stakeholders should be encouraged to be concessionaires in the system, thereby having a degree of ownership

Funding Options

- General revenue from the Government of Nigeria
- External sources in the form of official development aid and from NGOs and private foundations
- Beneficiaries pay which requires that those who benefit from a healthy coastal zone can contribute to coastal management – possible through the establishment of cost recovery mechanisms
- Polluters pay which was seen as the most promising long-term solution to environmental problems

Note: It is evident that for its successful operation, residential and industry, the main users of the LGA requires a huge range of infrastructural support ranging from roads to waste disposal sites. These all have capital and operating cost components. Furthermore there are additional

costs associated with management of the environment covering monitoring and enforcement, which are highly significant.

EMP Structure

The EMP is a commitment to carry out the proposed assessments / reviews and monitoring activities to guarantee environmentally friendly actions and environmental improvement within Bonny LGA. These actions have been made explicit in the form of:

- A review of current environmental legislation and its effect on the current and future management of Bonny Kingdom
- The identification of the main environmental issues and impacts including:
 - The existing environmental condition;
 - The existing influences on effective environmental management.
- An environmental mitigation plan:
 - The mitigation plan is a result of the review of issues and impacts and the existing regulatory framework governing the LGA. For each issue, mitigation measures are included and responsibilities are assigned.
- An environmental monitoring plan describing:
 - Actions to control and maintain the quality of environmental measures
 - The development of a Management Information System (MIS) to provide an inventory of issues and to define their nature and significance
- Putting in place an institutional strengthening mechanism:
 - Involving the creation of an environmental unit within the JIC to implement and monitor the environmental mitigation measures and its roles and responsibilities;
 - Financial Framework
- Implementation Schedule to integrate the activities of the EMP into the overall master plan;

- Reporting the status of the implementation of the activities relating to the EMP.

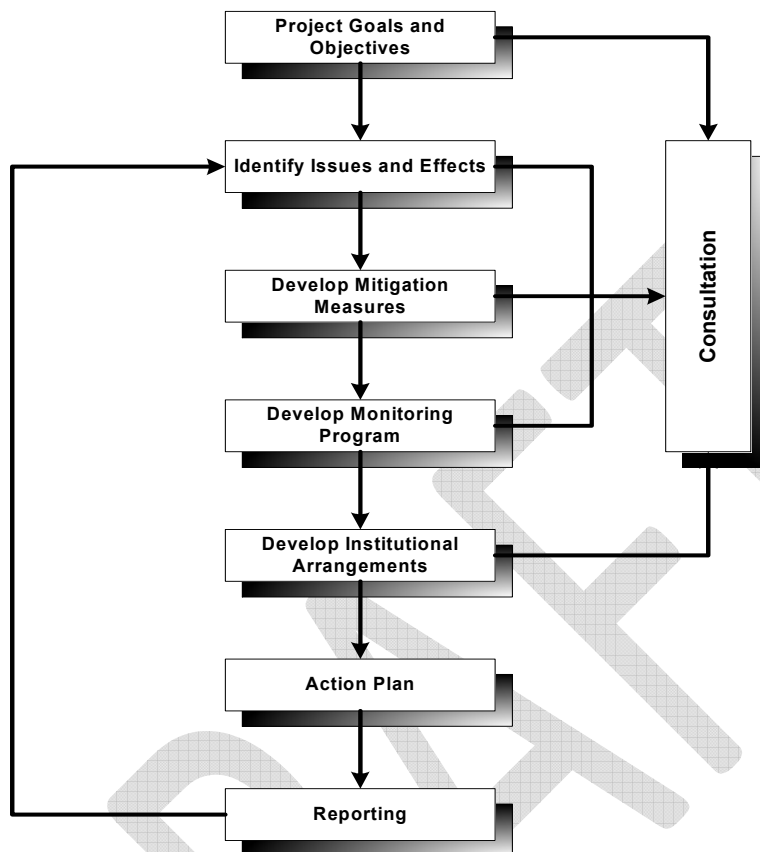


Figure 41: Structure of the Environmental Management Plan

Policy, Legal and Environmental Framework

Nigeria has established institutions and responsibilities for environmental management. It has joined a number of international conventions and is in the process of developing environmental legislation and procedures. The following Section establishes existing legislation and its effects on the management of the environment within Bonny LGA.

