



Maloukou Tréchet Bridge

Toll Bridge for
Brazzaville to
Kinshasa

Project
Information
Memorandum

November 2017



PREPARED FOR:
DELEGATION GENERALE DES GRAND TRAVAUX (DGT) FOR THE REPUBLIC OF CONGO
AND MINISTERE DU PLAN ET SUIVI DE LA REVOLUTION DE LA MODERNITE FOR THE
DEMOCRATIC REPUBLIC OF CONGO



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UNDER THE FRAMEWORK OF:
PROGRAMME FOR INFRASTRUCTURE DEVELOPMENT IN AFRICA (PIDA)





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1. PROJECT DESCRIPTION

1.1 CONTEXT

A bridge linking Kinshasa, the capital of the Democratic Republic of Congo (DRC), and Brazzaville, the capital of the Republic of the Congo (RC), has been under consideration for almost a century. The two cities, located on each side of the Congo River (Kinshasa on the left bank and Brazzaville on the right bank) are only 4 kilometres apart but are currently only connected via river based transport. Challenging conditions are currently being faced by travellers and businesses that make use of the river based transport, due to the uncomfortable conditions of transport, the high cost levied, the administrative burden associated with crossing the border, as well as delays resulting from the numerous controls undertaken by authorities on both sides of the river. Kinshasa has 8 million inhabitants and Brazzaville has a population of 1.2 million, giving rise to around 610,000 passenger trips per annum¹ and the transportation of 340,000 tonnes of freight² between the two cities. With the population of both capitals growing rapidly, it is expected that by 2025, passenger trips could grow to 7 million per annum and freight volumes to 5 million tons if adequate infrastructure is provided.

This PIM considers the construction of a tolled road-rail bridge across the Congo River at Maloukou Tréchet, the construction of a border post on each side of the river³, as well as the construction of road infrastructure to connect the bridge and existing roads on both ends (“the Project”).

1.2 PROJECT LOCATION

The Project is located at Maloukou Tréchet which is 65 km from Brazzaville, travelling by road along the right bank, and will be 75km from Kinshasa once the necessary road infrastructure is implemented. The bridge is located to the East and upstream of both cities. A border control post will be located at each end of the bridge, and will host administrative agents in charge of border control operations. Inspections will only be carried out on one side

1 This estimated are based on 2010 data. That year, it is estimated that 520 000 passengers crossed the river by ferries, 75 000 by speedboats, and about 15 000 by pirogue.

2 Goods are transported across either through the barge operated by CNTE, SCTP or private operators (90%), or as small package in ferries or pirogues (10%). Among the 340 000 tones exchanged yearly, 40% are petroleum products.

3 Inspections will be carried out on one side of the river, that of the departure; vehicles entering a country will not be controlled.

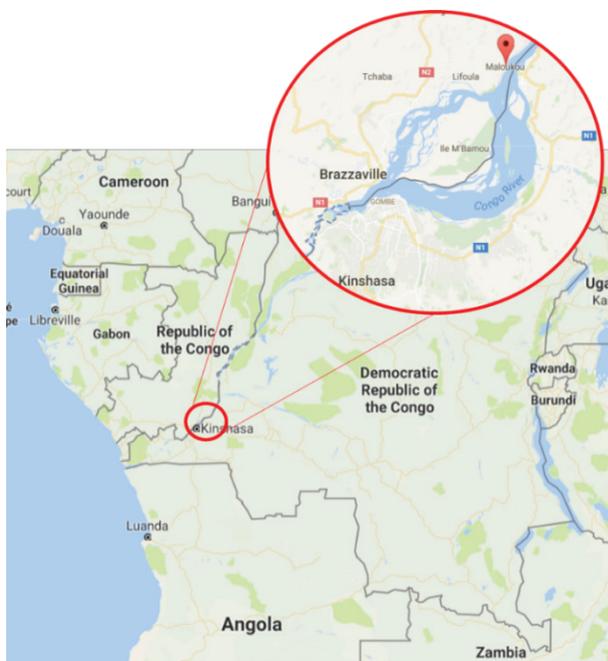


Figure 1: Location of the Maloukou village, on the shore of the Congo river (Source: Google Maps)

of the river (i.e. on the departure side). Existing road infrastructure will be extended by 10 km to connect the bridge to the two cities.

1.3 PROJECT OBJECTIVES

The Project is expected to meet a series of objectives, namely:

- Improve and secure the connections between Brazzaville, Kinshasa and the ports of Pointe Noire and Banana.
- Stimulate trade between Brazzaville and Kinshasa
- Foster trade between the DRC and Congo
- Encourage movement of people and goods along the Tripoli-Windhoek corridor
- Boost trade between the DRC, Cameroon and Gabon

