Feasibility Study on Oyo State Border Crossing in Saki West

Final Report

February 2012

Original or Copy

Highly Commended
British Expertise
International Awards 2009-10

Contract Reference No. 031 TR CA

Crown Agents Reference No. 28572

Cover page photo: Okparu river at border Nigeria-Benin, view from Afesmou to Okerete

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List of Abbreviations

AGOA	Africa Growth and Opportunity Act
AIDC	African Infrastructure Country Diagnostic
BOO	Build Operate and Own
BOT	Build Operate and Transfer
CBA	Cost Benefit Analysis
CET	Common External Tariff
DFID	Department for International Development
DFID-PDF	Department for International Development Policy Development Facility
DPR	Detailed Project Report
ECOWAS	Economic Community of West African States
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
FIRR	Financial Economic Rate of Return
FGN	Federal Government of Nigeria
FMTI	Federal Ministry of Trade and Investment
HFL	High Flood Level
ISRT	Inter-State Road Transit
JBP	Joint Border Post
LWL	Low Water Level
MDA	Multilateral Development Agencies
Mof	Ministry of Finance
MFN	Most Favoured Nations
NIAF	Nigeria Infrastructure Advisory Facility
NPV	Net Present Value
PDF	Nigeria Policy Development Facility
PPP	Public Private Partnership
RITTA	Réseau International de Transit, Transport et des Affaires
SSA	Sub-Saharan Africa
TA	Technical Assistance
TEU	Twenty feet Equivalent Unit
TFTF	Trade Facilitation Task Force
ToR	Terms of Reference
TTRI	Trade Tariff Restrictiveness Index
WTO	World Trade Organisation
WACC	Weighted Average Cost of Capital
WAEMU	West African Economic and Monetary Union

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Executive Summary

Executive Summary

Following discussions with the Federal Ministry of Trade and Investment (FMTI) and other stakeholders, the DFID Nigeria Policy Development Facility (DFID-PDF) has decided to fund a feasibility study on the possibility of constructing a border post and associated infrastructure at Saki West, Oyo State. The expected outcome of this feasibility study is that the FMTI and other key Federal Government of Nigeria (FGN) stakeholders will use the evidence for a preliminary assessment of the feasibility and desirability of a formal border post between the Republic of Benin and Oyo State, Nigeria, at this location. The stakeholders will decide on the basis of the evidence provided whether or not to go ahead with the design stage

This study, therefore, focuses on the benefits and on the economic viability of the bridge over the Okparu river at Okerete, the rehabilitation of the access roads in both Nigeria and Benin, and the establishment of a formal border post.

Methodology

This study assesses the feasibility of a programme that delivers a wholesale transformation of trade facilitation along the route between the Republic of Benin and Oyo State, Nigeria.

The following tasks have been performed:

- A cost-benefit analysis of developing a formal border crossing with associated infrastructure at Okerete corridor and Okparu river;
- An assessment of the specific objectives a formal border crossing and market are intended to achieve, as articulated by different stakeholders;
- A series of project options on how best to achieve the objectives identified by the various stakeholders, including PPP options and general terms of reference for further design studies.

Benefits of the project

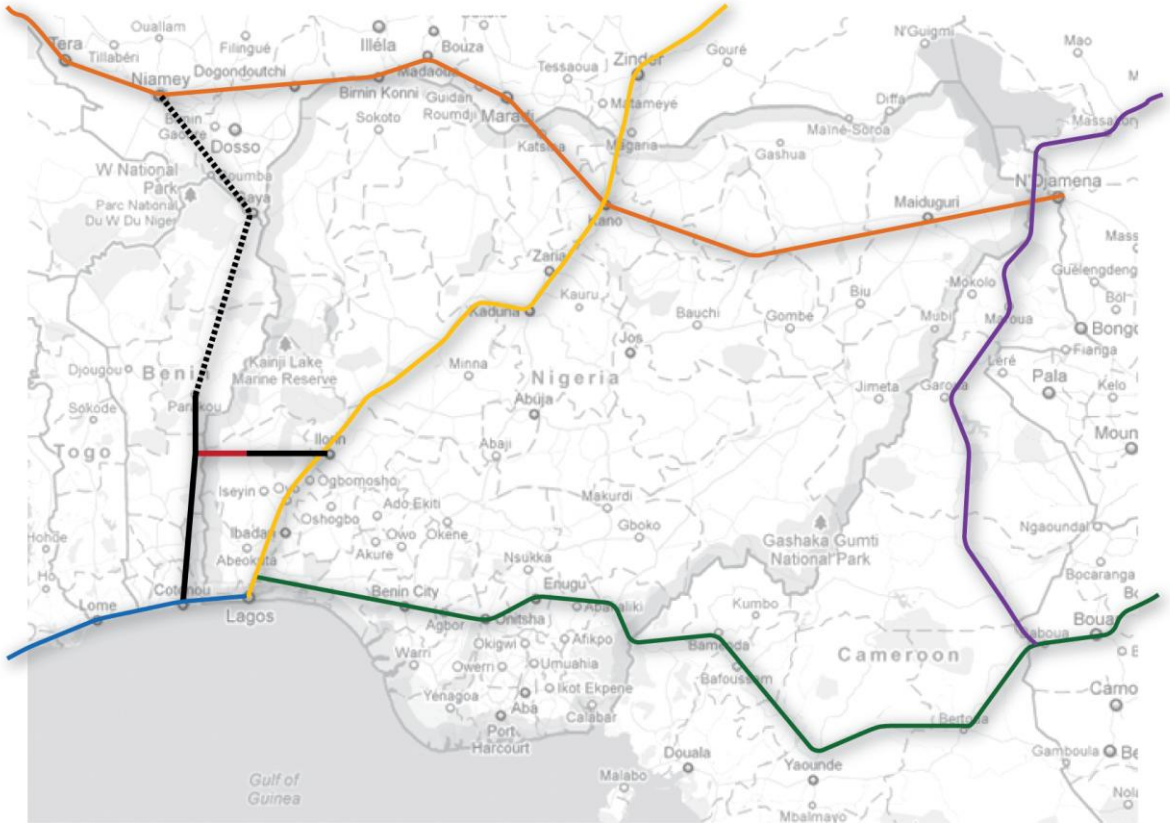
Direct benefits consist of savings on transport cost and time and savings on maintenance and repair of vehicles. Indirect benefits consist of the wider economic development of international and local markets, logistic centres and, subsequently, employment along the new corridor.

The direct benefits were estimated on the basis of a supply chain and logistics analysis. The financial benefit to government in terms of increased revenue collection is hard to estimate, but is substantial in view of the opening of a formal border that facilitates reduction of smuggling. In order to recover some of the investment cost, bridge or road tolls may be introduced.

Trade potential

The potential catchment area of the new corridor is enormous. Outside Nigeria, it is estimated at over 20 million people of the total of 139 million inhabitants in the nine regional trading partners of Nigeria (see Table 7).

Figure 1: Okerete Corridor conncections to Trans-African Highways



Key:

- Okerete Corridor
- Related Key transport routes in Benin and Nigeria
- Planned extension of Cotonou-Niamey rail route (and existing road route)
- Section of Abidjan-Lagos Corridor (Trans-African Highway 7)
- Section of Dakar-Ndjamena Corridor (Trans-African Highway 5)
- Section of Algiers-Lagos Corridor (Trans-African Highway 2)
- Section of Tripoli-Windhoek Corridor (Trans-African Highway 3)
- Section of Lagos-Mombasa Corridor (Trans-African Highway 8)

Within Nigeria, the potential market catchment area consists of the six states in the southwest of Nigeria, which have a population of around 50 million inhabitants. This catchment area is of sufficient size to allow the establishment of logistic centres to optimise the supply chain of products to and from other nations within, and outside of, the ECOWAS' region.

Private sector stakeholders have produced estimates that claim a border crossing at Okerete will generate the movement of 500,000 tons of goods per annum between ECOWAS landlocked cities and central Africa for the first year, due to the attractive logistics passing the Okerete corridor. Stakeholders estimate that over 350,000 cattle will be transported per year through this route, which is equivalent to 7,000 lorries per year. It is also thought that the trade of hides, skin and other meat products, and smoked fish will also grow.

Based on current volumes and the Consultants' estimate of future trade volumes, we have assumed an annual traffic pattern of passengers and vehicles as set out in Table 8. We have developed an estimate for reasonable bridge toll tariffs for different types of vehicles based on experience elsewhere in West Africa and in Europe, as well as through discussion with stakeholders.

Economic feasibility

The project benefits are summarised as follows:

Type of benefit:	**per annum**
Transport cost savings	NGN 700 million
Transit time savings	NGN 14 million
Maintenance & repair savings light vehicles	NGN 122 million

The project CAPEX are summarised as follows:

Cost item	
Construction / rehabilitation of the access roads from Saki to Okerete (60km)	NGN 4,600 million
Reconstruction of the road from Okerete to Kilibo in Benin (22km)	NGN 2,400 million
Cost of constructing a two-lane bridge over the Okpara river including Toll Plaza	NGN 700 million
Total CAPEX for the Saki-Kilibo corridor	**NGN 7,700 million**

The project OPEX are summarised as follows:

Cost item	
Maintenance cost of infrastructure	NGN 100 million per annum
Periodic maintenance	NGN 100 million (at yr 10, every 5 yrs)
Operations cost of Toll plaza at bridge	NGN 60 million per annum

The economic evaluation shows that the project is economically viable even when the increased tax/duty revenues for importation of goods are not taken into account. The Economic Rate of Return (EIRR) is 6.9 % under the assumptions made. When the additional benefits of increased Customs duties are taken into account, the EIRR increases significantly. It should be noted, however, that were external donors to be asked to finance some or all of the project, they would typically assess the EIRR against a "hurdle rate" used for helping to prioritise investments across different projects. By way of illustration, the consultants understand that DFID typically uses an EIRR hurdle rate of 12%.

Financial feasibility and Public Private Partnership (PPP)

Private capital providers will require a return on the capital provided to finance the investments. The required rate of return will reflect their perceived risk of the investment.

The financial evaluation shows negative Financial Economic Rate of Return (FIRR) (see Appendix D). A negative FIRR implies that the project is not attractive for the private sector as such.

The bridge tolls alone will not be sufficient to justify all infrastructure investments. This may be overcome by raising tolls periodically. Based on traffic estimates and toll rates predictions the FIRR may yield 13.6 %.

Joint border post development

The development of a border post is inherently linked with the establishment of a border crossing. Various models exist to engage in joint border posts, both on configuration and on border processes. Prior to the design and construction of a border post, further work will be required to:

- Undertake a full functionality study of the new border post operation;
- Identify the exact location of the border and the identified border post site;
- Track ECOWAS' work in developing legal and institutional frameworks for the establishment and operation of JBPs in the region.

Conclusion and recommendations

The Okerete border market corridor is economically viable. The integrated project is, however, unattractive to private investors. It is, therefore, recommended to divide the project into four parts, of which one (the bridge/toll plaza construction and management) is suitable for PPP through a concession. The remaining parts (access roads and joint border post) need to be financed from governmental funding and external donors. In the case of financing from external donors, the EIRR for the project, whilst positive, may not be sufficiently high to clear the EIRR "hurdle rates" used by such agencies in prioritising the allocation of investment funds, in which case additional justification may be required.

Next steps

Design studies

The Federal Ministry of Trade and Investment (FMTI) and other key ministries of the Federal Government of Nigeria (FGN) should invite consulting companies to prepare full design studies for the different parts of the Okerete border corridor, in which both the Republic of Benin and Oyo State, Nigeria, need to be involved. The design and construction preparation work is estimated at GBP 1 million for all project parts.

National and bilateral coordination

The implementation process to establish a formal and logistically sound transport corridor through Okerete border crossing will take considerable time and effort from both involved nations and their respective authorities.

The authorities involved are:

- Ministry of Trade and Investment
- Ministry of Public Works
- Ministry of Transport
- Ministry of Finance
- Département des Eaux et Forêts (Benin)
- Ministry of Water Resources
- Ministry of Agriculture
- Ministry of Environment
- State and province Technical departments (land use issues and ownership)

and in particular for JBP coordination:

- Customs authorities
- Ministry of Interior (Immigration & Police)
- Ministry of Defence (National Security)
- Ministry of Health
- Département des Eaux et Forêts (Benin)
- Ministry of Agriculture
- Ministry of Environment
- ECOWAS representatives

Project funding

As noted above, whilst the project is economically viable, the integrated project is, however, likely to be unattractive to private investors. It is, therefore, recommended to divide the project into four parts, of which one (the bridge/toll plaza construction and management) is suitable for PPP through a concession. The remaining parts (access roads and joint border post) need to be financed from governmental funding and external donors. The public portion of investments will need to be funded out of national budget sources, perhaps in combination with Oyo State resources, with or without credit facilities from financial institutions or donors.

At present, the Federal Government of Nigeria is gradually reducing fuel subsidies. The revenues of these reductions could be well allocated to a road rehabilitation program throughout the nation. More logical tools include creating funds for road rehabilitation via the introduction of a Federal Road tax for all vehicles, regardless of whether they use the Okerete corridor or not. This can be most simply implemented by charging a road surcharge on the yearly vehicle licence fee.

Since the Okerete corridor offers benefits to many ECOWAS member states, regional funding may be sought from financial institutions. Proper application would be required by both beneficiary nations (Nigeria and Benin) to allow the ECOWAS Commission to insert this project on the list of preferred projects.

Both governments should take steps to propose and promote the project to these potential donors or institutions to assess the chance of obtaining attractive financial means to fund the project.

FMTI has already approached some international and local banks, and is encouraged to continue dialogue to secure interest in co-funding the project, such as with the Afrexim Bank, Ekobank, Zenith Bank and the African Development Bank.

Overall, the range of options open for funding for the entire project and its sustainability will most likely hinge critically on FGN's willingness to release public funds for large parts of the project and of its decision on mechanisms to recover costs through corridor user charges to the private sector such as bridge tolls, road tolls, and general road taxation. The level of the user charges will also logically influence the attractiveness of the PPP option. As governmental funding could be significantly cross-subsidised by increased Customs revenues (import duties, excise) based upon the elimination of illegal trade in the region, this may also be a significant factor in FGN's overall investment decision, but it has not been estimated in this study quantitatively due to lack of reliable data.