There are numerous government institutions relating to the management of the environment within the Niger Delta. The three main regulating bodies responsible for compliance with environmental regulations within Bonny LGA are as follows:

- FEPA. The Federal Environmental Protection Agency (FEPA) was established in December 1992 under Decree 58. FEPA has the mandate to provide guidelines on environmental protection in Nigeria and to ensure compliance with the applicable environmental regulations;
- DPR. The Department of Petroleum Resources (DPR) is a department within the Federal Ministry of Petroleum Resources. DPR has a mandate to oversee all aspects of the oil and gas industry in Nigeria and to ensure compliance with all applicable regulations;
- RSEPA. The Rivers State Environmental Protection Agency (RSEPA) was established in accordance with the provisions of Section 34 of the FEPA Decree 58 (1988) and Chapter 131 of the Laws of the Federation of Nigeria, Edict No. 2 (January 1994).

Other Institutions include The Federal Ministry of Health, Federal Forestry Agencies, Water Hyacinth Control Committee, National Institute for Freshwater Fisheries Research (NIFFR) and State Ministries of Agriculture and Natural Resources.

Nigerian Environmental Legislation and Regulations

(i) Energy and Minerals

Oil companies in Nigeria are governed by federal jurisdiction. The federal government is a partner in all oil activities and is required by federal law to enforce environmental compliance of oil operations through the DPR. This results in the federal government inadequately regulating oil pollution, and at the same time, creating much of the oil related environmental problems of the Delta. All mineral rights are granted to the federal government who subsequently sell oil mining leases to the oil companies. Thus resulting in little dialogue between oil companies and local communities about land requirements. In summary, the major issues are; the lack of requirement for community participation in planning and development of oil activities and the lack of enforcement of environmental regulations.

(ii) Land Use Act 1978

The Land Use Act 1978 provides the basis for all the land use management in Nigeria. The Act decrees that all land in Nigeria belongs to the Federal Government and is administered by the governor of each state. Unfortunately, although the Act was intended to improve resource management, as applied it has had a strong adverse effect on resource management. In particular it devalues the traditional use and management rights of local communities. It is commonly the case throughout the world that resource users will not manage resources on a sustainable basis if they do not have complete control over those resources. In cases in the Delta area, where community rights have been transferred to the Government, uncontrolled exploitation has often followed. In many such cases, the weakening of community rights has permitted government agencies, community leaders and large companies to override rights of communities and the individuals within them in claiming lands for development.

(iii) Forestry, Wildlife and Fisheries

State governors and local governments are permitted to establish their own reserves, which are governed by State legislation covering specific regulations for reserves and timber species which are in turn often ignored. In addition, ecosystem management and habitat conservation is neglected as laws focus predominantly on species protection and hunting regulations. These laws themselves are inappropriate, e.g. the Endangered Species Decree lists species not even found in Nigeria. Fishing regulations within the Delta are often ignored with poison and explosives still regularly employed to kill fish. In summary, the major issues are; lack of enforcement and poor coordination of enforcement; no consideration of ecosystem management, and no inclusion of market based incentives.

(iv) Industrial Pollution

The Federal framework for controlling pollution is the most comprehensive environmental legislation in Nigeria, most of which is covered by FEPA Decree and comprises four Parts:

Part 1: Establishment, membership, functions and powers of the Federal Environmental Protection Agency

Part 2: National Environmental Standards, including:

- Water quality
- Air quality and atmospheric protection
- Noise
- Hazardous substances

Part 3: Establishment of state and local governmental protection bodies

Part 4: Supplementary and Miscellaneous Enforcement powers

(v) Environmental Impact Assessments

The legislation requires only large-scale developments to conduct EIAs, thus creating a loophole as most developments causing degradation occur on a smaller scale.