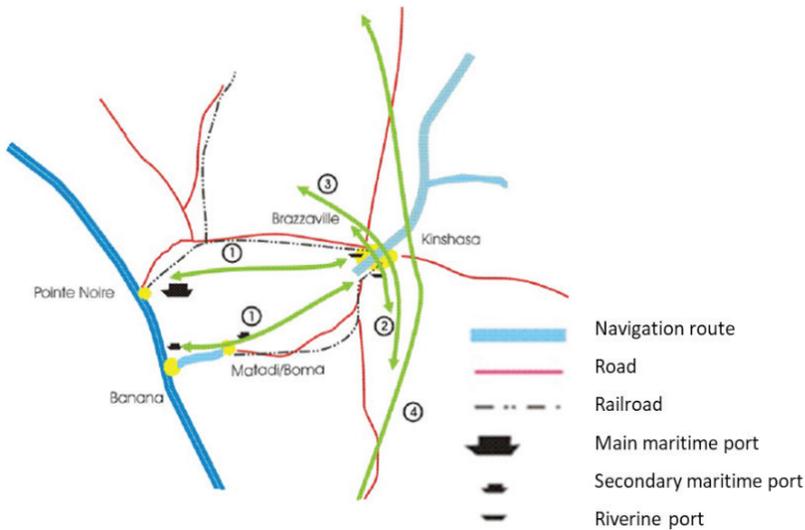


Figure 2: Trade corridors around the bridge (translation by Pegasys)

The bridge is part of a larger project, the Kinshasa-Ilebo Railway project⁴, that aims to improve the railway network in Africa. The larger project is expected to help increase regional trade and speed up regional integration between Central and Southern Africa. The Project is expected to allow for a cheaper and quicker river crossing by both passengers and goods. Beneficiaries from the project will therefore be numerous, including: the two countries whose fisca will benefit from increased trade, national and foreign businesses in both countries, private transporters, local communities and riparian populations.

1.4 PROJECT HISTORY, STAGE AND CYCLE

The Egis International/Scet Tunisie/Egis Structures and Environment group was appointed in 2011 to undertake a feasibility study, funded by the African Development Bank (AfDB), DRC and RC, which was completed in 2016 (“the Feasibility Study”). The Feasibility Study quantified the cost of developing the bridge, border posts and road connections, but did not investigate or cost the envisaged rail infrastructure.

⁴ This wider project involves the connection of the bridge to the Lumbumbashi-Ilebo railway, as part of the “Trans-African Highway: Tripoli-Windhoek-Cape Town”, and of the “Pointe Noire – South Eastern Africa Railway Network”.

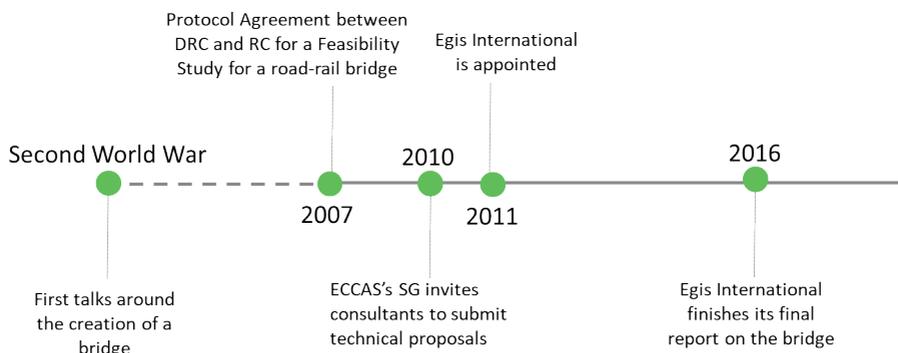


Figure 3: Historical timeline.

1.5 KEY PARTIES

1.5.1 PROJECT SPONSOR

The governments of DRC and RC are the Project's key project sponsors. The Economic Community of Central African States (ECCAS) ensures the general coordination of the project and plays the role of the Executive Agency of the study.

At the regional level, the road-rail bridge and the extension of the railroad between Kinshasa and Ilebo constitute a single project, that will be implemented in two phases. During the first phase, the bridge will be built and the detailed study of the railroad project will be undertaken.

1.5.2 IMPLEMENTATION AUTHORITY



Délégation Générale aux Grand Travaux (DGGT) of the RC, is part of RC's Ministry of Land Use Planning and Large Construction Work. It is an administrative and technical organ of the State which is mandated to undertake studies, publish bid tenders, evaluate quotes and do contract estimates. Acting as a project owner, the DGT controls the execution of construction sites.



Ministère du Plan et Suivi de la Révolution de la Modernité is mandated to plan and program the social and economic development policy of the DRC, through the preparation, monitoring and implementation of the Economic and Social Plan.



Economic Community of Central African States (ECCAS) was established to promote regional economic co-operation in Central Africa. According to its Charter, it aims to achieve collective autonomy, raise the standard of living of its populations and maintain economic stability through harmonious cooperation between member states.

1.5.3 OTHER KEY PARTIES

According to the Feasibility Study, the project is supported by ECCAS, the Common Market for Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC).

1.6 DELIVERY & BUSINESS MODELS

The Feasibility Study reviewed the possibility of financing the Project through a public-private partnership (PPP), and assessed the viability of three other forms of private sector participation. While four private sector participation models were evaluated in the Feasibility Study,⁵ the project sponsors have decided to develop the Project on the basis of a Build-Operate-Transfer (BOT) public-private partnership (PPP).

1.6.1 PRIVATE SECTOR OPPORTUNITIES

Under a BOT PPP, the private sector finances, designs, constructs, owns, and operates an asset over a defined period of time or concession period. A payment mechanism is developed as part of the structuring process that will compensate the private sector or concessionaire for funding costs, operational costs, maintenance costs and equity requirements. This PIM assumes that a typical PPP structure will be implanted for the Project, as represented in

⁵ A Build-operate-transfer (BOT) PPP (in French "concession BOT"), a concession (in French "concession d'affermage"), Operation and Management (O&M) contract with profit share (in French "régie intéressée"), and an O&M contract (in French "gérance").