Commitments

The FMTI has indicated that a Ground-Breaking ceremony for the Okerete Border Market project will be held at the end of June 2012. It is clear that ample study and preparation work still needs to be done, and this time frame poses a challenge for all stakeholders to comply with their respective role in the implementation process and allocate manpower and funds to manage and coordinate the many tasks ahead of them.

1. Introduction

Nigeria's Vision 20:2020 and associated implementation plans outline ambitious priorities with regard to trade facilitation and areas for action, including policies to improve trade facilitation and investment promotion capacities, as well as the reduction of transaction costs to trade, which encompass rationalising documentation and paperwork. These are complemented by plans to reform the country's trade policy.

Currently, many informal or unenumerated trading activities take place along Nigeria's porous borders for a variety of reasons. These activities lead to a reduction in collected tariff revenue, the influx of products that do not meet Nigerian product standards (expired products, cars over the age limit), and prevent the collection of adequate statistics on imports and exports.

To prevent informal trading activities multiple checkpoints along border corridors have been set up, requiring time and effort on the part of customs officials, and leading to additional delays in cross-border trade.

As part of its strategic plan to drive forward trade facilitation, FMTI is keen to develop an ambitious programme to modernise six of Nigeria's key border posts and associated infrastructure (including border markets and trade hubs).

This is aligned with the fact that, since the 1990s, the Nigerian Government has attempted to establish transnational and regional border markets in different parts of Nigeria, where trade procedures would be simplified and where adequate trade infrastructure would permit traders from Nigeria and neighbouring countries to come together and do business. These markets are prioritised in the *Vision 20:2020*. The government has also recently established the Presidential Trade Facilitation Taskforce (TFTF), which has broad membership from relevant Multilateral Development Agencies (MDA) and the private sector, with a clear mandate for improving trade facilitation by creating a forum for key private sector and public sector stakeholders to raise awareness of trade facilitation issues[1]. The TFTF has developed a Strategic Action Plan, identifying medium term priority policy interventions aimed at improving performance at key bottlenecks.

2. Project context

Following discussions with FMTI and other stakeholders, the DFID Nigeria Policy Development Facility (DFID-PDF) has decided to fund Phase 1 of a feasibility study on the possibility of constructing a border post and associated infrastructure at Saki West, Oyo State.

The Terms of Reference for this study were developed following a concept note presented by FMTI to DFID, which set out a roadmap for developing a formal border crossing at Saki West, Oyo State[2]. FMTI has already selected a border crossing point at Saki West Local Government Area on the border with the Republic of Benin as a pilot project. The successful model could then be applied to the other five identified crossing points, albeit configured to each of their specific contexts.

In line with the first phases of the roadmap set out in the concept note, the expected outcome of this feasibility study is that the Federal Ministry of Trade and Investment and other key Federal Government of Nigeria stakeholders will use the evidence for a preliminary assessment of the feasibility and desirability of a formal border post between the Republic of Benin and Oyo State, Nigeria at this location. The stakeholders will decide on the basis of the evidence provided whether or not to go ahead with the design stage, which includes detailed Terms of Reference (ToR) and budgets for a comprehensive and strategic set of interventions, including construction

[1] FMTI provides the chair and Secretariat for the TFTF.

[2] The Trade Facilitation Taskforce Action Plan also calls for a the "urgent need for proper definition of responsibilities among Federal Ministry of Commerce and Industry, Oyo State government, development partners, the organised private sector in terms of policy formulation, provision of financial resource development of infrastructure, provision of land and facilities within the market."

of the border post and associated infrastructure, and all related requirements, including, but not limited to, administration, training and communications.

This study, therefore, focuses on the benefits and the economic viability of the bridge over the Okparu river at Okerete, the rehabilitation of the access roads in both Nigeria and Benin, and the establishment of a formal border post.

The Consultants have also reviewed the issues around the establishment of a trans-border market as part of the project. Although there may be value in providing facilities near the border for a market that services the local communities, such as exists in Saki now, this would not have any significant impact on regional trade and economic growth. Therefore, the business case for this border crossing project needs to be driven by the benefits it provides to international trade through facilitating the movement of large volumes of goods and connecting that trade with trans-African corridors.

3. Methodology

This study assesses the feasibility of a programme that delivers a wholesale transformation of trade facilitation along the route between the Republic of Benin and Oyo State, Nigeria.

The ToR calls for the following tasks:

- A cost-benefit analysis of developing a formal border crossing with associated infrastructure at Saki West;
- An assessment of the specific objectives a formal border crossing and market are intended to achieve, as articulated by different stakeholders;
- A series of project options on how to best achieve the objectives identified by the various stakeholders.

Data collection

The consultants undertook data collection with the assistance of the FMTI and gathered the following reports and data:

- Trade Facilitation Taskforce Short-Term and Medium-Term Action Plan (2010)
- WTO Nigeria Trade Policy Review (due out in June 2011)
- Government of Nigeria, *Vision 2020*
- Government of Nigeria, First National Implementation Plan for Visions 20:2020
- Government of Nigeria, National Economic Empowerment and Development Strategy II
- ECOWAS Regional Strategic Plan (2011-2014)
- ECOWAS Conventions on Transit, Transport Regulations, and the Free Movement of People
- "The Joint Border Posts Functionality Study" – GOPA-NEA, for the EU 9th EDF Transport Facilitation Project in West Africa
- West Africa Regional Road Transport and Transit Facilitation Programme – Joint Border Posts. Final Report (PADECO, June 2007)
- Nigeria Customs Service Import and Export Prohibition List

Cost benefit analysis (CBA)

The cost-benefit analysis will be made on the basis of assessing all infrastructure costs, including the border bridge, the toll plaza, the border post structures and the access road from the bridge to the nearest point of a tarmac road in both Nigeria and Benin.

The cost of constructing a Joint Border Post has not been assumed in the base analysis. The reason for this is that the Consultants advise (in Section 7) that a more detailed functionality study will need to be undertaken to assess the size, layout, facilities and equipment requirements of the post, and these choices clearly impact on construction and operational costs. The

Consultants have, however, made a sensitivity test by assuming the infrastructure cost of the border post is in the region of NGN 1,000 million.

The analysis will also include the operational and maintenance cost of the bridge and the two access roads once they have been reconstructed in accordance with the requirements of the ECOWAS convention on Inter State Transport (axle load restrictions, vehicle dimensions, etc). Additionally, the cost of the maintenance of the toll plaza and border post infrastructure will be taken into account. The cost of JBP operations is a matter of further analysis by governmental agencies (Immigration, Customs, other inspection agencies, Security, etc.) that are involved in the border crossing process, dependent on their analysis of risk and their deployment plans. These have not been studied by the Consultants and are excluded from the CBA.

Benefits consist of both savings on transport cost and transit time between the present nearest tarmac road junctions (in Saki, Nigeria and Kilibo, Benin) and on generated revenue from bridge tolls based on present and generated (new and diverted) traffic of vehicles and persons.

Secondary benefits that follow on from creating savings in the cost and time of transporting goods obviously include growth in national and regional trade. The link between cutting transport costs and growing trade is well established, but this growth is also influenced, positively or negatively, by other important factors, such as trade policy. The Consultants have, therefore, focused on the direct benefits that flow from the project – revenue collection and savings in transport costs and time.

Furthermore, eventual bridge tolls will be analysed on the basis of international examples and will be compared to the transport cost savings that are result of the full uninterrupted traffic maintaining international speed standards (in Section 6).

Objectives for the border crossing and the market

The Consultants have interviewed relevant stakeholders to assess the objectives for the establishment of a border crossing and market. Stakeholder groups interviewed were:

- Ministry of Trade & Investment, Nigeria
- Ministry of Trade & Investment, Oyo State
- Customs Authorities at Ibadan, Saki and Okerete, Nigeria
- Chief of Local Government of Saki, Nigeria
- Mayor of Okerete village
- Ministère des Travaux Publics et de Transport, Benin
- Membres de l'Assemblè de Benin
- Direction de Chemin de Fer, Benin
- Trading community at Saki, Nigeria
- Representatives of RITTA

Project options

Taking objectives of stakeholders into consideration, options will be defined for:

1. Project funding based on PPP structure
2. Joint border post location, size and operations
3. Next steps in the process of implementation of the infrastructure development works including height and type of bridge, road type, minimum requirements for toll plaza and border post infrastructure

4. Trade policy and existing international trade

4.1 Trade policy development

Nigeria's import policy has gone through a protectionist phase that has evolved into a liberal one over the last two decades. The former was accounted for by the import substitution industrialisation strategy adopted immediately after independence, while the latter can be explained by the adoption of an import liberalisation policy following the structural adjustment programme. Several changes made to applied tariff rates, sometimes with simultaneously applied import prohibition, were the two main policy instruments. Instability and non-predictability were the bane of Nigeria's import policy, even during the 1988-1994 and 1995-2001 seven-year tariff book publication, which was meant to rationalise and harmonise Nigeria's tariff rates.

Nigeria's long list of prohibited imports (and a shorter list of prohibited exports) has partly accounted for the persistence of smuggling from regional neighbours (Benin, Niger, Cameroun, and Chad). Despite lowering import tariffs in 2008 for a wide range of goods, and replacement of some import bans by tariff (ref. 2011 Trade Tariff Restrictiveness Index -TTRI), Nigeria ranked 126th (where first is least restrictive) out of 177 countries.

Benin is a member of the WTO, the West African Economic and Monetary Union (WAEMU) and the Economic Community of West African States (ECOWAS). It is involved in substantial informal trade with Nigeria. Benin was ranked 44th and adopted the Common External Tariff (CET).

4.2 Existing trading patterns

4.2.1 Informal trade

Created in 1976, Oyo State has a population of 5.5 million and covers a total of 27,249 km^2. It shares a border with the Republic of Benin to the West.

Saki West is one of the 33 Local Government Areas of the State where Okerete border is located. Its economic mainstay is agriculture, made up of such crops as maize, yam, cassava, millet, rice, plantain, cacao tree, palm tree and cashew. The total domestic product of the State in 2008, according to an estimate of the National Bureau of Statistics, was US$1.5 billion.

The village of Okerete has been an existing route since 1800 and has been used by West African traders as a key crossroads between Dakar, Bamako, Ouagadougou, Djougou, Kilibo, Saki, Ilorin, Maiduguri, Kussiri, Ndjamena and Saki, Ibadan, Onitsha, Ikom, Kumba and Douala.

Okerete is about 22 kilometres away from the Trans-Benin highway and 15 kilometres from the railway line that links Cotonou Port with Parakou. It has, therefore, excellent linkages to Northern parts of ECOWAS nations, such as Burkina Faso, Mali, Niger and Chad. On the Nigerian territory, Okerete is linked by an unpaved road to Saki (60 kilometres), which is linked to Ibadan, Ilorin, Abuja at 759 kilometres, and Lagos at 400 kilometres.

No official statistics on trading volumes exist, however the Consultants have collected data from informal transporters of goods from various markets across Benin, Togo and Ghana through a recently established Trading/Customs clearing Association, named RITTA.

Table 1: Informal trade via Okerete and Kabo (import)

COUNTRY	2007	2008	2009	2010
From BENIN, TOGO, GHANA	Okerete: 41, 600 Kabo 7,300 Total through Saki 54,900 tons	Okerete: 38, 950 ex Kabo 6, 950 Total through Saki 45,900tons	Okerete: 48,700 Kabo 3,700 Total through Saki 42,500	Okerete: 19,650 Kabo: 6,700 Total through Saki 26,400

Table 2: Informal trade estimate via Saki (export)

COUNTRY	2007	2008	2009	2010
To BENIN, TOGO, GHANA	Okerete is 6,640 Kabo 1,320 Total through Saki 7,960 tons	Okerete 4,350, Kabo 6, 550 Total through Saki 10,900 tons	Okerete 3,650 Kabo 7,400 Total through Saki 11,050	Okerete 3,235 Kabo 1,650 Total through Saki 4,885

Local market for agricultural products and cattle

Agricultural Products and Cattle are traded in a number of local markets through Saki to Ibadan and Lagos. Products include Yam-Flour, Yam, Shea Butters, Maize, Soya Beans, Cashew Nut, Cassava and Livestock, such as cows and goats. The local markets are:

1. Sango Market
2. Sanni Salla Market
3. EkoKan Market
4. Imua Food Market
5. Idera Market
6. Okerete Market

Every week, some 50 trucks containing agricultural products leave from Saki to Lagos, Ibadan and other parts of Nigeria. More than 2,200 trucks of Cattle are routed through Saki to other parts of Nigeria.

Agricultural products trucks transport on average between 120-245 bags of 50-150 Kilos.

As a result of the poor crossing and road conditions in Oyo State (and neighbouring states), the trade of goods is limited in consignment size. The majority of goods are loaded onto passenger vehicles (old Peugeot 504's are often used) and pick up vans (see Figure 2). The cargo loaded is usually accompanied by paying passengers to justify the cost of the (time consuming) haulage.

Figure 2: Trade on road Saki-Okerete

The actual trade is very much retail oriented, and vehicle cargo consists of various small consignments of a variety of commodities, such as cotton, rice, onions, cereals, palm oils (import to Nigeria) and textiles, plastic and aluminium kitchenware, wood products (planks, furniture) and charcoal (export from Nigeria). Additionally, many agro-products are being traded across the informal borders. Finally, the border crossings are used to transport cattle from Central African countries into Nigeria.

Trading volumes are not known in aggregate, but discussions with Saki-based traders disclosed that volumes are in the order of 25 trailers per week (onions, textiles, wood products) to 200 trailers per week (charcoal). Since each trailer has a cargo capacity of four times that of a pick-up van, the volume of traffic is four-fold when compared to a trailer volume.