(vi) Urban Development

Industrial estates are supposed to be separated by buffer zones from residential areas. If enforced, these regulations would reduce community health problems. However, as can be seen by the unmanaged development of Bonny Island, these regulations have had little impact.

(vii) Health and Sanitation

As with most legislation and regulation in Nigeria, the main constraint is the lack of enforcement of the above.

(viii) Participation in Conventions

Nigeria is a signatory to several international environmental agreements, some of which are listed below.

- Vienna Convention for the Protection of the Ozone Layer, including the Montreal Protocol and the London Amendment;
- Convention on the Conservation of Migratory Species of Wild Animals or Bonn Convention;
- Convention on Biological Diversity;

- Convention Concerning the Protection of the World Cultural and Natural Heritage or World Heritage Convention;
- Basel Convention on the Control of Movements of Hazardous Wastes and their Disposal;
- International Convention on Oil Pollution Preparedness, Response and Coordination (OPRC).

Sector	Regulation / Act	Date
Energy and Minerals	Petroleum Act	1969
	Energy Commission of Nigeria Act	
	Oil and Gas Pipelines Regulations	1995
	Department of Petroleum and Mineral Resources Environmental Guidelines and Standards for the Petroleum Industry in Nigeria	1991
Forestry, Wildlife and Fisheries	Forestry Act	1958
	Endangered Species (Control of International Trade and Traffic) Act	
	Public Lands Act	1970
	River Basins Authorities Decree	1987
	National Parks Decrees	
	Town and Country Planning Act	
	The Sea Fisheries and Inland Fisheries Decree	1992

Sector	Regulation / Act	Date
Industrial Pollution	Federal Environmental Protection Agency Decree	1988
	Harmful Waste Decree No. 42	1988
	S.1.8: National Environmental Protection (effluent limitation) Regulations	1991
	Water Works Act	1915
	Mineral Act	1917
	Public Health Act	1917
Environmental impact Assessments	Environmental Impact Assessment Decree	1992
Urban Development	Town and Country Planning Act	
	National Environmental protection Regulations	1991
Health and Sanitation	Public Health Act	
	State Environmental Sanitation Decrees	

Table 34: Relevant Legislation by Sector

Although Nigeria has established legislation, listed in Table 33, to help prevent and manage the environment, however, most of these agencies tasked with the enforcement are hampered / impeded due to the existence of several potentially significant issues - they include:

- Limited Funding
- Weak Monitoring and Enforcement Capacity
- Dearth of appropriately trained staff / lack of expertise

- Lack of Information
- Absence of a long term planning framework

IMPACTS AND ISSUES

A more comprehensive review of Bonny Island LGA's significant environmental issues and impacts can be found in the existing conditions report. The following is a summary of the existing conditions and the main issues and impacts.

The conclusions drawn from the review of existing conditions are as follows:

- All developments on Bonny Kingdom since the mid 1960s have led to some damage to all elements of the Environment
- All resource users groups are causing long-term damage to the renewable resource base and no user group is effectively managed
- Urban areas are a source of environmental damage
- Industrial pollution is an important source of environmental damage but is only one of many factors
- Significant scope exists for reduction in the level of industrial pollution and threat of pollution. However, the effects of a large spill or contamination event in key sensitive areas could be devastating
- There are clear threats to the long-term sustainable management of Island resources:
 - Most significant are potential road links to the mainland and to villages on the east coast of the island. If these roads are constructed and systems are not in place to manage physical development and resource exploitation the effect on the natural environment will be devastating. Most of the key biodiversity and economic values will be lost within a matter of years.
 - Urban development, in particular unplanned and uncontrolled developments and waste disposal pose increasing threats to forest habitats in west central and central areas of the island.

