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Lobito Corridor Project (Prefeasibility Study)

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Preamble

In their Dar-es-Salaam Declaration, adopted on 20 November 2004, the Heads of States for the countries of the Great Lakes Region, committed themselves to cooperate in enhancing economic growth, by adopting an integrated strategy of regional reconstruction of productive sectors and infrastructure. The Heads of State also committed to cooperate in trade, energy, tourism, with special emphasis on railways and oil pipelines among other sectors. The proposed rehabilitation project for the Lobito Corridor infrastructure responds directly to these expressed aspirations for the region.

Lobito Corridor strides the two regions of Southern and Central Africa, and will once the transport infrastructure has been restored, also provide an easy access to Eastern Africa region. For many years and before the breakout of the conflict in the region, the Benguela Railway was a strong regional unifying and integrating factor. It was the most economical route for the mining operations, which thrived in the past within these two regions of the continent. In addition, the Corridor was also an important trading zone for agricultural and industrial products in the regions. Unfortunately, the railway line has been out of operation since the mid seventies when civil war broke out in Angola.

To resuscitate the rundown infrastructure of the Lobito Corridor including the Benguela Railway and get it operational again, would require that the recently signed peace agreement be nurtured through regional support, commitment and continued dialogue. The investment required is also large, and calls for cooperation, concerted efforts and goodwill to the raise both the huge funding required, and also to get the project implemented.

Executive Summary

For many years leading up to the seventies, Lobito Corridor was one of the busiest transportation routes in the Southern and Central Africa Regions. The Benguela Railway was the main carrier along the Corridor, of a whole range of produce from within and outside the region, including copper, cobalt, coal, zinc, lead, timber, sugar, maize, coffee, etc. Like all other sectors of the economy, most of the infrastructure in Angola was destroyed during the country's many years of civil war. Benguela Railway was not spared from the destruction. As a result, the railway is no longer functional except for the small sections including that of Benguela – Lobito. Consequently, the Port of Lobito, which forms the gateway to the Corridor, is currently only able to handle a fraction of its peak capacity. Similarly, the road system within the corridor is in a devastated state for the same reasons.

Similarly, the perpetual insecurity in the DRC also contributed to the suspension of the operations of the railway beyond Angola border. The section of the railway within DRC stopped operations in 1997. When the operations of the railway were suspended, Zambia was forced to seek longer routes (including via ports of Dar-es-Salaam, Beira, and Durban) for exportation of its copper and its many other produce.

The rest of the transportation infrastructure within the Lobito Corridor comprising road network is also in a run down state like the railway. There is a need for these roads to be rehabilitated, as they feed into the railway system and are vital for its effective operation.

Due to the importance of the Lobito Corridor Railway to both Angola and the entire region, several attempts have been made to rehabilitate and put it back into service. Unfortunately, not much has come out of these efforts, as it has been almost impossible to carry out any work in a war situation. However, following the signing of the peace treaty in 2002, the region has experienced semblance of lasting peace which has made the rehabilitation of the railway system an emergency.

Based on a study carried out in 2002, it is estimated that it would require approximately US\$ 390 million to rehabilitate the entire railway system from Lobito on the Atlantic through Lumbubashi in the DRC to the Zambian Copperbelt. This large volume of financial resources calls for both public and private sector funding. To rehabilitate the railway alone, it would take approximately seven years to implement. While no comprehensive studies have been carried out on the road network within the Corridor, it is well known that the rehabilitation the network will require even bigger amounts of funding. The rehabilitation of the entire transportation system within the Lobito Corridor will have to be phased as it might be impossible to raise such financing all at the same time, not to mention the logistics of managing such a project. Restoration of the railway operations is top priority as this would provide an appropriate and needed platform for the rehabilitation of the rest of the infrastructure within the Lobito Corridor including roads.

With the information available from the past studies, it is recommended that a donors/financiers conference be organized as soon as possible to decide on the best financing and implementation strategies for the project. The same forum would also be used to raise the required funds for updating of the costs of rehabilitation of the railway system estimated as US\$ 1,116,500 and for carrying out a prefeasibility study for the rehabilitation work of the entire road network within the Corridor, estimated to cost US \$ 1,464,500.

LOBITO CORRIDOR PROJECT

1. Introduction

For many years since the early parts of the twentieth century, the Lobito Corridor was an important gateway for industrial and agricultural goods produced in the two regions of Central and Southern Africa. The Corridor offered a shorter and hence faster access for exports to and imports from Europe. In particular, the Benguela Railway especially provided a cheap transportation route for the copper, cobalt and manganese mined in the three countries of Angola, DRC and Zambia. Lucrative regional trade also thrived spurred by the good transportation system. Unfortunately, all these regional economic and development activities seized not long after the outbreak of the war in the mid seventies, which continued and only came to an end with the signing of the peace treaty in 2002.