Figure 4. A special purpose vehicle (SPV) will be established by the concessionaire that will ringfence the Project’s cashflows and pass operating & maintenance (O&M) and construction risk down to an O&M contractor and an engineering, procurement and construction (EPC) contractor. This structure will require development finance institutions (DFIs) to provide loans to the SPV to fund the majority of the Project’s capital expenditure. Equity provided by the private sector will fund the remaining capital expenditure.

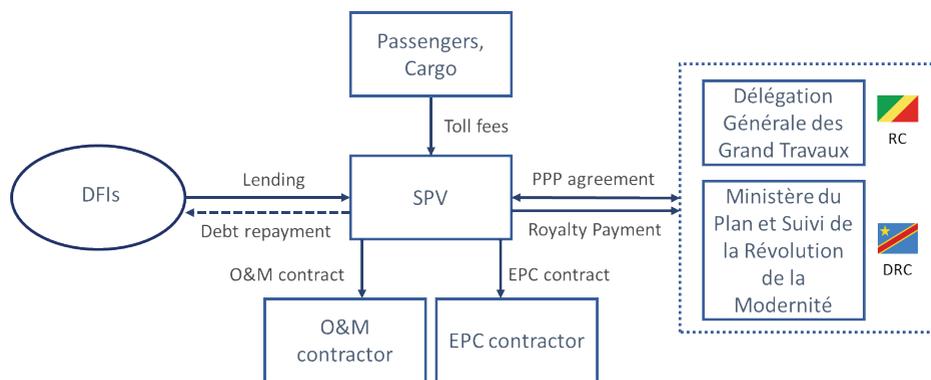


Figure 4: Structure of the BOT PPP (source: Pegasys)

The two countries will be entitled to an annual royalty payment at a fixed percentage of the Project’s capital expenditure.

1.7 REVENUE MODEL

Toll revenues paid by passengers and goods crossing the bridge will be collected by the concessionaire, however, an associated payment mechanism still needs to be developed. In the event of a higher demand, the payment mechanism will accommodate profit sharing between the private and public partners and should result in greater value for money for the public sector. Similarly, in the event of lower than expected demand, the private sector may require downside protection in the form of a patronage guarantee as part of the payment mechanism.



The Feasibility Study estimates the current full cost⁶ of crossing by ferry at approx. USD 69, whilst a speedboat crossing is estimated at approx. USD 95 and a canoe/pirogue crossing at approx. USD 33. The cost per tonne of transporting cargo across the river is estimated at approx. USD 7.5.

Table 1: Current estimated Congo river crossing costs (2010 terms)

TYPE OF TRANSPORT	NUMBER OF PASSENGER TRIPS P.A.	COST PER PASSENGER TRIP	TOTAL COST	TOTAL COST
			USD million	EUR million
FERRIES	520 000	USD 69 (EUR 62.2)	35.9	32.3
SPEEDBOATS	75 000	USD 95 (EUR 85.6)	7.1	6.4
PIROGUES	15 000	USD 33 (EUR 29.7)	0.5	0.5
TOTAL	610 000		43.5	39.2

The Feasibility Study, concluded on the financial viability of the Project on the assumption that a light vehicle, which can carry 4 passengers, will be charged a toll of USD 35.5⁷ whilst a lorry will be required to pay USD 106.5.

1.8 POLITICAL SUPPORT

The Governments of the two countries have continuously demonstrated their willingness to complete this project. Their willingness has translated into a series of measures, namely: the signature of a Protocol Agreement; the two States' close cooperation during the feasibility study; co-funding contributions of approximately USD 2 million; the completion of various studies; and finally, the signing of a joint financing requests for the project, addressed to the AfDB (which were strengthened by ECCAS's support). The two countries have also appointed the Secretary General of ECCAS as intermediary to the Legal Support Facility (ALSF), which will be assisting the DRC and RC with the structuring and procurement of the Project.

6 The full cost of crossing includes the cost of transport, administrative costs, plus a combination of other expenses relating to passes and authorisations, security checks, vaccination record, taxes at destination, police forces, etc.

7 This rate appears to assume that 16% of passengers will be transported by minibuses with a higher occupancy (6.5 passengers)

2. TECHNICAL FEATURES

2.1 CAPACITY

The bridge will be 1,575m in length, and will include a single railway track, two road lanes (one in each direction) as well as two sidewalks. There will be the possibility to extend the road to four lanes if future demand justifies such an extension. According to the Feasibility Study, the rail road bridge will be designed to be easily maintained and operated, and a single border checkpoint will be located at each end of the bridge. To connect the bridge to existing road infrastructure (as illustrated in the figure below), there will be a road extension of 6.8km in the DRC, and 3.2km in the RC (totaling 10km of road connections).