- While water hyacinth is at present a very low level threat, the economic consequences of an invasion of Bonny Island waters are potentially extreme

Influences on Environmental Management

In addition to the above issues, effective management of available environmental resources will be hampered by the following factors:

- Inadequacy of the Database. The lack of a coherent database on which development planning and conservation decisions can be based is a major constraint. Despite the fact that a number of EIA's have been prepared for projects based on Bonny Island it is not possible to establish with any certainty a precise environmental baseline for the LGA as a whole;
- Poor co-ordination between stakeholders. The pattern of development on the Island indicates that, at best, co-ordination and co-operation for the benefit of the environment does not occur and that at worst co-ordination occurs only when there is a defined potential for conflicts;
- Environmental and community education requires development.

Finally, it is important to recognise that Bonny Island cannot be treated simply as an extension of the Delta area as a whole. The pressures and problems faced on the island are different and must be treated as such.

Category	High	Moderate	Low
Land Resource Degradation	Urban Expansion	Agricultural land degradation	Sea Level rise Coastal erosion
		Riverbank erosion	Flooding
Renewable Resource	Fisheries habitat degradation	Mangrove degradation	

Category	High	Moderate	Low
Degradation	Biodiversity loss	Deforestation	Nypa Palm expansion
	Water Hyacinth expansion	Fisheries depletion	
Environmental Pollution	Sewage	Water Resources	Gas flaring
	Pollution from the Oil and Gas Industry	Industrial effluents	Vehicle emissions
	Municipal solid wastes	Industrial solid wastes	Industrial air emissions
	Toxic and hazardous substances		

Table 35: Summary of Environmental Issues

MITIGATION MEASURES

The environmental mitigation plan is drawn up to address the key environmental issues and mitigate potential impacts within the applicable / existing regulatory framework. The Mitigation Plan covers the fourteen (14) key areas listed below:

- Pollution from Oil and Gas Industry and Other Industrial Activities
- Industrial / Municipal Waste Management
- Sewage Collection and Disposal
- Air Emissions
- Agriculture Land Degradation

- Flooding
- Coastal and Riverbank Erosion
- Fisheries Depletion and Habitat Degradation
- Biodiversity Loss and Deforestation
- Water Resource Degradation
- Industrial Effluents
- Water Hyacinth and Other Exotic Species
- Sea Level Change
- Urban Expansion

1. Pollution from Oil and Gas Industry and Other Industrial Activities

There is a wide range of potential sources of pollutant on Bonny Kingdom. The most significant arise from the oil and gas industry, the range of potential pollutants includes:

- Crude Oil
- VOC's
- Refinery Effluent
- Contaminated Waters and Sludge
- Construction Waste

Under international standards or codes of practice, most of the existing (and potential future) industrial sources should pose little threat unless it results from breakdown, accidents, operational errors or some other form of disruption to normal operation. However, the extent of compliance is a subject of some debate and a number of organisations claim continued widespread damage is resulting from oil sector activities. There is no scientific evidence of any

widespread contamination by petroleum hydrocarbons in the Delta Regions. However, the information base is limited. In addition, very little LGA specific pollution and contamination data is available.

Strategic Objective: Produce oil and gas in an environmentally and socially non-disruptive way

Option	Action Plan	Responsibility
Legislative and Regulatory	Enforce standards & regulations	DPR / RSEPA
Institutional Instruments	Implement effective monitoring systems	EU / JIC
Economic Instruments	Impose fines for spills or uncontrolled releases from sources.	DPR
Public Awareness	Promote community monitoring of vulnerable facilities and encourage reporting of incidents.	LC / EU
	Increase public awareness of damage and concerns with incidents	EU

2. Industrial / Municipal Waste Management

There are no organised measures for waste collection and disposal except for those operated by the JIC companies within the industrial area of Bonny LGA. The JIC companies favour the use of incinerators and wastes arising from within the industrial complexes are normally disposed of in this way. Medical waste produced by the SPDC is shipped in sealed bags to the SPDC medical clinic in Port Harcourt for incineration. At present most wastes arising in any part of the study area are disposed of either into a watercourse or to an un-official and un-engineered dump. There are several dumps scattered around the various communities without apparent regard for their location and are frequently close to the banks of rivers or waterways. The potential for recycling is high, however recycling is not properly organised on the Bonny LGA.