4.2.2 Transit Trade

Table 3: Transit goods from ports of Ghana, Togo and Benin in transit to Nigeria and Niger (in tons)

COUNTRY	2004	2005	2006	2007	2008
NIGERIA	416 639	629 282	798 076	798 554	835 591
NIGER	671 446	1 041 253	1 280 237	1 696 993	2 205 805
BENIN	2 727 137	3 111 788	2 894 382	3 303 001	3 584 393
TOTAL	**3 815 222**	**4 782 323**	**4 972 695**	**5 798 548**	**6 625 789**

Source: Benin Port Authority

Table 4: Transit of goods from Togo to Nigeria and Niger (in tons)

COUNTRY	2004	2005	2006	2007	2008
NIGER	180 248	143 872	151 278	177 879	194 183
NIGERIA	18 538	27 319	28 326	79 850	115 663
TOTAL	**198 786**	**171 191**	**179 604**	**257 729**	**309 846**

Source: Benin Port Authority

Table 5: Transit goods from Ghana ports to Nigeria and Niger

COUNTRY	YEARS	
	2009	2010
NIGER	41 871	79 702
NIGERIA	16 217	19 132

Source: Ghana Shippers' Authority

4.3 Border crossings

Along the Benin-Nigerian borders only a few Parliament approved border posts exist: one at Seme/Krake, along the Dakar/Lagos corridor, and one at Idi Iroko, some 60 kilometres north of Seme/Krake.

Apart from these approved border posts that offer full Customs clearance services to shippers of goods, many informal border crossing points exist. Oyo State has reportedly three informal crossings (Okerete, Oyegun and Ibokoko), while Ogun State (south of Oyo State) has eight. Also, Kwara State (north of Oyo State) has informal border crossings between Nigeria and Benin. All the informal crossings allow vehicles to pass the border without immediate inspection by the authorities (Police, Customs). Due to the Okparu river that forms most of the borderline in Oyo and Ogun States, vehicles cannot cross the border by themselves (except for January-March when the river falls dry). In the remaining nine months of the year vehicles have to be driven on to a canoe or a pair of canoes (see Figure 3). This operation may not cost too much time, but significantly increases the level of risk to the vehicle and cargo due to heavy currents in the river. Moreover, the type of vehicles using these informal border crossings is limited to passenger cars and light vans. 10-ton trucks and trailers cannot normally pass, not only because of the river crossing, but also because of the very poor road conditions in Nigeria and partly in Benin.

Ideas to install a ferry for trucks crossing the Okparu river are cost effective, but cannot work due to the river being dry for three months of the year. Heavy goods vehicles would no longer be able to take this corridor during these three months.

Figure 3: Border at Okerete with canoes for vehicles

4.4 Customs Clearance

Although most trade across the Nigerian-Benin border is informal (except through approved border posts) and not subject to Customs control at the border itself, this trade is still subject to Customs regulations. Each of the Nigerian states operates a number of check posts and mobile inspection teams to combat illegal trade. The actual clearance of informal goods is required to be carried out at official Customs revenue collection offices in the State capitals, such as Ibadan in Oyo State. Cross border traders also need to register the goods at a specific Customs check point in Oyo State, at Orisunmiram, located some 30 kilometres east of Okerete. The Consultants have not been able to assess to what extent registration is carried out for all passing vehicles. This Customs registration point does not collect any Customs duties or charges. Drivers are obliged to pay their duties at the nearest Revenue Collection station at Ibadan at some 250 kilometres further southwest.

4.5 Smuggling

The ECOWAS protocol on the free movement of people means that ECOWAS citizens are able to move freely across the borders within the region without requiring a visa. The ECOWAS convention on Inter-State Road Transit (ISRT/TRIE) establishes certain conditions, under which goods can move freely in transit from one country to another via a third country. ECOWAS agreements on duties and tariffs allow certain goods (according to their type and origin) to be traded duty free across the region's internal borders. However, national Customs laws do limit or ban the import and export of certain products, which creates both a demand and an opportunity for smuggling. This smuggling is further fuelled by the sometimes huge price difference between products in Nigeria and other ECOWAS states. This is particularly true for cars, electrical appliances, rice, vegetable oils and petroleum products (see Figure 4.)

Additionally, the World Bank report of 2010 on Nigeria's restrictive trade policy claimed there were very high levels of corruption and a severe skills shortage among Nigerian Customs officials. This is due, in part, to the long list of goods banned at import which, according to the report, has increased the opportunities and incentives for corrupt practices within the Nigeria Customs Service.

Smuggling affects border villages socially. Security and inspection teams are present at or near borders, and sometimes exchange gun fire with smugglers. Furthermore, high levels of youth unemployment equates to plenty of ready recruits for conveying prohibited commodities across the border.

Estimating the revenue the country may have lost to smuggling, the APEX Bank calculates that about NGN 600 billion cargo value of banned goods pass through and enter Nigerian markets unofficially from Benin Republic alone. This figure represents up to 15% of Nigeria's annual imports.

According to the report, if trade restrictions could be rationalised to apply to only a small number of products, then at least an additional NGN 60 billion, or a quarter of the current revenues, could be collected by Nigerian Customs.

While arguing for a reduction of the long list of banned products, the World Bank report emphasised that the success of domestic production is not simply contingent on restrictive trade policy, but is also sensitive to issues, such as power supply and transportation.

The report states that 13% of Cotonou Port traffic is destined for Nigeria, although unofficial figures suggest that 75% of the total of an estimated 4 million tons of (containerised) cargo at the port is actually estimated to be headed for Nigeria.

Customs Authorities in Nigeria, and especially in Oyo State, have increased their level of effort to combat smuggling. The efforts have paid off in terms of seizures of illegally imported goods and the value of duties (including excise) collected. From January to July 2011 (7 months) a total of NGN 254 million (GBP 1 million) was recovered from smugglers in Oyo/Osun district from a total of 110 seizures. A further 30 seizures were made during the months of August, September and October 2011.

Figure 4: Smugglers from Benin returning to Nigeria to refill the barrels

The private sector has, through RITTA, requested Nigerian Customs authorities to formalise this route in 2010[3].

4.6 Importation of cars

It is thought very likely that many of the passenger cars that are shipped via West African ports and brought into Nigeria via Benin neither pass any point of Customs registration nor pay the required legal import duties (import duties which can climb to over 30 % of the value of the car depending on its value and age).

In order to reduce the smuggling of vehicles, Nigeria has recently raised the legal maximum age limit for cars from 8 to 12 years. However, it is estimated that many cars of a younger age are still illegally imported into Nigeria in order to avoid the high duty rates. Unofficial sources indicate that yearly 400,000 cars illegally arrive in Nigeria via a land border (mainly from Benin,) which equates to around 200% of the official car import volume from Nigerian ports. Of this volume, other sources indicated that some 2000 new and used vehicles per week are imported through Oyo State borders alone.

5. Benefits of the project

The Okerete bridge and corridor plan provides a variety of direct and indirect economic benefits.

Direct benefits consist of savings on transport cost and transport time, lower vehicle operating cost and improved road safety leading to lower accident cost. These savings are the result of both an improved connectivity to the three major trans-African corridors (see Figure 5 numbers 2, 5 and 7) that cross Nigeria and the improved road and border passage conditions between Saki(Nigeria/Oyo State) and Kilibo (Benin)

Indirect benefits consist of wider economic development, such as improved regional trade that will lead to increased supply chain activity, for example, the increase in warehousing and distribution facilities and the related employment along the new corridor. The trade volume increase will be observed primarily in the wholesale trade, but intra-regional retail trade may benefit as well, although some substitution from retail trade to wholesale trade will occur.

[3] The Nigeria Customs cannot approve any Customs entry point. Such approval must come from the Nigerian Parliament.

Direct benefits can be estimated on the basis of supply chain improvements and a logistics analysis, and on average truck operating costs.

Indirect benefits are hard to predict, as trade development is dependent on many aspects other than the efficiency and quality of the supply chain. The development of international trade– and its subsequent economic effects on society – also depends heavily on trade policies in terms of stimulation of trade, import restriction policies, finance structures, telecommunication and general taxation rules.

5.1 Trade potential and logistics

5.1.1 Foreign trade

Exploiting international trade is a key thrust of the Federal Government of Nigeria's trade strategy. According to the Vision 20:20, Nigeria will take advantage of the WTO Generalised System of Preferences, a formal system of exemptions, by which developed countries offer non-reciprocal preferential treatment to products originating in developing countries, and other preferential trade programmes, such as the Cotonou agreement or the Africa Growth and Opportunity Act (AGOA).

Although developed countries have provided trade preferences, most of these preferences are skewed to the export of raw materials or are accompanied by rules of origin that are almost impossible for local manufacturers to meet, thus hindering their ability to export value added goods. A cogent trade and commerce facilitation team will be formed to address this and other non-tariff issues that hinder the trade in value added exports.

An export oriented approach will be utilised to increase foreign trade in specified value added products. The industrial parks, clusters and enterprise zones outlined will specialise in the production of products unique to the competitive and comparative advantages of the region. Marketing and branding, as well as policy incentives to encourage the specialisation and exportation of selected goods will be mandated (see Table 6).

Table 6: FGN Priority Sub-Sectors for Exports

S/N	High Priority Sub-Sectors	Products	Potential Markets
1	Chemicals and Pharmaceuticals sector		
	a. Chemicals	Refined Oil	US, EU, North Africa, Asia (China, India)
		Liquified Natural Gas	US, EU, North Africa, Asia (China, India)
	b. Pharmaceuticals	Over The Counter drugs	ECOWAS Region
2	Non-metallic mineral products sector		
3	Basic metal, iron and steel and fabricated metal sector		
4	Food, beverages and tobacco sector		
	a. Food	Parboiled Rice	ECOWAS Region
		Processed Cocoa beans	EU , Canada, US
		Sesame Oil	Asia
		Frozen Shrimps and Prawns	ECOWAS Region, US, EU, Japan
		Cashews	
		a. Processed Cashew Nuts	India, Brazil, Vietnam
		b. Cashew Kernels	US, UK
	b. Beverages	Fruit Juice	ECOWAS Region
5	Textiles, wearing apparel,		
	Leather/leather footwear		
	a. Textiles, wearing apparel	Ready–to-wear garments	ECOWAS Region
		Processed cotton	ECOWAS Region, EU, US
	b. Leather, leather footwear	Leather Products	Italy, Asia (China)

Source: Vision 20:20 Nigeria

5.1.2 Regional integration

The interregional trade between ECOWAS nations has hardly increased since the establishment of ECOWAS 45 years ago, and counts for 10-12 % of total trade compared to the intra-EU trade of 75%.

Nigeria remains a major player in the ECOWAS sub-region. Nigeria's adoption of the ECOWAS Common External Tariff (CET) in 2005 was a strong signal to indicate Nigeria's commitment to deepening sub-regional integration. Nigeria accounts for about 51% of firms involved in the ECOWAS Trade liberalisation Scheme. However, the regional market still accounts for only a small fraction of Nigeria's total trade.

The potential catchment area of the new corridor is enormous. Outside Nigeria it is estimated at over 20 million people of the total of 139 million inhabitants in the nine regional trading partners of Nigeria (see Table 7).

Table 7: Population of trading partners of Nigeria

	COUNTRY	POPULATION
1	Benin Republic	8.9 million
2	Togo	7.3 million
3	Burkina Faso	15.7 million
4	Niger	13. 5 million
5	Mali	16.5 million
6	Ivory Coast	22 million
7	Ghana	26 million
8	Chad	13 million
9	Cameroun	16 million
	TOTAL	**138.9 million**

Within Nigeria, the potential market catchment area consists of the six states in the southwest of Nigeria, which have a population of around 50 million inhabitants. This catchment area is of sufficient size to allow the establishment of logistic centres to optimise the supply chain of products to and from other nations within, and outside of, ECOWAS region.

Private sector stakeholders have produced estimates that claim that a border crossing at Okerete will generate the movement of 500,000 tons of goods per annum between ECOWAS landlocked cities and central Africa for the first year, due to the attractive logistics passing the Okerete corridor. Stakeholders estimate that over 350,000 cattle will be transported per year through this route, equivalent to 7,000 lorries per year. Further trade of hides, skin and other meat products, and smoked fish will benefit.

5.1.3 Regional supply chain and logistics

The opening of another formal border crossing at Okerete will stimulate interregional trade, in particular the trade with landlocked countries in Africa (Mali, Niger, Burkino Faso, Chad), but also with coastal nations, such as Ivory Coast, Ghana, Togo and Benin. It also provides an alternative to the Trans-African corridor through Abidjan to Lagos, which is severely congested at the Seme/Kraké border (although improvements to the border process are in progress).

The Nigeria-Benin border stretches out to the north for several 100 kilometres and requires at least one more alternative border post to serve border trade to be located at a reasonable

distance from the coastal border posts at Seme/Krake and Idi Iroko, which is a little further inland from Seme/Krake. The following maps show the position of Saki, Kilibo and the proposed corridor (see Figure 6 and Figure 7).