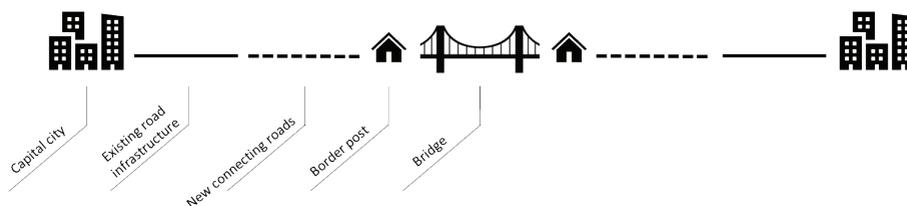


Figure 5: Illustration of the Project components (source: Pegasys)

The Feasibility Study focuses on the bridge section for the roadway, and therefore this PIM does not expand on the railway element of the bridge; however, it is noted that there is a strong intention to add a railway track onto the bridge's structure at a subsequent time, and to connect the railroad bridge to the closest railway stations on both sides of bridge. The bridge has been designed as a bi-level bridge to facilitate the addition of a railway track, with the roadway designed on the top level, and the railway perway planned to run below.

2.2 DESIGN STATUS

Preliminary designs were prepared for the Project as part of the Feasibility Study. The designs cover the bridge, connecting roads and the border posts and were prepared in accordance with Eurocodes EN 1990 and EN 1992.⁸

⁸ The most relevant codes for the Project design were EN 1990 Eurocode 0 (detailing the basics for calculations) and EN 1992 Eurocode 2 (on concrete structures).

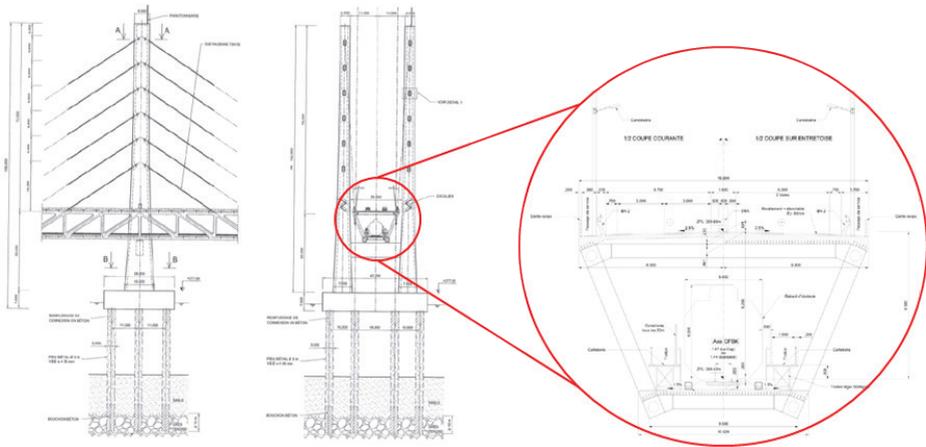


Figure 6: Longitudinal and transversal cut of the bridge, and zoom on the bay (functional cut)

2.3 SCOPE OF THE TRANSPORT SECTOR IN DRC & RC

Transport sector in the DRC

The transport network in DRC is poorly established, and a number of regions cannot readily be accessed by motor vehicles. Out of 10 regional capital cities, only Matadi is linked to the Kinshasa by a tarred road.

Roads: The DRC road network is 58,509 km long, and is managed by the National Office of Roads (Office National des Routes). The network is poorly maintained and only 3,000 km are tarred. The great majority of roads are thus gravel roads, which are in poor conditions and often inaccessible.

Railway between Matadi-Kinshasa (SCTP): this railway network is 724 km long (366 km between the two cities, and 358 km of connecting railway). The number of passenger using the train has been decreasing since the 80s. The SCTP is undergoing a rehabilitation program to increase its capacity and provide a better service.

Ports of Matadi, Boma and Banana: Matadi port is located on the Congo river (150 km from the Atlantic coast). It deals with about 2,260,000 tons of merchandise a year (2010 data), most of it being imports. Matadi port is in the process of being renovated to increase its capacity. The Boma and Banana ports have a lower capacity.



Kinshasa port: Kinshasa port, managed by the SCTP, is situated on the last navigable portion of the Congo river (southern-most). About 220,000 tons transit through the port annually (2010 numbers). Despite its importance, the port is poorly maintained, due to a lack of investment.

Transport sector in the RC

Air transport is widely used in RC despite high costs evidenced by the country's 24 aerodromes due to the poor condition of its terrestrial transport infrastructure.

Roads: The road network in RC is poorly developed, and generally in bad condition, due to a lack of maintenance and damage caused by armed conflicts. Some regions of the country are not accessible by road.

Railway (the Chemin de Fer Congo Océan – CFCO): The CFCO is 886 km long, and is composed of three portions: Brazzaville to Pointe-Noire (built in the 1920s and 1930s), Mont-Bélo to Mbinda, and Bilinga to Dolisie. The railroad network is in poor condition and has a high accident rate. The railroad however remains the main link between Pointe Noire and Brazzaville for heavy goods (such as cement and hydrocarbon products). The transport of freight traffic by has declined since the 1970s and in 2010, only 771,000 tons of freight were transported by rail.

Pointe Noire port: The Pointe Noire port is a deep-water port in the Guinea Gulf that handled 12 million tons of oil and 7.1 million tons of other cargo in 2009. The Bolloré Africa group was licensed to manage the container port in Pointe Noire in 2008.

The Brazzaville port: The port infrastructure has been degraded by armed conflicts in the last decade, and suffers from a lack of maintenance. Volumes handled by the port have been on the decline since the beginning of the conflict. The port is however key to supplying products to the North of the country.