Strategic Objectives: Establish an LGA wide waste collection and disposal system and Encourage waste producers to reduce, reuse and recycle waste

Option	Action Plan	Responsibility
Legislative and Regulatory	Achieve 20% reduction by volume of waste generated.	JIC/EU
	Enforce regulations to combat illegal dumping	RSEPA
Institutional Instruments	Evaluate private sector provision of services	EU
	Monitor industrial waste streams	JIC/EU
	Monitor all closed sites - formal and informal	EU
	Monitor all waste deliveries to waste sites	
	Identify appropriate sites for managed disposal of solid waste	
Investments	Solid waste reduction, reuse and recycling programme	JIC/LGA
	Waste collection and disposal service	LGA/JIC
	Prepare new sites for disposal	LGA/JIC
Economic Instruments	User charges for waste collection and disposal	Waste Collection Company
	Encourage markets for waste re-use products	JIC/LGA
Information	Study economic technologies for recycling and re-use	EU
	Promote separate waste disposal for recycling	EU/JIC
Public Awareness	Improve public awareness of hazardous materials	EU
	Implement education programs aimed at promoting re-use and reduction of consumption	EU

3. Sewage Collection and Disposal

There is no sewage disposal system incorporating the entire LGA. Some individual properties have indoor toilets which discharge effluent into private septic tanks or cesspits. A number of septic tanks in Bonny leak effluent as a result of their poor condition or overflow. Elsewhere there are a variety of sanitation systems in operation but none of them are regarded as safe or appropriate to service the needs of the growing population. A recent study of sanitation

systems in the Bonny LGA revealed 51% of the total population using a toilet built over open water. Significantly no local sanitation systems have been identified in Bonny LGA, which incorporate treatment of any kind. All of the methods of disposing human wastes in Bonny involve direct and untreated discharge to the environment.

Strategic Objective: Establish a sewage collection and disposal system to prevent potential threats to the environment and potential for wide scale disease

Option	Action Plan	Responsibility
Investments	Sewage treatment plants	Bonny LGA/ EU
	Drainage and sewage systems	
	Public Toilets	
Economic Instruments	User charges	Bonny LGA
Information	Evaluate private sector provision of services	EU
Public Awareness	Environmental health education for communities and schools	EU

4. Air Emissions

Due to a lack of gas utilisation infrastructure, Nigeria flares a substantial amount of the gas it produces (more than any other country in the world). In the immediate environment of the flare, gas flaring causes noise, elevated temperatures and NO_x, SO₂, VOC and soot (particulates). Other sources of polluting air emissions within the Bonny LGA arise predominantly from the oil industry and include water treatment, emulsion treatment, sludge holding pits and tank farms. There is little data regarding air pollution from other areas of industry or Vehicle emissions within Bonny LGA. However, this does not preclude significant air pollution within the Bonny LGA. The problem of air pollution is further exacerbated by the fact that Nigeria does not have a pollution control policy.

Strategic Objective Minimise scope for adverse effects from Air Pollution associated with new and existing developments.

Option	Action Plan	Responsibility
Legislative and Regulatory	Develop air emissions standards & regulations	FEPA / RSEPA
Institutional Instruments	Develop LGA wide Air shed model	EU
	Conduct EIAs in future	JIC / EU
Economic Instruments	Impose fines for uncontrolled releases from sources.	RSEPA

5. Agriculture Land Degradation

Agricultural degradation is not a major problem in Bonny LGA at present. However, an increase in population in the future will add pressure to current practices. Without a management program the degradation of agricultural land in Bonny may be inevitable.

Strategic Objective: Develop appropriate agricultural management to prevent future land degradation.