Figure 5: Trans-African corridors

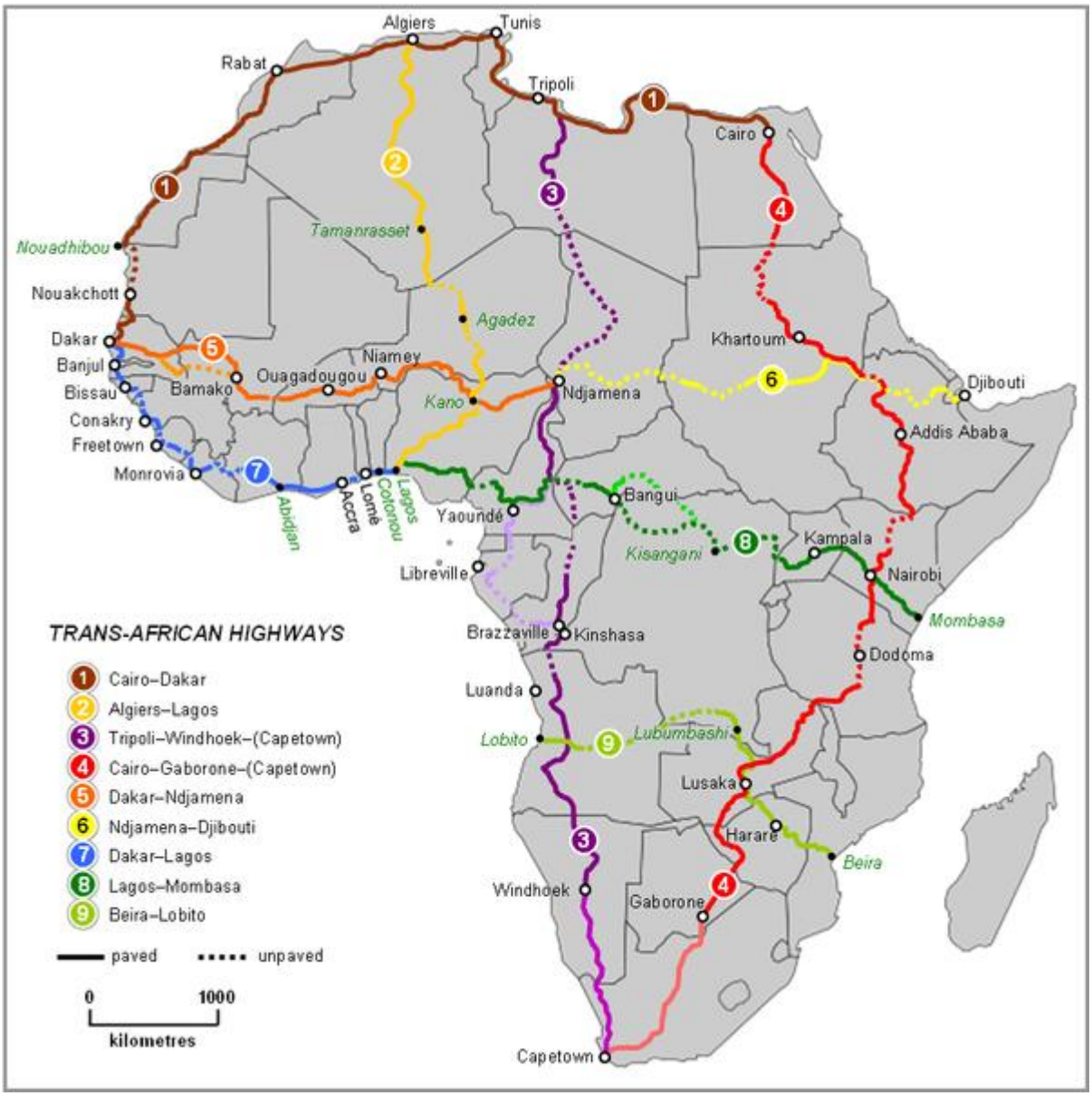
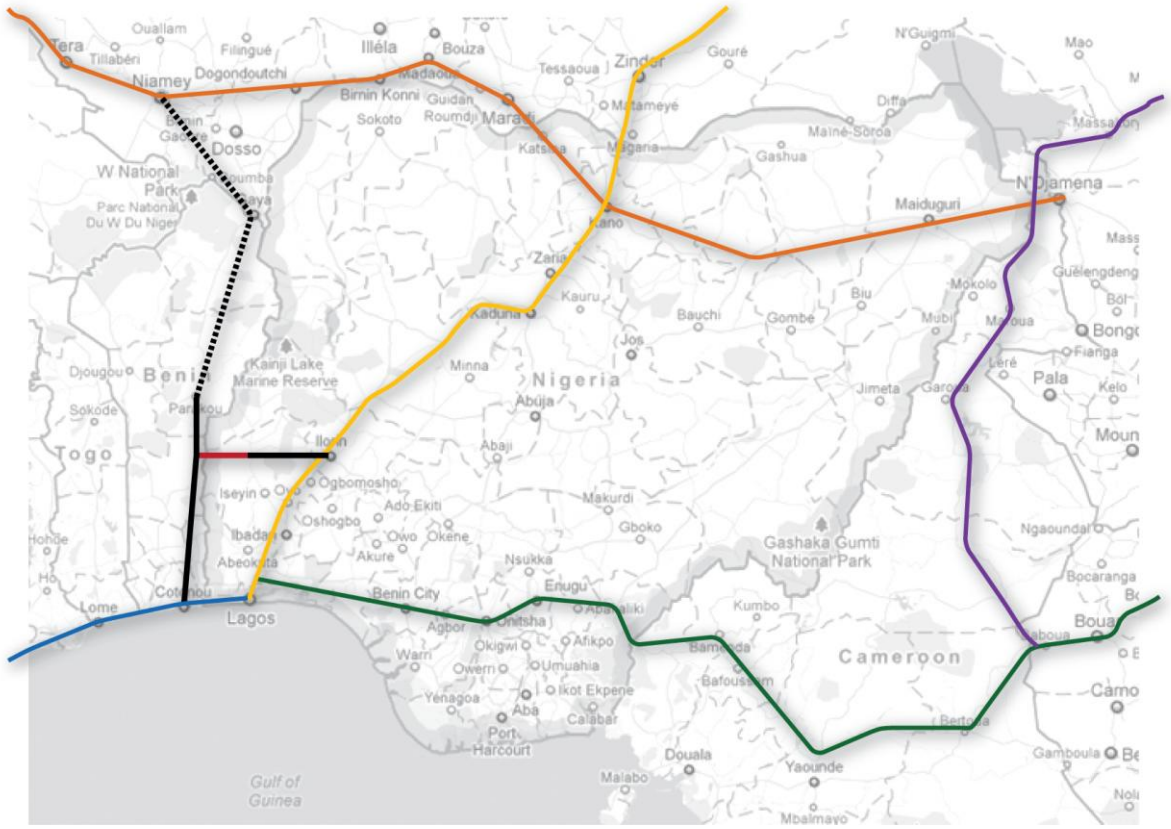


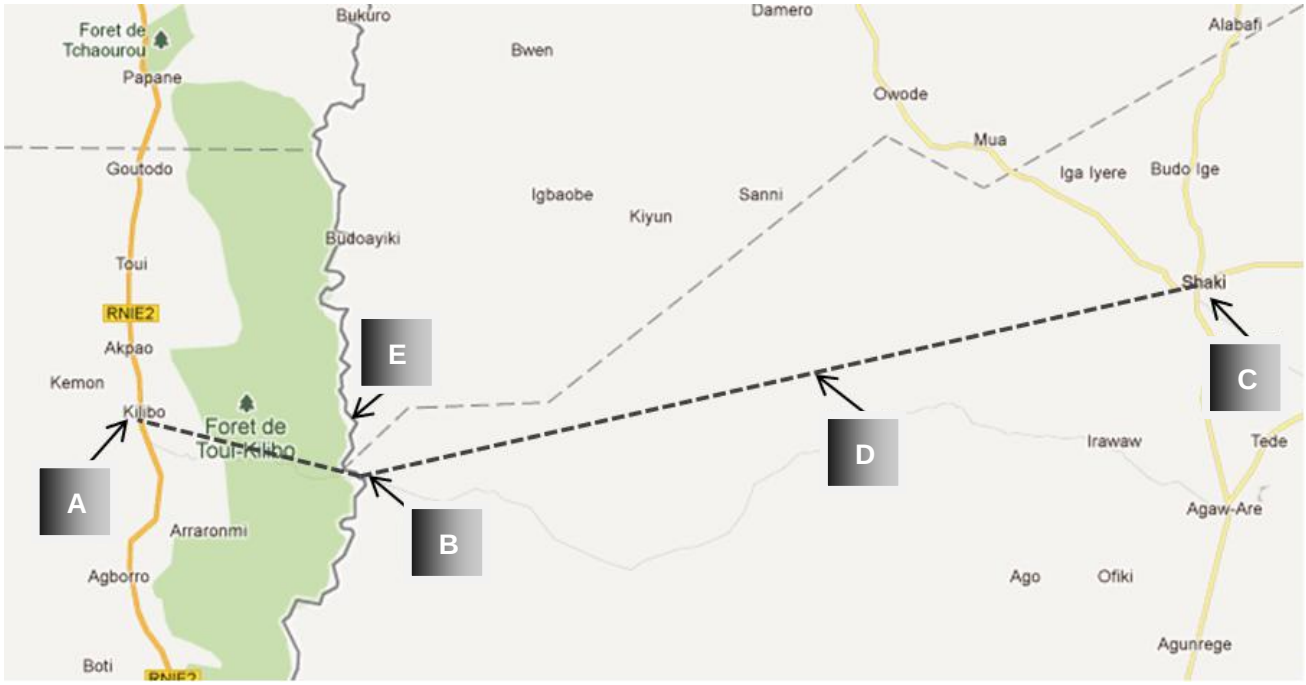
Figure 6: Okerete Corridor connections to Trans-African Highways



Key:

- Okerete Corridor
- Related Key transport routes in Benin and Nigeria
- Planned extension of Cotonou-Niamey rail route (and existing road route)
- Section of Abidjan-Lagos Corridor (Trans-African Highway 7)
- Section of Dakar-Ndjamena Corridor (Trans-African Highway 5)
- Section of Algiers-Lagos Corridor (Trans-African Highway 2)
- Section of Tripoli-Windhoek Corridor (Trans-African Highway 3)
- Section of Lagos-Mombasa Corridor (Trans-African Highway 8)

Figure 7: Outline of Okerete Corridor



Key:

A – Kilibo

B – Okerete

C – Shaki

D – Scheme of Shaki-Okerete-Kilibo route

E – Benin-Nigeria border

5.2 Transport networks and border post development

Currently, there is heavy dependence on road transport for haulage of products in Nigeria – raw, processed and finished. Rail freight is very rare in Nigeria, but does provide an alternative to road transport in Benin. The Benin-Niger railway company is currently carrying some 30-40 containers per train set with a frequency of 2 to 3 trains per week.

Specifically in Vision 20:20, investments in transport infrastructure is encouraged through concessions – BOT (Build, Operate and Transfer), and BOO (Build, Operate and Own) for the purpose of haulage and distribution of inputs and other materials to primary and manufacturing industries and, subsequently, to domestic and international markets for trading purposes. The plans include provisions to:

- Modernise and increase railway network density from 87.94 to 184.2 km/10,000 sq. km
- Provide well serviced stations in locations along the rail line at a maximum of 25 km intervals
- Increase the harnessed inland waterways from 3,000 km to 8,000 km
- Create at least four (4) new deep seaports in such locations as Epe/Lekki, Brass, Bonny, Badagry and Akwa-Ibom
- Interconnect Nigerian railway networks to its ECOWAS neighbours

The Okerete border post (and its international corridor) will, however, only be a success if substantial vehicle traffic is attracted and if Customs revenue collection increases. Achieving both of these success criteria will require the other (informal) border crossings in this border zone to be closed to any type of vehicle traffic (including motorcycles). This includes the other crossings in Ogun, Oyo and Kwara state (north of Okerete), where no formal border posts exist at the moment.

If the governments of Nigeria and Benin decide to move forward with the development of the Okerete corridor, it will be essential that all border states and provinces in Nigeria and Benin understand and accept the high level of priority given to the Okerete border crossing and its related corridor and market development. The physical closing of informal borders should not create any conflict with rural road rehabilitation plans aimed at improving accessibility to border villages in Ogun State, Kwara State or Beninese border provinces.

Should the Okerete corridor and formal border crossing prove a success in a few years' time after opening, other border crossings along the Nigeria-Benin border may be developed to cater for increased economic activity in the region.

5.3 Transport infrastructure development

The Federal Government of Nigeria has been considering for some time the construction of an Express Highway from Lagos to Sokoto. This Express Highway would logically pass Saki and connect to the Okerete corridor.

The Government of Benin plans to extend the trans-Beninese railway line (running presently from Cotonou port to Parakou) into Niger to Niamey. This railway line development aligns well with the Okerete border crossing plans, as it merges at Kilibo (Benin) at the shortest distance (18 kilometres) from the border at Okerete. The railway line runs parallel to the transnational highway (see Figure 7) RNE2 at 4 kilometres from the railway line and 22 kilometres from Okerete) and runs from Cotonou to Niger, Mali and Burkina Faso and connects to Trans-African corridor nr. 5 (see Figure 5 and Figure 6).

Transit time and transport cost for all kinds of vehicles may be reduced considerably when the Kilibo-Okerete-Saki corridor is formalised and rehabilitated, and intermodal transport services can be well developed at Kilibo railway station to shift cargo between transport modes.

Containerised and break bulk cargo arriving from Cotonou port could subsequently be routed via Okerete into the vast hinterland of the Northern territory of Nigeria and further into Niger and Chad (SW-NE route).

Similarly, the supply chain from and to Nigeria and Central African states west of Niger (Burkina Faso, Mali and the Northern parts of the coastal states Togo, Ghana, Ivory Coast) will also be opened up for smooth and speedy transport (SE-NW route).

For both supply chains (either SW-NE or SE-NW) opening the corridors to larger types of vehicles (trucks/trailers and buses) will significantly reduce the transit time and transport cost. The level of reduction varies by length of route and type of product. In Section 6 an analysis is made of various truck sizes to determine the benefits for traders and their freight forwarders in terms of savings on transport cost and transit time.

The new Okerete corridor may, however, face some new or revived competition when the Joint, Border Post at Seme/Krake becomes operational and when cargo now transhipped via Cotonou diverts to Lagos port, once its service levels (high dwell time of containers) and transhipment costs have reduced to commercially acceptable levels.

It is also envisaged that Ogun State will eventually rehabilitate the road from the A5 highway to the Ilara/Idofan informal border crossing, providing another (tarmac) corridor from Benin to Nigeria. The Consultants are not informed whether this potential corridor is among FMTI's six preferred border posts.

Free Trade Zones and Trade Hubs

FMTI suggests the establishment of one or more Free Trade Zones along the Okerete border crossing corridor. Free Trade Zones have the potential to shift existing economic activity to the Free Zone for pure tax avoidance reasons. The Zone may attract new investments from either domestic or international investors, but comes at a federal cost, as labour and profit taxes do not, or only partly, apply to the economic activities in the Free Zone. Careful analysis should be given to the attractiveness of such a scheme.