2.4 MARKET SIZE

A preliminary market study was undertaken as part of the Feasibility Study, and was used to form the basis of the financial modelling undertaken.



Current demand and market size

Passengers currently make use of three modes of transport between Kinshasa and Brazzaville, namely: speedboats, ferries, and pirogues (or canoes). It is estimated that 520,000 passengers crossed the river by ferry in 2010 of which 390,000 passengers purchased tickets for ferries operated either by CNTF ferries (RC) or SCTP (DRC). A further 130,000 or 25% of passengers are estimated to have crossed by ferry but evaded fares. It is also estimated that 75,000 passengers crossed using privately operated speedboats. There are no official numbers regarding river crossing by pirogues (10 to 15 passengers per pirogues), but it is estimated that pirogues transport around 15,000 people per annum.

Future demand and market size

The demand to cross the border is expected to increase due to a combination of the following factors: (1) demographic⁹ and economic growth,¹⁰ (2) increased integration between both countries, and (3) the development of infrastructure that will boost trade in the region. If the Project is constructed, additional factors should contribute to boosting the river-crossing demand, namely: (1) the “less cumbersome” administrative procedures and it is expected that (5) the increased competition created by the Project will push the price of crossing the river down. Based on these assumptions, the consultant put together a forecast that estimates that 4,344,000 road based passengers will cross the bridge in 2025 and a further 346,000 by rail and that road based passengers will grow to 10,460,000 by 2040. Passengers crossing the river by boat and road are forecast to grow at a compounded annual rate (CAGR) of 18.6% between 2010 and 2025 and 6% thereafter.

Whilst there is a great potential to develop the passenger railroad network in both countries, the realisation of such potential will require significant capital expenditure by both countries. As such, the Feasibility Study excluded the rail passenger numbers from the financial analysis but highlighted the opportunity. The Feasibility Study forecasts that 2,262,000 tons of freight will be transported by road in 2025 compared to the 340,000 tons transported via river modes in 2010. The volume of freight transported between the two cities is therefore forecast to grow, on a compounded basis, by at least 13.5% per annum between 2010 and 2025. The

⁹ According to the UN, the DRC should count over 100 million inhabitants in 2030. RC is on a relatively fast demographic growth as well.

¹⁰ GDP growth was considered as the most important indicator to reflect the evolution of transport demand since it reflects both the growth in population and the growth of per capita income, and therefore people's mobility



Table 2: Passenger demand (train, road and river)

	2010	2025	CAGR (2010-2025)	2040	CAGR (2025-2040)
PASSENGER TRAFFIC BY ROAD (TAXI OR PRIVATE CAR)	n/a	4 344 000		10 460 000	
PASSENGER TRAFFIC BY RIVER MODES	610,000	3 552 000		8 512 000	
TOTAL USED IN FINANCIAL ANALYSIS	610,000	7 896 000	18.6%	18 972 000	6%
PASSENGER TRAFFIC BY TRAIN		346 000		780 000	

growth in freight volumes is forecast to reduce to 2.5% per annum after 2025. The high growth assumes that significant freight traffic will be generated as a result of: an increase in traffic between the Pointe Noire port and Kinshasa, the Special Economic Zone planned for Makulu, in the Kinshasa region; and increased trade between the two countries. Rail freight volume forecasts were excluded from the Feasibility Study's financial analysis for the reasons discussed above.

Table 3: Freight transport demand through the bridge (road and rail)

TONS	2010	2025	CAGR (2010-2025)	2040	CAGR (2025-2040)
FREIGHT BY ROAD (TAXI OR PRIVATE CAR)		2 262 000		2 224 000	
FREIGHT BY RIVER MODES	340,000				
TOTAL USED IN FINANCIAL ANALYSIS	340,000	2 262 000	13.5%	2 224 000	2.5%
FREIGHT BY TRAIN		2 857 000		1 073 000	

2.5 ASSUMPTION USED IN THE FEASIBILITY STUDY

The Feasibility Study made several assumptions in respect of the positive impact of other infrastructure developments on the demand for the Project. It assumed that:

- the Matadi port will be rehabilitated in 2015, and that it will have a maximum capacity of 3.5 million tons a year;
- the traffic between Pointe Noire and Brazzaville will grow;
- the RN1 road between Pointe Noire and Brazzaville will be rehabilitated;
- a deep-water harbour in the DRC (probably in Banana) will be constructed and operational by 2020;
- the traffic and volume of merchandise in the Pointe-Noire and Matadi ports will increase;
- the boat services on the Congo river between Kinshasa and Brazzaville will not be expanded; and
- a Special Economic Zone will be created.