Option	Action Plan	Responsibility
Legislative and Regulatory	Land use Zoning	Planning Authority
Institutional Instruments	Foster NGO's and soil conservation programs	LC / EU
	Land use data collection and Management	EU
Economic Instruments	Remove any subsidies for Extensification / intensification	Bonny LGA

6. Flooding

The main issues associated with flooding are:

- Saltwater ingressión;

- Sea invasion due to climate change

Surface saltwater intrusion is mainly associated with forest clearance and channel construction / dredging. However, there has been little assessment of its significance within Bonny LGA. Sea level rise due to climate change may result in significant widespread seawater invasion. Potentially this may lead to:

- Localised salinisation;
- Water quality changes;
- Inundation of wetlands;
- Coastal flooding.

Strategic Objective: Reduce economic, social and environmental costs of flooding

Option	Action Plan	Responsibility
Legislative and Regulatory	Land use zoning	Planning Authority
Institutional Instruments	Improve management and response capacity to identify and stabilize erosion areas	EU / LGA
Investments	Drainage Projects	JIC / LGA
	Protection Projects	

7. Coastal and Riverbank Erosion

At present, land loss from creek erosion is a major concern even though areas of land affected are small and the processes involved predominantly natural. Such erosion is problematic because it often affects the most valuable lands, smallholdings and settled areas. Coastal erosion is potentially the more serious issue especially over the longer term. However, the available coastal erosion data in this regard does not paint a consistent picture.

Strategic Objective: Stabilise all coastal erosion sites and restore sites where practicable and Prevent new incidence of erosion

Option	Action Plan	Responsibility
Legislative and Regulatory	Land use planning and management to minimise erosion risk	Planning Authority / EU
Institutional Instruments	Improve management and response capacity to identify and stabilise erosion areas	EU
Investments	Stabilise all coastal erosion sites and restore sites where practicable	EU / Bonny LGA
Information	Prepare risk mapping	EU
	Prepare management plans for highest risk areas	EU / LGA
Public Awareness	Enhance erosion management awareness	EU

8. Fisheries Depletion and Habitat Degradation

Studies undertaken by various groups are largely inconclusive in determining the state of fisheries and the resources upon which they are based. However, given the available baseline information, it would seem that the most likely significant impacts would come from:

- Stock damage – over fishing from an increased number of fishermen;
- Habitat damage – cumulative effects of seismic exploration and channel dredging;
- Pollution – cumulative effects of oil spills and ineffective waste management.

Strategic Objective: Sustainable Fisheries Management

Option	Action Plan	Responsibility
Legislative and Regulatory	Enforce Fisheries legislation, regulations.	RSEPA
Institutional Instruments	Improved monitoring	EU
	Improved enforcement	RSEPA
Investments	Alternative livelihood projects for communities in over fished areas	JIC / LGA

Option	Action Plan	Responsibility
Information	Information campaigns among fishermen on fisheries and the environment	EU
	Research into Fisheries and Fishing Activity	JIC/EU
Public Awareness	Environmental education in coastal communities	EU

9. Biodiversity Loss and Deforestation

The two principle threats to biodiversity are habitat destruction and hunting. At present the biodiversity of Bonny LGA has not yet been irrevocably damaged. However, population pressure and agricultural land degradation will increase biodiversity loss. Three developments on Bonny Island would have a major affect on Swamp Forest Resource (Mangroves, because of their characteristics, perpetually wet soils in tidal areas of varying degrees of salinity, will remain least vulnerable to widespread exploitation), all three of which are Scenario 1 developments:

- Opening of Road to Mainland;
- Provision of Access Roads within the Eastern Sector of the Island;
- Large Scale Development on Eastern Bonny Island.

However, there is a general lack of data on biodiversity for the study area and an inadequate management capacity among relevant institutions to deal with potential losses in biodiversity.