Nigeria accounts for over 70% of the manufacturing activities in the ECOWAS region, and this is likely to increase more and more. Foreign Direct Investment is targeting the huge Nigeria domestic market of 160 million as the regional manufacturing base from which to exploit the ECOWAS Free Trade Zone and ECOWAS Trade Liberalisation Scheme. The export processing zone offers even more opportunity for south-west based manufacturers to set up both manufacturing activities and distribution warehouses at Okerete for products targeting the eight ECOWAS countries that are within the 500 mile arc around Okerete (the line of least distance).

5.4 Social aspects of Okerete border market

The establishment of a formal border at Okerete will have social impact for both local as well as regional and national communities.

The Okerete border area is within a forest reserve from Okerete to the Sanni-Salla boundary. Okerete land comprises of the following:

1. Okeretedo Village
2. Orita Gbabe
3. Aiye Mojuba
4. Ajila

These villages will be affected by the establishment of the bridge. Road access infrastructure and resettlement may, therefore, be needed. The traditional ruler of Saki has repeatedly indicated that the local community stands positive towards the plans and is willing to cooperate to resolve any potential relocation or resettlement issues. Based on this confirmation, the consultants have not taken any cost items for relocation or resettlement into consideration.

The local community will benefit from the border from increased traffic volume and passengers that may stop at (or just after) the border for sanitary or resting reasons. This will undoubtedly create business opportunities for retailers of food and beverages, as well as other services.

The border post will also need to be equipped with border post buildings for all governmental agencies that need to be operating at borders (see section 7), and maintenance and security services need to be provided. Finally, some traders or freight forwarders/carriers of goods may want to establish their warehouse or distribution facility to collect, store or distribute their commodities.

This latter development may, however, not take place when there is no specific reason to establish a hub at the border. A quarantine facility is definitely required, based on legal requirements. A commercial hub may, however, not be erected at or near Okerete, since markets are located more inland, such as in Saki and further East and South in Nigeria.

The border will have a mixed impact on Customs processing and employment: on the one hand the Customs facilities and operation at the border will be upgraded and enlarged, while some Customs control functions on the corridor may disappear (not only as a result of the opening of the border, but for efficiency reasons).

In a wider range, logistics centres (warehouses, distribution centres) may be established to cater for the increased demand of supply chain requirements. This all implies that more qualified labour will be hired by the private sector. This may be a substitution from other centres (Lagos, major cities) to locations at Oyo State (at probably lower operating cost).

Nationally, trade volumes and production facilities may increase and labour demand will increase.

In general, the effect of increased economic activity has not been quantified in view of the lack of clear impact of the opening of the border and the relative share of the border in international trade.

6. Cost Benefit analysis

In this Section the economic and financial benefits as described in section 6 are elaborated quantitatively. Subsequently, project cost elements (Capital and Operational expenses) are estimated.

6.1 Economic Benefits

6.1.1 Transport cost, transit time and vehicle operating cost savings

Light vehicles and motorcycles

The transport cost savings vary by type of vehicle. While passenger cars and pick-up trucks and motorcycles can physically pass the Nigeria-Benin border at many crossings, the transport cost savings will basically be the result of a faster (and cheaper) passage along the newly constructed section between Saki and Kilibo (total 88 kilometres).

The transit time for motorcycles and small vehicles (up to pick-up van size) can be reduced to one hour instead of the current seven hours with the present road conditions (excluding border processing time). Apart from the transit time saving, vehicles also currently consume more fuel, endure more wear and tear, and are more liable to engine breakdowns from dust and contact with the road surface.

A report from the transport economist at the Nigeria Infrastructure Advisory Facility (NIAF), a DFID funded Technical Assistance (TA) program for infrastructure development, estimated the cost of time for light vehicles in Nigeria at NGN 1 per minute. For the total transit of the Kilibo-Saki section the time saving would, thus, equate to at NGN 420 per vehicle.

Trucks, trailers and buses

For vehicles that are currently unable to use the informal corridor, the savings are much more significant, as the nearest point of entry between Nigeria and Benin is at Idi Iroko (some 250 kilometres from Kilibo) or Seme/Krake (some 300 kilometres from Kilibo) or at the most Western border station between Niger and Nigeria at Birnin Konni (over 1200 kilometres from Kilibo). Some larger trucks may currently be able to physically pass via Ketou (Benin), crossing the border at Ilara/Idofa (Ogun State) over the untarred road to connect with the A5 into Nigeria. This latter route requires a detour in Benin of over 300 kilometres from Kilibo for vehicles coming from Central African states and is, therefore, not likely to be used.

The actual saving on transport costs is dependent on the trade route. Logically, most benefit will occur for trucks/trailers that carry freight between Central African states and SW, SS and SE Nigeria. This applies also for cargo from Cotonou port (or further west located origin/destinations) to the NW, NN and NE of Nigeria.

According to a study on Transport Costs in Africa made by the African Infrastructure Country Diagnostic (July 2008, AIDC), the relationship between variable and fixed costs of (truck) transport in West and Central Africa is 70/30. Based on the reported overall cost of USD 1.88 per kilometre, the variable cost for trucks amounted to USD 1.31 per kilometres, while the fixed cost amounts to USD 0.57 per kilometre. This is partly caused by the relatively high fuel consumption for West/Central African trucks of 65 litres per 100 kilometre and the low truck driver (labour) cost (ref. Table 2.1 and 2.2. of the AIDC Report).

The AIDC rates are used here as a guide to analyse transport cost savings. The fuel cost in Nigeria is, however, presently far below price levels in neighbouring countries and, for calculation purposes, the average kilometre cost of trucks has been reduced to USD 1.50. Based on the

detour distance to the nearest formal border crossing (i.e. Idi Iroko), the transport cost saving of 300 kilometres (Kilibo to Idi Iroko) will amount to around USD 450 or NGN 63,000 per trip.

Apart from direct transport cost savings, transit time will be reduced by a minimum of six hours (at an average speed of 50 kilometre). Based on the value of time of NGN 2 per minute (ref. NIAF estimate) the overall time savings amount to NGN 720 for each transit.

Vehicle operating costs will also be reduced as a result of lower maintenance and repair cost. The poor road conditions between Saki and Kilibo cause deterioration of vehicle chassis and equipment at a fast rate and a new levelled and smooth road surface will bring savings in maintenance and repair costs. The savings for heavy duty vehicles is, however, not considered, as this type of vehicles does not use the existing corridor at present.

Savings could be made for passenger cars and some pick up vans that use the corridor at present. For this purpose, the average vehicle price (excluding taxes) is set at USD 16.000, the average lifetime at 20 years (African standards) and the lifetime maintenance and repair cost is set at 25 % of the car value.

Based on a reduction of repair cost of 10%, the overall savings from reduction of repairs and increased lifetime amount to USD 20 per vehicle/per annum. These savings ratios have been applied to all small vehicles/pick-up vans/minibuses (total 35,000) that may use the corridor in its present condition.

Road safety will improve, although this improvement is negligible, since the average speed of vehicles on the present corridor is between 10 and 15 kilometres per hour.

Savings from lower fuel exhaust emissions have not been analysed, but do add slightly to the overall benefits.

6.2 Traffic volume forecast

The Consultants have tried to collect traffic and cargo flow statistics between Nigeria and Benin. These, unfortunately, do not exist and the consultants have, therefore, applied their own estimates from interviews with various stakeholders during their mission in November 2011 to Abuja, Ibadan, Saki, Okerete and Cotonou.

Based on the actual flows and traffic it is very likely that traders (in particular wholesale traders) will shift their supply chain means from small vehicles to larger trucks and truck/trailers. This shift will be completely driven by the economy of scale of buying commodities in larger quantities, which reduces both commodity prices and logistics cost per unit.

Small vehicles will still be used by retailers for short distance trade (border-trade), as consignments will remain small in volume due to lack of financial resources and/or sales risks.

The only traffic that may reduce is the carriage by drum of petroleum products on motorcycles as a result of the gradual removal of fuel subsidies (which reduce price differences between the countries) and the improved border control effectiveness by Customs in respect of prohibited, restricted and dutiable goods.

In order to assess the financial viability of investing in the bridge and access roads, the Consultants have roughly estimated the potential traffic that may use the new corridor once in operation (see Table 8).

6.3 Financial benefits

6.3.1 Improved tax and duty generation

As the World Bank report has indicated, a significant amount of import and excise duties remain uncollected in both Nigeria and Benin. Whilst it is unclear to what extent the Okerete border post (when fully formalised and operational) will contribute to the improvement of collection of taxes and duties of traded goods, even a moderate increase in the amount of goods being properly

declared should provide a significant benefit by way of increased tax collection. This effect will be multiplied if resources are concentrated on those goods subject to the highest rates of tax (such as vehicles). Based on the World Bank reported value of NGN 600 billion of banned goods and an average import/excise duty of 10%, if 1% of this missing revenue is collected at Okerete this would equate to revenue generation of NGN 600 million or USD 4 million per annum.

However, to achieve such increases, Customs and other inspecting agencies will need to maximise the effectiveness and efficiency of control functions at Okerete, such as those proposed at Section 7. This approach will support increased compliance through tackling informal trade, whilst facilitating all types of trade through better infrastructure and more efficient procedures.

The potential revenues (net of additional Customs organisation cost) from increased import and excise duties is a financial benefit to the federal budget. This effect may induce investment in this corridor from the public sector.

6.3.2 Okerete Bridge tolls

In order to finance at least a part of the infrastructure investments, a number of tools can be identified to generate direct revenue from corridor users (passengers and/or vehicles). The most common way to gain revenues from direct utilisation of the new formal border station at Okerete is to introduce a bridge toll. The tolls can be easily collected at one side of the bridge (to be agreed upon bilaterally) and require a single toll booth system.

Private sector stakeholders at Saki have reacted positively to the introduction of an eventual toll system for the Okerete bridge.

Bridge toll levels should be based on vehicle type. In several African countries road and bridge tolls are based on the type of the vehicle (passenger, buses) and for cargo vehicles on the number of axles. The Consultants' experience in The Gambia, where a toll bridge is planned, has been used as an example to calculate potential revenues at Okerete.

For the local population (pedestrians) and motorcycles, tolls should remain low, as cost savings are merely time based and economically insignificant. This is, however, different for larger trucks and buses that will benefit heavily as a result of reduced mileage.

Taking these considerations into account, the consultants have assumed a certain toll level for each of the vehicle categories, which should be considered as an example for toll structuring and tariff setting in future bilateral discussions. The assumptions are presented in Table 8.

Table 8: Bridge toll tariff and traffic forecast

Okerete bridge tariffs		**and revenues**									
				Bridge Toll				**Annual**		**Annual Revenue**	
				CFA	**NGN**	**GBP**		**Traffic**		**x 1000 NGN**	
Pedestrians				300	100	0.40		10,000		1,000	
Motorcycles				600	200	0.80		3,000		600	
Vehicles	sedan			3000	1000	4.00		10,000		10,000	
	landcruiser	SUV		4500	1500	6.00		1,000		1,500	
	car with trailer			6000	2000	8.00		500		1,000	
Buses	1-7 pax			6000	2000	8.00		4,000		8,000	
	8 to 20			9000	3000	12.00		1,000		3,000	
	> 20 pax			12000	4000	16.00		1,000		4,000	
Trucks	pick up van	3 ton	2 axles	6000	2000	8.00		20,000		40,000	
	Leyland Truck	10 tons	2 axles	9000	3000	12.00		10,000		30,000	
	truck/trailers	> 10 tons	3 axles	12000	4000	16.00		5,000		20,000	
			4 axles	15000	5000	20.00		3,000		15,000	
			5 or more	18000	6000	24.00		1,000		6,000	
										x 1000 NGN	x GBP
							Total veh.	**59,500**	**Total**	140,100	560,400

6.4 Cost elements

The cost composition of the new Okerete border corridor consists of three main elements:

Capital investments (CAPEX):
Roads
Bridge /toll plaza

Operations(OPEX):
Bridge/toll plaza

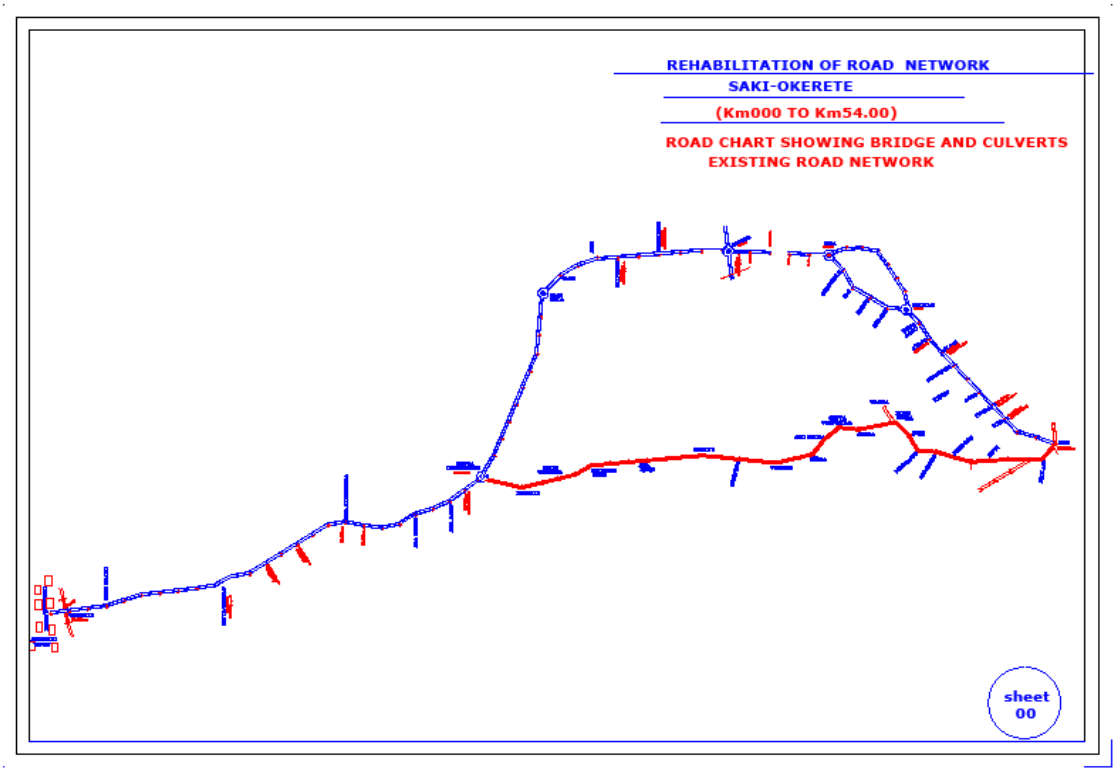
Maintenance(OPEX):
Roads
Bridge/toll plaza

The CAPEX includes the following three main components:

- The construction / rehabilitation of the access roads from Saki to Okerete (60 kilometres)
- The reconstruction of the road from Okerete to Kilibo in Benin (22 kilometres)
- The cost of constructing a two-lane bridge over the Okpara river including Toll Plaza

Two access roads need to be rehabilitated to cater for heavy truck transport. On the Nigerian side the road between Saki and Okerete (60 kilometres) has been identified for reconstruction (see Figure 8 blue section).