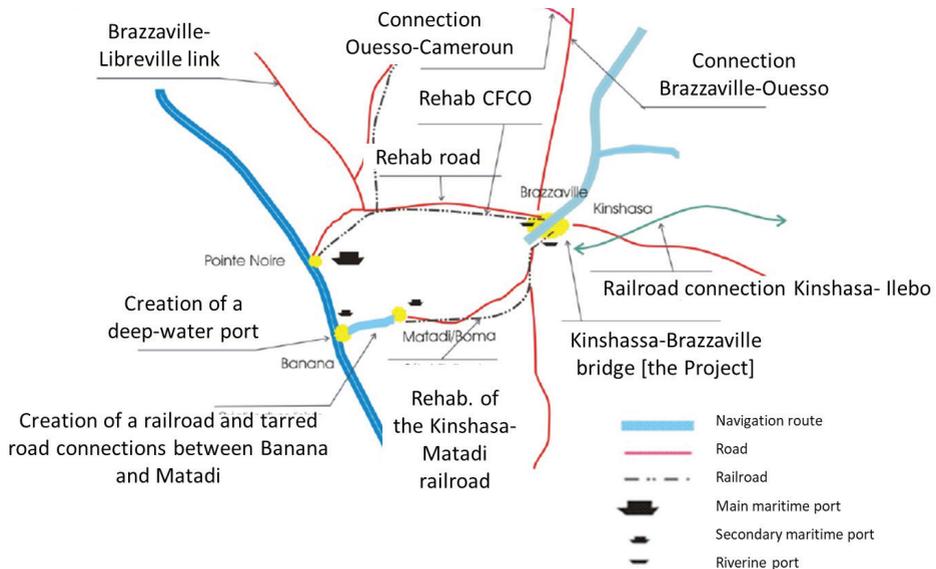


Figure 7: Major infrastructure projects in the region (translation by Pegasys)



Whilst some of these assumptions seem to be materializing, a significant amount of uncertainty exists around their timing and completion. The development Matadi port has been progressing over the last few years and is continuing,¹¹ but is taking longer than envisaged according to the Feasibility Study. Despite the signing of a recent MOU, the construction of a deep-water harbour in DRC is unlikely to materialize before 2020.¹²

2.6 PROJECT COSTS

The **capital expenditure** (Capex), or the cost of developing the Project, is estimated at EUR 413.7 million (USD 459 million) as summarized below. The cost of connecting roadways is estimated at EUR 62.7 million (USD 69.6 million), and the cost of two border checkpoints (one on each side) is estimated at EUR 37.7 million. (USD 41.8 million).

Table 4: Capital Expenditure

COMPONENT	POWER PAYMENT (\$C/KWH)	WATER PAYMENT (\$C/KWH)	PERCENTAGE OF TOTAL COSTS
BRIDGE	300.3	333.3	72.6%
CONNECTING ROADWAY	62.7	69.6	15.2%
CONTROL POSTS	37.7	41.8	9.1%
CONTROL AND SUPERVISION	12	13.3	2.91%
ENVIRONMENTAL MEASURES ¹³	0.8	0.9	0.19%
EXPROPRIATIONS	0.2	0.2	0.05%
TOTAL	413.7	459.2	100%

The Project's annual average **operating expense** (Opex) is estimated to be 2% of the total cost of construction. The amount was calculated as a sum of current maintenance costs (estimated at 0.5% per annum) and periodic maintenance every 10 years (estimated at 30% of the total cost of construction).

11 Investments have been made in a new container terminal by the Filipino company ICTSI. More recently, the government announced having secured a USD 40 million investment to dredge the Congo River from Banana to Matadi to a depth of 11m, allowing larger vessels to berth in Matadi.

12 The company DPW signed a Memorandum of Understanding (MOU) for the construction of the harbour in 2017, however, due to the complexity of the situation, it will likely not happen by 2020.

13 This number (provided in the Feasibility Study) might be revised, as the Environmental and Social Management Plan was costed at EUR 3.7 million (USD 4.1 million).



2.7 ECONOMIC ANALYSIS

The economic analysis undertaken as part of the Feasibility Study was prepared assuming that the bridge would be operational by 2021 and using a time horizon to 2040. The analysis quantifies the benefits related to passenger traffic (in terms of cost and time saved) and to freight transport (also in terms of cost saving as well as time gained for the alternative use of vehicles). While transport costs will be similar, the analysis assumed that a passenger would save 1 hour as a result of using the bridge, which cuts the time to cross the Congo from 3.5 hours to 2.5 hours, and is potentially able to convert this time saved into a monetary value.¹⁴ A discount rate of 12% was used to arrive at an economic **internal rate of return (EIRR)** of **22%**, and a **net present value to EUR 303.5 million** (USD 336.9 million).

2.8 FINANCIAL ANALYSIS

Financial analysis was undertaken as part of the Feasibility Study which quantified key financial metrics for a PPP arrangement. The Feasibility Study, assumes:

- A construction period of four years;
- A concession period of up to forty years, but which has been modelled for a 20 years operational period;
- A concession royalty payment of 1.8% of capex;
- Interest rates of 6% and a debt tenor of 20 years;
- Passenger volumes as illustrated in Table 2;
- Freight volumes as illustrated in Table 3; and
- that the project is financed using a 70:30 debt to equity ratio.

The financial analysis assumed a toll rate of EUR 32 for a 4-seater light vehicle, resulting in a cost of EUR 8 /person which is equal to current ferry tariffs (EUR 8/person). Whilst passengers will still need to pay for a vehicle to transport them across the bridge, it is estimated that the time saved by using the bridge and other cost savings generated by the bridge¹⁵, will out way any incremental transport costs. The main results of the financial analysis are summarised in

¹⁴ The value of time was estimated to EUR 0.28 (USD 0.31) per hour in 2010 terms for passengers whilst freight time savings were quantified assuming EUR 151 (USD 168) per lorry per day (EUR 7.5 or USD 8.3 per ton per day).