Strategic Objective: Reduce demand for wood from Bonny Island Forest Resources; Achieve sustainable management of non-reserve forest areas and Create reserve areas

Option	Action Plan	Responsibility
Legislative and Regulatory	Ban export of log wood from Bonny Island	RSEPA
Institutional Instruments	Create forestry section of Environmental Unit (FEU) to improve data collection, monitoring and enforcement	EU

Option	Action Plan	Responsibility
	Promote and consolidate community participation of forest resources	FEU
	Establish system of reserves	
Investments	Integrated conservation and development projects and programs	FEU
Information	Promote non wood based construction	FEU
	Undertake inventory of systems of representative ecosystems - define all threatened and endangered species	
Public Awareness	Introduce environmental education in schools	FEU
	Establish conservation clubs	
	Embark on community training programs	
	Promote use of non-wood fuels - including fish smoking	

10. Water Resource Degradation

Few hand-dug wells exist on Bonny and those that do are rarely used for drinking. The salt content of well waters has been increasing over the years suggesting some back flow or infiltration of saline waters. In addition, septic tanks on the island are in direct hydraulic contact with the underlying aquifer. Combined with poor waste management, bacterial contamination of the shallow groundwater has resulted.

Strategic Objective: Management of water resources to prevent degradation and to monitor potential contamination

Option	Action Plan	Responsibility
Institutional Instruments	Monitor water sources for saline intrusion	EU / JIC
	Establish sustainable yield for all water resources	EU

11. Industrial Effluents

Contamination of surface and shallow aquifers originating from urban areas and the contamination of waters from industrial activity.

Strategic Objective: Prevent industrial effluents polluting water resources

Option	Action Plan	Responsibility*
Institutional Instruments	Monitor controlled collection and discharge of all surface water run-off from industrial sites	EU / JIC
	Minimise discharge of untreated effluent from industrial sites	JIC
Economic Instruments	Fines for untreated effluent / contamination from industrial sites	RSEPA

12. Water Hyacinth and Other Exotic Species

Two exotic species are usually identified as being a major concern in the Niger Delta, Water Hyacinth and Nypa Palm. Of these the hyacinth is by far the most problematic. Since its introduction into the area (around 1984) water hyacinth has taken hold and is now widespread throughout the delta destroying natural production systems and economic livelihoods. This poses an immediate threat to Bonny Kingdom and its vicinity. - Hyacinth infestation are so high that any risk that it may establish itself and take hold must be treated as extremely important.

Strategic Objective: Prevention of Water Hyacinth and Nypa Palm infestation.

Option	Action Plan	Responsibility
Institutional Instruments	Research program	EU
Public Awareness	Educate communities to report sightings of Water Hyacinth to EU	EU

13. Sea Level Change

The impact of sea level rise will be felt in low-lying and estuarine areas, which are often areas of significant economic activity, such as the Niger Delta where population densities and potentially hazardous industrial activity, are increasing. Present trends of declining yields in certain fisheries could well be exacerbated as coral reefs and mangroves, rich spawning grounds, are eroded or degraded.

Strategic Objective: Establish baseline data with which to monitor for future potential sea-level changes.

Option	Action Plan	Responsibility
Investments	Research program	JIC / EU
Public Awareness	Educational programs in schools and communities	EU

14. Urban Expansion

The shortage of land in Bonny Town may potentially result in accelerated eastward expansion leading to an unplanned ribbon of development and a loss of community focus unless a clearly defined Master Plan is in place to control it. Uncontrolled urban development may facilitate environmental degradation in previously undeveloped areas of the study area. The creation of the Port Harcourt – Bonny Link Road would bring further rapid uncontrolled urban growth along its route across the island leading to the destruction of most of the biodiversity and ecological values on the island.

Strategic Objective: Planned Urban Development

Option	Action Plan	Responsibility
Legislative and Regulatory	Land use zoning	Planning Authority
Institutional Instruments	Ensure appropriate and sustainable planning for urban growth	Planning Authority

Option	Action Plan	Responsibility
	Integrate environmental issues into planning objectives	Planning Authority / EU

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