Figure 8: Rehabilitation of road network Saki-Okerete



An alternative routing from Okerete to Saki is feasible and lies south of the initial selected route, via Orita (see Figure 8, red section). The total distance using this route is shorter (52 km) which will save construction cost.

Detailed cost specifications of Capital and Operational Expenses of the access roads, the bridge and toll plaza are presented in Appendix B.

6.5 Cost benefit summary and economic evaluation

The project benefits are summarised as follows:

Type of benefit:	per annum
Transport cost savings :	NGN 700 million
Transit time savings	NGN 14 million
Maintenance&repair savings light vehicles	NGN 122 million

The project CAPEX are summarised as follows:

Cost item	
Construction / rehabilitation of the access roads from Saki to Okerete (60km)	NGN 4,600 million
Reconstruction of the road from Okerete to Kilibo in Benin (22km)	NGN 2,400 million
Cost of constructing a two-lane bridge over the Okpara river including Toll Plaza	NGN 700 million
Total CAPEX for the Saki-Kilibo corridor	**NGN 7,700 million**

The project OPEX are summarised as follows:

Cost item	
Maintenance cost of infrastructure	NGN 100 million per annum
Periodic maintenance	NGN 100 million (at yr 10, every 5 yrs)
Operations cost of Toll plaza at bridge	NGN 60 million per annum

The economic evaluation (see Appendix C) shows the project is economically viable even when the increased tax/duty revenues for importation of goods are not taken into account. The Economic Rate of Return is **6.9 %** under the assumptions made.

It is clear that, when additional benefits of increased Customs duties are taken into account, the EIRR increases significantly.

The result of the above base case evaluation is based on many assumptions which may not materialise in future. Alternative calculations were made to assess the sensitivity for different levels of benefit.

For a justification of the project the Government of Nigeria and Benin need to agree on a benchmark for infrastructure projects to be matched with the eventual detailed calculation of the EIRR. Once both nations agree on the feasibility, further steps can be taken in order to implement the project. It should be noted, however, that were external donors to be asked to finance some or all of the project, they would typically assess the EIRR of the project against their own benchmark or “hurdle rate” used for helping to prioritise investments across different projects. By way of illustration, the consultants understand that DFID typically uses an EIRR hurdle rate of 12%.

The next steps are presented in Section 8.

6.6 Financial evaluation

Unlike the economic evaluation, the financial evaluation takes only direct financial benefits into account, i.e. increased taxes/duties from imports and experts and bridge toll revenues. Based on

the desire of the Federal Ministry of Trade and Investment to opt for a Public-Private Partnership, the Consultants found it sensible to evaluate the financial feasibility (FIRR) of the project when the private sector would be an investing partner in the project. In this private sector evaluation, however, only direct benefits to private sector investors can be taken into account, while revenues from taxes/duties are omitted as entirely collected by the MoF.

Private capital providers will require a return on the capital provided to finance the investments. The required rate of return will reflect their perceived risk of the investment.

The rate of return for capital providers is commonly matched with the Weighted Average Cost of Capital (WACC). The WACC is used to discount all cash flows over the lifecycle of the investment (e.g. incoming cash flows or revenues and outgoing cash flows, such as capital and operational expenditures). The consequent Net Present Value (NPV) of these cash flows is to be considered as the profitability of the project. A negative NPV implies that the project is not financially feasible (i.e. the cash flows are insufficient to provide the capital providers a fair return).

The WACC is subject to interpretation. The WACC in Nigeria is estimated at 17%, which makes investment projects extremely vulnerable for financing. It is unlikely that private investors would accept risks of uncertain revenues (tolls) at rates lower than the WACC.

6.7 Project options and PPP

The bridge tolls alone will not be sufficient to justify all infrastructure investments.

A realistic possibility for PPP would be to extract the bridge construction and operations from the other investments. A logical division would be to split the entire project into four parts:

(a) Project Road Saki-Okerete, governed by the Ministry of Transport and Ministry of Public Works in Nigeria

(b) Project Road Kilibo-Okerete, governed by the MOT and Public Works in Benin

(c) Project Bridge and toll plaza, governed by the Ministry of Public Works in Nigeria

(d) Project Joint Border Post, governed by ECOWAS upon a bilateral agreement between Nigeria and Benin (see further section 7).

The projects a),b) and c) cannot generate a direct revenue to the private sector and need to be governed and funded by government.

Project (c) Bridge construction is, however, a project that is of interest to the private sector when sufficient revenues can be collected from users of the bridge. Calculations based on above mentioned assumptions show that the FIRR for a pure bridge/toll plaza investment project will amount to **13.5%,** which may be sufficient to attract private interests.

When toll revenues would be significantly lower than projected (NGN 100 million instead of NGN 140 million per annum after one year of operation), the EIRR would decrease to **7.6 %.** This decline in income can be caused both by lower traffic volumes or a reduced tariff level for all vehicles. Government may stimulate the private sector by installing minimum revenue levels or subsidies for a short period of time.

In the next phase (Detailed Design) further Technical assistance is required based on separate Terms of References for each of the four projects. Indicative Terms of Reference (ToR) are presented in section 8.

6.8 Conclusions

Based on assumptions, the economic feasibility for establishing the Okerete Border market (corridor) has proven viable. The viability, however, requires a certain (minimum) level of traffic flows. Moreover, in the case of financing from external donors, the EIRR for the project, whilst positive, may not be sufficiently high to clear the EIRR “hurdle rates” used by such agencies in prioritising the allocation of investment funds, in which case additional justification may be required.

The private sector may see the general benefit of the project, but will require for any investment certain direct revenues rather than indirect revenues, such as increased trade volumes and lower import/export product cost per unit.

For road construction of a maximum of 60 kilometres it is not recommended to install tolls (also in view of the need for many exits). Also, a Joint border post will not create direct revenues to private sector investors.

By subdividing the project into four parts (three for each neighbouring nation), Public Private Partnership may be an option for a particular part - the construction and management of the Okparu bridge at Okerete. In order to attract private capital, tolls would need to be established for all types of vehicles and persons/animals.

Further study is required for all four projects in the Design phase.

7. Joint Border Post Operations

7.1 ECOWAS JBP Background

ECOWAS, focusing on the need to drive forward economic growth in the region, has identified the development of Joint Border Posts as a key component of its trade facilitation agenda. It is, therefore, an assumption that any study into the construction of a new border post in the region must start from the basis that it will be a joint border post, to some extent or another. The following sections outline the range of Process Models and Configuration Models for JBPs recommended by ECOWAS, and analyses the best options for the specific needs at Okerete.

This analysis is drawn from two main documents:

- The Final Report of the West Africa Regional Road Transport and Transit Facilitation Programme – Joint Border Posts, written by PADECO in June 2007
- "The Joint Border Posts Functionality Study" – written by GOPA-NEA, for the EU 9th EDF Transport Facilitation Project in West Africa in 2008

The PADECO report sets out the high level operational, legal, institutional and infrastructure principles for the construction, operation and management of JBPs within the ECOWAS region. GOPA-NEA built on this by carrying out a "Functionality Study" into key JBPs in the region. The objective of this study was to prepare an architectural brief for the infrastructure needed to maximise the efficiency and effectiveness of a joint border operation.

From the principles set out in these reports, and the observations and information gathered by the project team, the Consultants have been able to extrapolate options for the most suitable JBP model at Okerete. However, a full functionality study for the Okerete JBP would be required as a key component of any early design studies.

7.2 Inspection Process Models

This section outlines the options set out in the two previous reports on West Africa joint border posts and will make recommendations for the most appropriate process models for the proposed JBP at Okerete.

Process Model 1: Delegated Authority

The first option for arranging the way in which the various processes are undertaken at a JBP is the "Delegated Authority" model. In this model powers are delegated from one agency to another. In the case of Okerete, the delegated authority approach could be implemented in three main ways:

- Beninois or Nigerian authorities could undertake all the processes at the JBP;
- One country could be responsible for all controls in one direction, while the other country takes responsibility for all controls in the other direction;

- One country could be responsible for all freight controls, while the other country is responsible for all passenger controls.

This model requires a high degree of trust and a transfer of sovereignty. Legal arrangements must be put in place to allow one country to exercise the powers of another country, as if the control was being undertaken by the personnel of the delegating country. The delegating country would also need to compensate the delegated administration, and all proceeds collected by the delegated administration would need to be returned to the delegating country.

It should be noted that this is a very advanced model and is thought by GOPA to be unrealistic and more complicated than the abolition of customs barriers and the creation of a common market. According to GOPA, there is only one example of this system in the world - at Brest, on the border between Poland and Belarus.

It seems, therefore, overambitious to try to apply this model between Benin and Nigeria at this stage, although it may be a model that can be aspired to in the much longer term. The infrastructure model we will recommend would not hinder this ambition being achieved in the future.

Process Model 2: Joint Control

The second option is a joint control, involving simultaneous or near simultaneous inspection by the authorities of the neighbouring countries. This requires an increased level of harmonisation of documents and procedures, but does not present the level of legal complexity inherent in the delegated authority option. This option, therefore, seems achievable, is a logical next step, and represents visible progress. Moreover, it is the recommended option for the redevelopment of the main border post between Benin and Nigeria, at Semé and Kraké Plage on the Abidjan-Lagos coastal corridor. The Consultants understand from various stakeholders that progress at Semé/Kraké is not as advanced as had been previously hoped, but the work already undertaken there sets operational, legal and institutional precedents that could be built on at Okerete.

Process Model 3: Sequential Inspections

PADECO's articulation of this model could not be clearer (p.B-7):

… "the authorities of the neighboring countries perform their inspection / control one after another: this is the traditional modality that is to be avoided because it is redundant and wastes time, effort, and expense"…

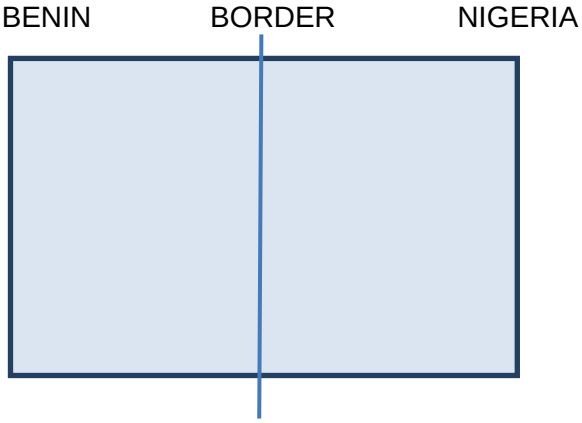
A model whereby the Beninois and Nigerian authorities undertake their controls one after the other does not represent a step forward for trade facilitation on this Okerete corridor and should not, at this stage, be recommended as a preferred process model.

7.3 Site Layout Models

The three process models set out above can be applied in any of three broad configuration or layout models. For example, a border post configuration that consists of a single site straddling the border does not automatically mean controls are joint or delegated; controls could still be sequential. Equally, a split site does not automatically mean there is no harmonisation of controls - at Chirundu, for example, (a JBP between Zambia and Zimbabwe, which is currently viewed as one of the leading examples for facilitating trade through the modernisation of border infrastructure), the site is necessarily split because of the river. However, the process model still allows for joined up JBP controls.

Site Layout Model 1: Common Area with Juxtaposed (straddling) Facilities

In this model, a single facility straddles the border. The facility can contain shared offices, or there can be separate offices within the shared facility.



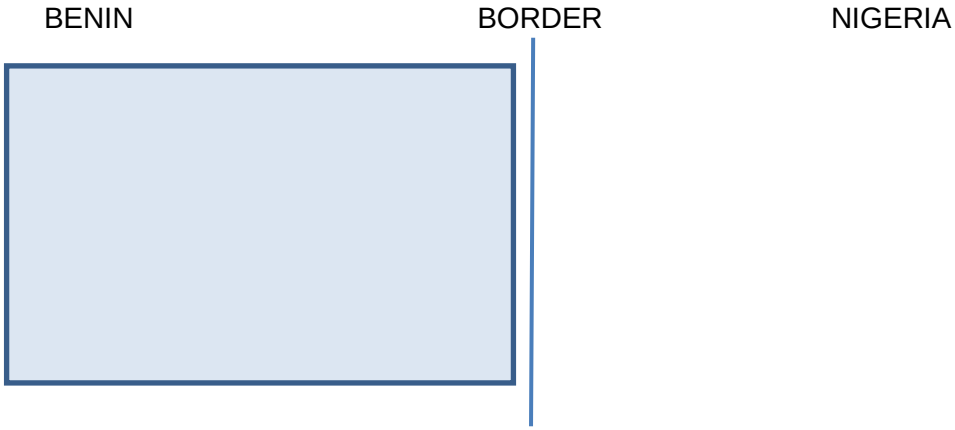
As PADECO's report points out:

… *"A straddling facility is the ideal modality, allowing both one-stop and joint processing without extraterritoriality problems; however, this option may not be practicable for topographic reasons (due to a natural barrier, e.g., a river) or because the countries prefer to upgrade existing separate facilities rather than invest in new construction."…*

However, work on JBPs that has been developed in the ECOWAS region since PADECO's report has shown that the straddling facility cannot entirely avoid extra-territoriality problems. If a JBP is run along the lines of joint or simultaneous inspections, it is not really possible for each country's agencies to stick to their own side of the border. The solution that has been developed is that the land is ceded by national governments to ECOWAS, whether straddling the border or, as model 2, entirely in the territory of one country.