¹⁵ Cost savings relative to full cost of crossing (as quantified in table 1)



Table 5 which shows a project IRR of 16.9% and an Equity IRR of 24% which should attract private sector interest but may require patronage guarantees given the ambitious demand assumptions modelled.

Table 5: Financial simulation results

FINANCIAL SIMULATION RESULTS (BOT MODEL)		
Current Tariffs		
Passengers	EUR 32	USD 35.5
Cargo	EUR 96	USD 106.6
Private Investment Required	EUR 413.7 million	USD 459 million
IRR Project	16.9%	
IRR Equity	24.0%	
Payback Period	6 years	
Years with Negative Cash Flows	1 year	
Concession Viability		
Equilibrium Tariffs (Zero NPV)		
Passengers	EUR 26.4	USD 29.3
Cargo	EUR 79.3	USD 88
Fixed Royalties (With Current Tariffs)		
Concession Royalties (% of Investment)	1.8%	
Concession Royalties (Nominal)	EUR 7.6 million	USD 8.4 million
NPV of Royalties	EUR 85.3 million	USD 94.7 million

Results of sensitivity tests show that the Project is sensitive to toll rates, illustrated by the fact that if tariffs are reduced by 17.4%, the Project's NPV is reduced to zero. The analysis also showed that a 20% increase in capex will result in a negative NPV. The Project is also sensitive to variations in forecasted passenger/freight volumes, demonstrated by a 17.4% decrease in volumes which is also likely to result in a zero NPV.



2.9 PROJECT FUNDING REQUIRED TO UNLOCK THE PROJECT

To unlock funding, an initial business case (Dossier d’Affaire Initial) will be prepared. The preparation of this document will include an update of the economic study and financial analysis. As part of this exercise, it is recommended that a detailed demand study is undertaken that will forecast demand per vehicle type (including busses and minibus taxis) and which will be underpinned by surveys that identify the current true cost of crossing by boat. The surveys should also seek to identify affordability levels which will allow investors or funders to conclude on how affordable the proposed toll rates will be to potential users. The existing Feasibility Study calculates toll fees for only two vehicle types, namely a 4-seater vehicle and a lorry but appears to make an assumption that minibuses will account for 16% of passenger vehicles. It is recommended that analysis is undertaken that calculates toll fees per vehicle type, including minibus taxis and buses that are likely to transport most passengers.

In order to unlock loan funding from DFIs for the project and equity from the private sector, the demand analysis will need to substantiate the significant growth in demand forecast in the Feasibility Study. Given how sensitive the Project appears to be to demand, the private sector will most likely require patronage guarantees to be issued by the two governments to undertake the project. These patronage guarantees may require credit enhancement from a DFI, if possible, to attract private sector investment. In the absence of a patronage guarantee, lenders will require debt to be guaranteed by the two counties or for the two countries to on-lend sovereign debt to the Project. RC recorded a debt to GDP ratio of only 22% in 2016, compared to 87% in 2007 and an average of 125% between 1990 until 2016. The DRC had debt to GDP ratio of 83% percent in 2016 and an average ratio of 102% between 2000 and 2016.



3. ENVIRONMENTAL, SOCIO-ECONOMIC IMPACT AND SUSTAINABILITY MODEL

The Feasibility Study includes a comprehensive environmental, socio-economic impact study, as well as a sustainability study for the construction of the bridge, the road and railway access, and the border control installations. This study was based on a series of public consultations with riparian populations, as well as administrative and customary authorities. As a result of this study, it was found that the project is likely to have both positive and negative impacts on RC and DRC's respective society and economy.

- Positive socio-economic impacts are expected to be significant. The bridge is expected to stimulate the local, provincial and regional economy, by creating jobs in the region.¹⁶ The project is also likely to trigger further regional development of infrastructure.
- Negative Project impacts are expected to include the resettlement of populations living, possessing property or exercising business activities on the construction site. Impact on the environment include construction related risks – e.g. pollution risks – and the impact of the carbon footprint to connect to the bridge.¹⁷

An Environmental and Social Management Plan (ESMP) was developed as part of the Feasibility Study which sets out a number of mitigation measures to minimise the environmental and social impacts of the Project. During the construction phase, the Project's ESMP will ensure that: affected communities have access to water; that water quality is maintained; ensure the security of displaced people; and minimize involuntary displacement of people. The environmental socio-economic impact study concludes that the Project's positive impacts are expected to outweigh the negative ones, and that no major irreversible negative impacts are expected to arise in the project zone and beyond.

¹⁶ It is difficult to estimate how many local workers, mainly unskilled workers, will be employed on the construction site. Because of the technicality of the Project, it is expected that only a low proportion of the workforce will be sourced locally. However, because the workers' inflow will increase demand for a wide array of services (housing, health, transport, leisure etc.), the Project will also create jobs for traders, local merchants, as well as hotel and restaurant staff. Once in service, the bridge will also create jobs for its operation and maintenance (managers, accountants, technicians, toll collectors, security agents etc.).

¹⁷ The distance of the bridge site from the two capital cities being higher than current point of passage, some additional CO₂ emission are to be expected.

4. RISKS AND GOVERNANCE

4.1 GOVERNANCE STRUCTURE

The Feasibility Study identifies a three-tier institutional framework for the Project that speaks to the regional, state, and sector levels.