Site Layout Model 2: Common Area Located Entirely in the Territory of One Country

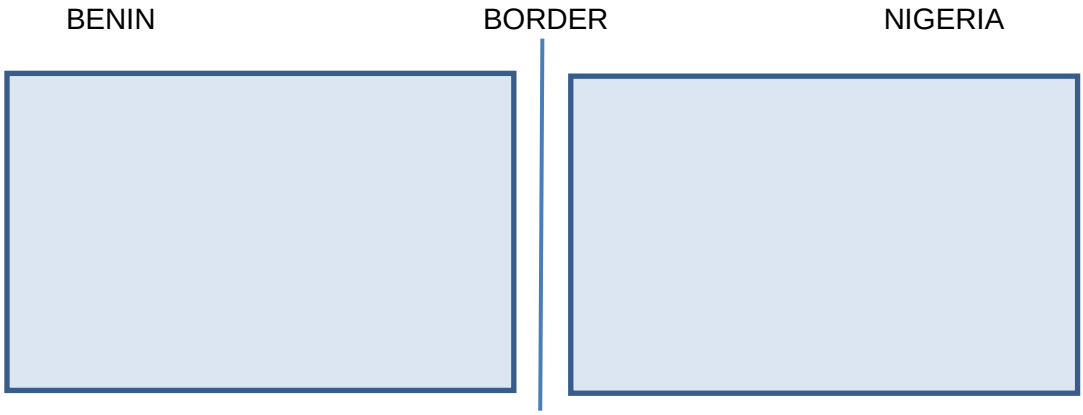
This model involves the facility being located entirely on one side of the border.



PADECO's analysis suggests that legally, this is the most complicated option, and if there is no topographic necessity (i.e. a river demarcating the border), this model should be avoided. Their argument is that, in order to streamline processing to one stop in this configuration, legal issues surrounding delegation of authority or enabling personnel to operate in a neighbouring country would have to be addressed. However, as mentioned with reference to Layout Model 1, precedents have already started to be set within the ECOWAS region for the legal and institutional frameworks that are required to support this model, primarily by creating a joint control zone ceded to ECOWAS. Moreover, this is the model that is being established at Semé/Kraké, where the border post is located entirely within Benin.

Site Layout Model 3: Split (Separate) Infrastructure in the Respective Countries

This model effectively represents the status quo, as reflected in "traditional" border post models. It is the set-up for unintegrated, sequential, duplicated inspections.



In this model, each country has its own facility on either side of the border. If they are situated close enough together, it is possible to install a common inspection area. If not, a single stop process would require the delegation of authority or the enabling of the personnel of one country to operate in the other, and the resolution of all the related legal issues.

As this model represents no significant progress on the current set-up, and there is no topographical reason not to pursue the single site straddling the border, the Consultants do not recommend that the split infrastructure model is implemented.

7.3.1 JBP Conclusions and Recommendations

Inspection Process Model: it is clear that to deliver a modern border post that drives forward trade facilitation and fits with the ECOWAS vision a border post operating process Model 2, joint or sequential inspection, is required. Although process Model 1, Delegated Authority, would also deliver a thoroughly modernised border post, it is deemed to be too advanced from a legal and institutional perspective, and an unrealistic ambition at this stage.

Site Layout Model: The Consultants' analysis suggests that a common area either straddling the border or entirely in one country both offer equal opportunities for joined up border processing. With the precedents that are being developed on the legal frameworks for operating within a control zone that has been ceded to ECOWAS, both options present similar levels of institutional and legal complexity. A site straddling the border does have the advantage of allowing each country to cede an equal amount of territory to the border operation. However, this is an ideal scenario that cannot be delivered where topographical obstacles prevent the construction of the site actually on the border. Stakeholders at the workshop in Saki were clear that the river forms the border line (although stakeholders met during the mission to Benin were not all in agreement with this). If it is the case that the river demarcates the border, the JBP will need to be located in a site entirely in the territory of either Benin or Nigeria. If, however, the border is a distance from the river (although this is thought to be unlikely), it may be possible to identify a site that straddles the border.

According to stakeholders at the Saki workshop, a site has already been identified for the border post. The Consultants have not been able to assess this site.

Areas for Further Study: Prior to the design and construction of a border post, further work will be required to:

- Undertake a full functionality study of the new border post operation;
- Identify the exact location of the border and the identified border post site;
- Track ECOWAS' work in developing legal and institutional frameworks for the establishment and operation of JBPs in the region.

8. Next steps

8.1 Design study

Assuming the Okerete border market programme is in four separate parts (see section 6) further design and implementation preparation studies need to be made in order to procure design, construction and supervision works. The following sections include resource and cost estimates for the design studies.

8.1.1 Project A. Road construction Saki West to Okerete

The design study should include:

- Analysis and selection of most preferred route (from 2 options, see Figure 7)
- Detailed road condition review
- Topological/geotechnical survey
- Update of construction and supervision cost
- Environmental impact assessment (EIA)
- Analysis of legal and land ownership along the road
- Evaluation of required resettlement of building/civilians along the road
- Detailed design of main road, parking places along the corridor
- Preparation of procurement documents for works and supervision
- Time plan for design works and construction
- Provisions for road maintenance

Resources:

The study will require the following expertise:

• Senior Road engineer	2 man months
• Bridge engineer (bridges along the corridor)	1 man month
• EIA assessment expert:	1 man month
• Socio-economist	1 man month
• Total expert time	5 man months
• Project time frame:	April-June 2012

8.1.2 Project B: Road construction Kilibo to Okerete (Okparu river)

This project requires similar resources as Project A (Saki-Okerete road). Due to the road crossing rail of the Cotonou-Parakou rail line, some engineering time for railroad crossing design need to be included. In principle, no extra expertise time may be needed and the project time should be done in the same period of time as Project A.

The indicative cost of design study for Project A. and B is GBP 250,000 each.

8.1.3 Project C: Okparu bridge construction

The design study should include:

- Analysis of average Okparu river height levels
- Topologic/geotechnical survey
- Selection of best location for a 4 lane heavy duty bridge (plus pedestrian/cattle lane) Selection of best bridge model and location and size/scope of the toll plaza
- Detailed design of bridge and toll plaza
- EIA including marine biodiversity impact
- PPP modelling and draft concession agreement

Resources required:

• Bridge engineer	2 man months
• Environmental impact expert	1 man month
• Soil survey, biodiversity testing	1 man month
• Toll Bridge Concession expert	1 man month
• Total expertise	5 man months

Indicative study cost for project C: GBP 250,000.

Time frame: April-June 2012

8.1.4 Project D: Joint Border Post establishment

The design study should include:

- Functionality study of the Border Post
- Development of operational procedures
- Drafting of legal framework (enabling rule, within the framework of the ECOWAS regional JBP agreement)
- Detailed design of Joint Border Post (buildings, highways, and equipment)
- Preparation of Tender Documents (provided a funding agency has been identified)

It is expected the JBP design study will take a period of 5 months

Resources required:

• Team Leader, Civil/Structural Engineer	5 months
• Senior Architect	2.5 months
• Highway/Traffic Engineer	4 months
• Geotechnical/Material Engineer	1.5 months
• Electromechanical Engineer	2 months
• Cost Engineer/Quantity Surveyor	2.5 months
• Mechanical Engineer	1 month
• Fire Safety and Protection Specialist	1 month
• IT Specialist	1 month

- Environmental Specialist 1.5 months
- Procurement Specialist 1 month
- Joint Border Post specialist 1 month
- Legal expert 1 month
- Total expertise 25 man months

Indicative cost for JBP design study is GBP500,000.

8.1.5 Next steps

In order to start Design studies, the following steps need to be taken:

- Coordination between Nigerian and Benin government of acceptance of Economic viability of the entire project
- Identification of financing for the design studies
- Bilateral agreement on a PPP arrangement for Project C (bridge)
- Transfer of governmental authority to relevant Ministry (Transport/Public Works in both countries) who will monitor the Design studies

8.2 Bilateral coordination

The implementation process to establish a formal and logistically sound transport corridor through Okerete border crossing will take considerable time and effort from both involved nations and their respective authorities.

The road, bridge and JBP infrastructure should be subject to a number of conditions that need to be agreed upon during the next phases of a detailed feasibility study.

It is, therefore, of great importance that all relevant authorities of both nations are becoming fully involved and engaged. This can be best done through the establishment of a number of bilateral coordinating and validation committees that will deal with all institutional issues, ownership of land, border processing, funding mechanism (PPP),and infrastructure and service operations.

The authorities involved are:

- Ministry of Trade and Investment
- Ministry of Public Works
- Ministry of Transport
- Ministry of Finance
- Département des Eaux et Forêts (Benin)
- Ministry of Water Resources
- Ministry of Agriculture
- Ministry of Environment
- State and province Technical departments (land use issues and ownership)

and in particular for JBP coordination:

- Customs authorities
- Ministry of Interior (Immigration & Police)
- Ministry of Defence (National Security)
- Ministry of Health
- Département des Eaux et Forêts (Benin)
- Ministry of Agriculture
- Ministry of Environment
- ECOWAS representatives

8.3 Project Funding

Potentially, donors such as DFID, GIZ, USAID or EDF could be approached for funding for the Design studies. The relatively small amounts for study cost may be instrumental in finding funds for all four studies. However, it should be noted that none of these donors has yet given an indication in principle of a willingness to finance the Design studies.

For the main infrastructure investment, whilst the project is economically viable, the integrated project is, however, likely to be unattractive to private investors. It is, therefore, recommended to divide the project into four parts, of which one (the bridge/toll plaza construction and management) is suitable for PPP through a concession. The remaining parts (access roads and joint border post) need to be financed from governmental funding and external donors. The funding of the public part of the infrastructure investments will need to be funded out of national budget sources, perhaps in combination with State (Oyo) of provincial (Benin) resources, with or without credit facilities from financial institutions or donors.

At present, the Federal Government of Nigeria is gradually reducing fuel subsidies. The revenues from these reductions could be well allocated to a road rehabilitation program throughout the nation.

A more common way to create funds for road rehabilitation is the introduction of a Federal Road Tax for all vehicles, regardless of whether they use the Okerete corridor or not. This can be most simply implemented by charging a road surcharge on the yearly vehicle licence fee.

Since the Okerete corridor offers benefits to many ECOWAS member states, regional funding may be sought from financial institutions. Proper application is required by both beneficiary nations (Nigeria and Benin) to allow the ECOWAS committee to insert this project on the list of preferred projects.

While the project is economically viable with an EIRR of 6.9%, a PPP structure will be difficult to establish without financial support from international donors or financial institutions. It should be noted, however, that were external donors to be asked to finance some or all of the project, they would typically assess the EIRR of the project against their own benchmark or “hurdle rate” used for helping to prioritise investments across different projects. By way of illustration, the consultants understand that DFID typically uses an EIRR hurdle rate of 12%.

Both governments should make efforts to propose and promote the project to these potential donors or institutions to assess the chance of obtaining (attractive) financial means to fund the project.

FMTI has already approached some international and local banks and is encouraged to continue dialogue to secure interest in co-funding the project, such as with the Afrexim Bank, Ecobank, Zenith Bank and the African Development Bank. ADB is working elsewhere with ECOWAS to develop trade corridors, for example between Cameroon and Nigeria.

In terms of donors, FMTI should continue to engage with DFID, as well as with the European Union, who have, like ADB, been working with ECOWAS to fund projects developing trade corridors (including Joint Border Posts). However, the Consultants’ understanding is that the EU have scaled back their original programme from five border posts to three, perhaps indicating that funding for a new project at Okerete would be difficult to find. The World Bank has also been engaged in programmes to promote regional economic integration in West Africa, particularly focused on the development of the Abidjan-Lagos corridor. FMTI should, therefore, also seek to engage with the World Bank.

Overall, the range of options open for funding for the entire project and its sustainability will most likely hinge critically on FGN’s willingness to release public funds for large parts of the project and of its decision on mechanisms to recover costs through corridor user charges to the private sector such as bridge tolls, road tolls, general road taxation. The level of the user charges will also logically influence the attractiveness of the PPP option. There is, however, a limit to user charges since alternative corridors/routes (including illegal border crossings in the region) become more attractive when the user charges levels on the formal routes become too high. It is suggested that FGN (FMTI, Ministry of Transport and Federal Ministry of Finance) discuss the sensitivity of the establishment of user charges and their desired

level with private stakeholders such as the national trucking associations, freight forwarding associations and international and regional trade associations in both Nigeria and Benin and perhaps intra-regional.

Finally, governmental funding will be cross subsidised by increased Customs revenues (import duties, excise) based upon the elimination of illegal trade in the region. This effect can be financially substantial and may be significant for FGN's overall investment decision, but it has not been estimated in this study quantitatively due to lack of reliable data.

8.4 Trade hubs and Logistic centres development

The Okerete Border market corridor does not take into account the subsequent investments in trade facilities, such as warehouses, distri-centres and market plazas.

These investments need to be coordinated and planned properly. For a decent allocation of land for these type of facilities, each State should establish their own land-destination plan that determines which locations and which types of commercial activities can be established. It is obvious that large warehouses and distri-centres for wholesale trade should not be allowed in city centres, but should be planned around business areas, preferably close to main access corridors (road or rail).

It is recommended that Oyo State and Kilibo province prepare this land-use-destination plan to allow the private sector to take full advantage of the new corridor. In this respect, the multimodal (rail/road) platform at Kilibo should be allocated and initialised, as well as locations for physical distribution of products along the corridor in Oyo State.

8.5 References:

1. Nigeria

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Appendix A. Okerete – Saki road reconstruction

The existing unpaved road is in bad condition and a visual preliminary condition survey of the proposed route was undertaken by Consultants assessing the following characteristics:

- General Topography of the terrain (i.e whether flat, rolling, mountainous)
- Existing drainage structures (culverts and bridges)
- Proposed culverts and bridges
- River crossing location for the trans national bridge between the two countries
- Identification of potential location of schools, market, custom post
- Identification of existing utility services (electricity, water, communications)
- Location of streams, water courses, ponds and lakes
- Ground conditions (nature of soil and formation)
- Identification of potential borrow pits and quarries for extracting road materials (fill material, sub-base, rock for crushing to make crushed based base
- Environmental factors
- Alternate routes

The survey is presented in detail in the Table below.

Table 9: Route condition Survey of Shaki to Okerete


Proposed culvert

Existing culvert


Existing bridge

Km	Town		Photos	Remarks
0		Start of survey at road junction		Take off point at
1		Existing culvert		
2				
3				
4		Major intersection from Shaki		
5		Culvert proposed		
6		Culvert proposed		
7		Existing culvert low point		
8		Culvert proposed		
9	**Ekokan**	Rice field on left		Electric poles
10	**Mua**	Road divides into 2		
11		Low points with water		
12				
13				
14				
15	**Owode**	Culvert proposed		
16		Existing culvert		
17		Small bridge		

18	**Gbepakan**	Market		
19		Flood points		Low ground level with
20				Flooding at different points
21				Culverts will be needed
				At relevant points between
				Km 18 – km 20
22	**Sani sala**	Police station, Baptist Church		
		Community Primary School		
		Road turns to the right		
		Start of forest reserve		
23				
24	**Yeri yeri**	Existing bridge with timber floor		End of electric poles
		With 4 intermediate masonry		New bridge required
		supports		
		Rocky ground formation		
25		After bridge		
26		Low lying ground with flooding		
27		Erosion prone areas		
28				
29				
30				
31	**Orisa Orisunbar**	Joint border patrol posts		
32				
33				
34				Culverts required at relevant
35				points after investigations
36				
37				
38				
39		Floor prone area		Small bridge proposed
40				Culverts required at relevant
42				points after investigations
43				
44				
45				Culvert proposed
46	**Orita Gbage**	Customs posts		

47 48 49				
50 51 52 53 54	**Okerete**	Border point Nigerian side		Bridge proposed across the Border
		Border point Beninois side	  	

Appendix B. Cost specification of road infrastructure, bridge and toll plaza

Cost specification of road infrastructure, bridge and toll plaza

1. Road construction cost Okerete-Saki

The basic design parameters of the road assumed are as follows;

- Length of road = 60 km
- Width of road = 7.3 m
- Width of shoulders = 1.5m
- Sub-base thickness = 200 mm
- Road Base thickness = 150 mm
- Asphaltic Concrete surfacing thickness = 50 mm

Preliminary cost estimates for each road section have to be compiled based on a range of major construction items (see Table 13) The exchange rate assumed is US$= NGN 150.

Table 10: Cost estimates for the road construction from Saki to Okerete

No	Description	Quantity	Unit	Rate (NGN)	Amount x NGN million	Dollar x 1000$
1	Preliminary (5%)		L.S		153,5	1,023
2	Site clearance	600,000		100	60	400
3	Earthworks					
A	Cut to spoil on shoulders	36,000	m3	600	21,6	
B	Removal of top soil to depth of 150mm	438,000	m2	200	87,6	584
C	Excavation to road formation level	87,600	m3	1,000	87,6	584
D	Embankment filing to road level	43,800	m3	3,500	153,3	1,022
4	Bridge works and drainage		L.S		300	2,000
5	Pavement and Surfacing (7.3m width) – 50mm thick	60	km	18,000,000	1,080	7,200
	Road Base					
	Provide, place, spread , shape and compact(a)	87,600	M3	3,500	306,6	2,044
	Provide, place, spread, shape and compact (b)	65,700	m3	14,800	972,4	6,482,4
6	Ancillary Works (4%)				122,6	818,416
7	Variation of material and labour (5%)		Sum		153,5	1,023,020
8	Contingencies (5%)	Sum			153,5	1,023,020
9	Total excluding VAT				3,652,2	24,347,876
	VAT (5%)	Sum			182,6	1,217,394
	Sub TOTAL				3,834,8	25,565,270
	Add for consultancy costs (10%)				383,479,047	
	Add for supervision cost (10%)				383,479,047	
	Grand Total				**4,601,748,564**	**30,678,324**

Notes: a) 100% WASC approved naturally occurring laterite material to a compacted thickness of 200mm as sub-base to carriageway & shoulders (haulage included); b) approved crushed rock (wet or dry) in carriageway and shoulder as base specified to a compacted thickness of 15 cm.

2. Road rehabilitation of 22 KM construction Kilibo to river Okpara

The access road from Kilibo to Afesmou (in Benin) was not surveyed by the Consultants. Interviews with local stakeholders, however, provided information that this section is a laterite paved road, but is in poor condition. The journey to cover the 22 kilometres to the trans-Benin Highway (RNE5) at Kilibo normally takes one hour, indicating the road is in a slightly better shape than that on the Nigerian side.

Assuming average construction costs of NGN 77 million per kilometre, overall reconstruction cost is estimated at NGN 1.694 billion, or USD 11.3 million, using the Nigerian average cost estimates.

A ground level crossing at the railway junction (4 kilometres from Kilibo) will be required. The Consultants consider that an elevated crossing, based on average train traffic of 2-3 trains per week at present, would not disturb road traffic significantly and would not justify the investment cost. For the ground level crossing a 10% cost increase has been assumed or NGN.

Table 11: Construction cost access road Kilibo - Afesmou (at Okpara river)

	Cost (x million NGN)	**Cost (x 1000 US Dollar)**
22 km @ NGN 77 million	1.694	11.293,3
Railway crossing	308	2.053,3
Sub total	2.002	13.346,6
Design costs (10%)	200,2	1,334,7
Supervision costs (10%)	200,2	1,334,7
Total	**2.404,4**	**16.016**
Benin road construction cost	Estimate by Ministère des Travaux Public	**CFA 7 mlrd** (approx. US$ 13,600,000)

3. Bridge construction cost

The FMTI has identified a preferred border crossing point at Okerete in Saki West Local Government Area close to the border village of Afesmou in Republic of Benin, where the Okpara river forms the natural boundary between the two countries and is approximately 50 metres wide at this point.

A 60 metre span concrete bridge is proposed for traffic between the two border towns at Okerete in Nigeria and Afesmou in Benin. The bridge should contain a 7,3 metre width for a 2-way, 2-lane configuration with 1.5 m pedestrian / animal crossing at the two sides.

In making the preliminary design, information on the following will be collected:

- High flood level (HFL)
- Low water levels (LWL)
- Discharge velocity
- Desk study of available data on topography (topographic maps, stereoscopic aerial photography)
- Storm duration
- Rainfall statistics
- Top soil characteristics, vegetation cover, etc.

Following this phase, the length and height of the bridge may be estimated and the Consultants will also carry out geo-technical investigations and subsurface explorations for the proposed bridge along the embankments and any location, as necessary, for proper design of the works and conduct all relevant laboratory and field tests on soil and rock samples.

Conservative average cost estimate in Nigeria is assumed as follows:

a) concrete bridge construction is estimated at $ 3,225/m2

b) toll gate plaza (excluding booth and weigh bridges) with road paving works/communications/water, etc., can be assumed to be $ 300 / m2.

The toll plaza may consist of six (6) booths in two (2) directions. Each set will comprise:

- 1 booth for passenger vehicles
- 1 for trucks/trailers
- 1 for motorcycle /pedestrians /cattle booth

Table 12: Construction cost of Okerete bridge

	Cost($) of Area / m2	**Total cost estimate (x 1000 $)**	**Total cost estimate (x mln NGN)**
Construction of bridge 60m x 10.3m (width)	3,225 /m2	1,993	299
1) Site Investigation costs 2) Design Costs 3) Supervision costs	30 % of cost of construction	597	90
Total 60 m Bridge cost		2,590	390
▪ Toll plaza 20m x 100m		600	90
Toll booths + weighbridges		133	20
Short bridge (60 m) all in		**3,323**	**500**
Longer bridge (100m) all in		**4,627**	**694**

For calculation purposes the Consultants have assumed the longer bridge in view of the uncertain water level statistics.

4. Operational expenses

The toll plaza and weigh bridges need to be operated on the basis of 24 hours and 7 days per week. The booths and weigh bridge will require a two shift roster which include sufficient off duty periods (holidays, illness, etc). This alone will imply a labour force of 2 x 6 booth plus 3 x 2 (weigh bridge) = 18 operational staff. On top of direct labour cost maintenance and management cost will be incurred, as well as other operating expenses such as training.

Consultants estimate the total operations cost (incl. Toll Plaza management) at NGN 60 mln or USD 400.000 per annum.

5. Maintenance cost of road and bridge infrastructure

Road maintenance can be broken into three categories with following cost estimates.

Table 13: Maintenance Costs for Saki to Okerete road

No	Maintenance type	Description	Cost x NGN million	Cost x 1000 USD
1	Routine works	1.5 % road construction cost	100	1,534
2	Periodic works for structure integrity	1.5 % at intervals of 5 years as from year 10	100	1,534
3	Special works	A special contingency fund can be created (3%)	pm	

The maintenance cost for the Kilibo-Afesmou section (Benin) would arrive under similar assumptions as for the Saki-Okerete road at NGN 85 million per annum for either routine or periodic works.

For cost calculations the special works item has not been taken into account.

Maintenance costs for the bridge and toll plaza is estimated at 3% of the total construction cost, i.e. NGN 5 NGN million per annum.

Appendix C. Cost Benefit Analysis

	Cost-Benefit Analysis		**Okerete Bridge and access Roads**																									
CAPEX					year																							
1 Investments		**x NGN mln**			-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
					plann	construction			operation																			
	Road infrastructure		-7000		-100	-2300	-2300	-2300																				
	Bridge at Okerete		-700		-100	-200	-200	-200																				
		x mln	NGN	GBP																								
	Total Investments		**-7700**	**-30,8**																								
OPEX																												
2 Maintenance cost	yearly	roads		1,5%					-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105
	yearly	bridge		3%					-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	periodic	each 5 yrs																-105					-105					-105
3 Bridge operations	Toll Plaza								-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60
Benefits																												
1 Transport cost savings		light vehicles							pm																			
		large vehicles							350	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700
2 Transit time savings		light vehicles							6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7
		large vehicles							3,6	7,2	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4
3 Maintenance&Repair savings		light vehicles							61,25	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5
Benefits minus Costs					-200	-2500	-2500	-2500	235,6	650,4	657,6	657,6	657,6	657,6	657,6	657,6	657,6	552,6	657,6	657,6	657,6	657,6	552,6	657,6	657,6	657,6	657,6	552,6
	NPV=	**-3.048**																										
	EIRR=	**6,9%**																										

CAPEX																								year
1 Investments		**x NGN mln**			21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
2 Maintenance cost	yearly	roads		1,5%	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105	-105
	yearly	bridge		3%	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	periodic	each 5 yrs							-105					-105					-105					
3 Bridge operations	Toll Plaza				-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60
1 Transport cost savings		large vehicles			700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700	700
2 Transit time savings		light vehicles			6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7	6,7
		large vehicles			14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4	14,4
3 Maintenance&Repair savings		light vehicles			122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5	122,5
Benefits minus Costs					657,6	657,6	657,6	657,6	552,6	657,6	657,6	657,6	657,6	552,6	657,6	657,6	657,6	657,6	552,6	657,6	657,6	657,6	657,6	657,6

Appendix D. Financial Evaluation

Annex 4 **Project C: Okerete Bridge**																			
Financial evaluation																			
CAPEX				**year**															
1 Investments	**x NGN mln**			-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12
				plannir	construction			operation											
Road infrastructure		0		0	0	0	0												
Bridge at Okerete		-700		-100	-200	-200	-200												
	x mln	NGN	GBP																
Total Investments		-700	-2.8																
OPEX																			
2 Maintenance cost		roads	1.5%					0	0	0	0	0	0	0	0	0	0	0	0
		bridge	3%					-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
		periodic	ev 5 yrs														0		
3 Bridge operations		Toll Plaza						-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60
Revenues																			
1 *Transport cost savings*		light vehicles						pm											
		large vehicles						0	0	0	0	0	0	0	0	0	0	0	0
2 *Transit time savings*		light vehicles						0	0	0	0	0	0	0	0	0	0	0	0
		large vehicles						0	0	0	0	0	0	0	0	0	0	0	0
3 **Bridge tolls**	**5 % traffic increase p.a.**							70	140	147	154.4	162.1	170.2	178.7	187.6	197	206.8	217.2	228
4 *Customs duties generation*								pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm
Benefits minus Costs				-100	-200	-200	-200	-11	59	66	73.35	81.07	89.17	97.68	106.6	116	125.8	136.2	147
NPV=	**-161**	at WACC = 17 %																	
FIRR	**13.6%**																		

1 Investments (year)	13	14	15	16	17	18	19	20	21	22	23	24	25	26
2 Maintenance cost – roads	0	0	0	0	0	0	0	0	0	0	0	0	0	0
bridge	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
periodic			0					0					0	
3 Bridge operations – Toll Plaza	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60
1 Transport cost savings – large vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 Transit time savings – light vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0
large vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Bridge tolls	239.4	251.4	264	277.2	291	305.6	320.9	336.9	353.8	371.5	390	409.5	430	451.5
4 Customs duties generation	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm
Benefits minus Costs	158.4	170.4	183	196.2	210	224.6	239.9	255.9	272.8	290.5	309	328.5	349	370.5

CAPEX											year			
1 Investments (year)	27	28	29	30	31	32	33	34	35	36	37	38		
2 Maintenance cost – roads	0	0	0	0	0	0	0	0	0	0	0	0	0	0
bridge	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
periodic				0					0					
3 Bridge operations – Toll Plaza	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60
1 Transport cost savings – large vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 Transit time savings – light vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0
large vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 Bridge tolls	474.1	497.8	522.7	548.8	576.3	605.1	635.3	667.1	700.4	735.5	772.2	810.9	851.4	894
4 Customs duties generation	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm	pm
Benefits minus Costs	393.1	416.8	441.7	467.8	495.3	524.1	554.3	586.1	619.4	654.5	691.2	729.9	770.4	813

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