At the **regional level**, ECCAS ensures the general coordination of the project and a Project Management Unit has been established, which sits in the Physical, Economic and Monetary Integration Department of ECCAS. The Project Management Unit includes an Infrastructure Services Chief, which is responsible for project coordination.

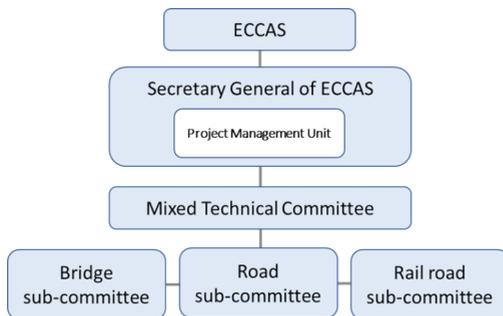


Figure 8: Institutional Framework for Project Management

At the **state-level**, the Mixed Technical Committee is responsible for overseeing the studies in each country and sector. The presidency is held alternatively by the DRC and RC's respective state institution in charge of infrastructure development (DRC's *Ministère du Plan* and *Direction des Infrastructures*, and RC's *Délégation Générale des Grands Travaux*). Other

institutional actors are consulted by the Committee, including those responsible for security, immigration, commerce, border control, health, or women integration. Focal Points for DRC and DC help coordinate activities between the two countries.

At the **sectoral level**, there are sub-committee for bridges, roads, and railroads. Each sector hosts a focal point from DRC and RC.

4.2 RISK MATRIX

No risk matrix was developed as part of the Feasibility Study, however, some of the key risks of the Project are highlighted in this PIM as well as potential mitigating actions.



5. TIMELINE AND MILESTONES

The Project is currently being supported by the African Legal Support Facility. This facility, hosted by the African Development Bank, has been providing legal advice and technical assistance to African countries since 2010 and is providing advice in respect of the optimal PPP structure.

To advance the Project to financial close, a series of actions will be required, as summarised in Figure 9. As part of the Initial Business Case, it is recommended to undertake a detailed demand study and to create a demand forecast model. That will require surveys to be undertaken in both cities to conclude on demand at various price points. Once the detailed demand study has been completed, the feasibility study will need to be updated, underpinned by a detailed financial model. The financial model should reflect the the institutional and financial structure of the PPP and will solve for toll fees across of range of vehicle types and link into demand forecast model.

It is further suggested to conduct a market sounding with DFI lenders, EPC contractors and potential equity investors which will provide an opportunity for the transaction advisor to test and refine the proposed structure to ensure private sector participation and foster competition.

After securing the necessary sign-off among key stakeholders, the procurement process should begin with the release of tender documents. A request for quotation (RFQ), followed by a request for proposal (RFP) will be issued to shortlist PPP partners and appoint a PPP partner that offers the best value for money. The following timeline provides an idea of next steps and deadlines.

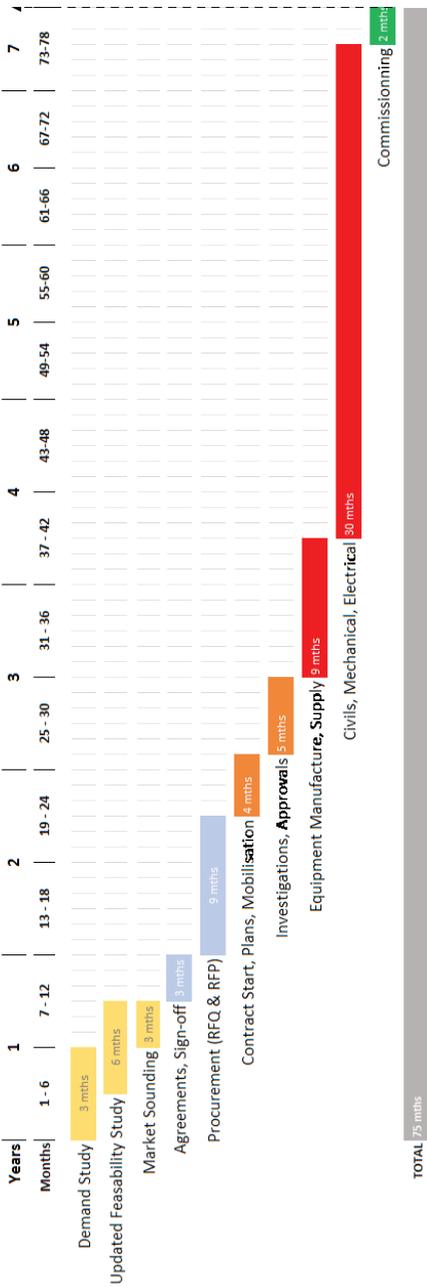


Figure 9: Proposed timeline.



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INTERVIEWS

Jean Claude Azonfack, project manager, Economic Community of Central African States (ECCAS). Correspondence and questions relating to the project between the 24th of October and the 10th of November 2017.

VERSION CONTROL

VERSION NUMBER	DATE	PREPARED BY	REVIEWED BY
VERSION 1	10 November 2017	Pegasys	ECCAS, NEPAD, Republic of Congo Awaiting feedback from Ministère du Plan et Suivi de la Révolution de la Modernité and DGGT





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