The long running civil war in Angola has had a far-reaching adverse effect on the political and economic development of both Southern and Central Africa regions. The war has caused extensive damage to the country's economy and to that of the region as whole. The many years of fighting left most of the once impressive Angola's infrastructure of good roads and railway systems in ruins. The transportation infrastructure of the Lobito Corridor including the Benguela Railway was perhaps the most adversely affected.

Due to the importance of the Lobito Corridor as a transportation conduit for the region, many attempts have been made in the past by the regional economic community and the international community to rehabilitate the Benguela Railway. Under SADC, a comprehensive rehabilitation programme was prepared in 1987 but it was never implemented. It was not possible to carry out any serious work in a war situation. Other similar rehabilitation programmes mainly concentrating on the Angolan part of the Benguela Railway, have been proposed through bilateral arrangements or by private sector organizations. These too did not lead to any action on the ground and the railway is still not operational and continues to deteriorate.

The countries directly involved, the regional groupings (SADC and COMESA), as well as the international community are now anxious to consolidate the recent peace agreement, promote unity and regional stability. It has been recognized that a functioning infrastructure especially transport, is critical for economic development, a prerequisite in building on the prevailing peaceful climate. The project is currently on the priority list for SADC projects, has also been included in the NEPAD's Short-Term Action Plan, while the World Bank, African Development Bank (AfDB) as well as Development Bank of South Africa (DBSA) have been approached by Angola to finance the Benguela Railway rehabilitation.

The proposed infrastructure development programme for the Lobito Corridor as presented in this paper has been conceived in the context of the prevailing conditions in the region as described above. The project has been written using documentation and

information provided by the Government of Angola, Economic Commission of Africa (ECA) as well as by the AfDB.

2. **Situation Analysis**

2.1 Background

The Benguela Railway, which is the main transportation feature of the Lobito Corridor, remained for many years as the principal means of communication and outlet to the sea for a big part of Central and Southern Africa regions. The construction of this railway started in 1902 and was completed in 1928, funded by the British under a 99 years lease contract from the Portuguese Colonial rulers. Primarily, the railway line was constructed to transport copper and cobalt, from the mines in the three countries of Angola, DRC and Zambia.

The Benguela Railway is a 1304 km long (within Angola), BS 60 of 1067 mm-gauge railway line, was operated profitably for years until the outbreak of the long civil war in Angola, which proceeded the end of Portuguese rule in 1975. The railway continues from the Angolan border for 755 km through DRC, then on for approximately another 90 km to the Zambian Copperbelt. At its peak, the railway was carrying over 2.5 tonnes per year of goods including copper ore and other minerals from the hinterland to the Port of Lobito. Within Angola, the railway also provided a vital transportation conduit for the agriculturally rich regions located in the Lobito Corridor, including the provinces of Benguela, Huambo, Bie' and Moxico.

Other infrastructure of the Lobito Corridor, comprise the Port of Lobito, which is the Corridor's outlet to the Atlantic Ocean. This is the second most important port in Angola, second only to the Port of Luanda. At its peak the Port was able to handle the above-indicated large volume of cargo to and from the hinterland. The Lobito Corridor was also once well served by a network of both trunk and secondary roads. These fed into or complemented the railway system in the transportation of goods. For example, it is estimated that within Angola alone, the total road network was approximately 1800 km.

The ravages of the civil war coupled by the perpetual breakdown of law and order within the DRC literally brought the lucrative operations of the Benguela Railway to a halt in the mid seventies. The Angola border – Lumbubashi section operated up to 1997, while the section from Lumbubashi to the Zambian side is still operational. Much of the railway infrastructure especially within Angola, has been destroyed and acts of sabotage, vandalism and sheer destruction have put out of action, a once very busy rail service.

Similarly, the once extensive road network within the Lobito Corridor, particularly within Angola, comprising national, secondary and tertiary systems has also suffered the same fate as that of the railway to which they feed into. Years of neglect partly due to the civil strife and lack of regular maintenance have left many of these roads in impassable state.

Due to its strategic importance and despite the war, serious efforts have been made to rehabilitate the essential infrastructure within the Lobito Corridor, and especially the Benguela Railway. In 1987, SADC carried out under SATTTC, a rehabilitation study for the Benguela Railway. The study came up with a three-phased 10-year rehabilitation programme, estimated to cost a total of US\$ 575 million. Unfortunately, this programme was never implemented due to ongoing civil war.

A number of other studies on the rehabilitation works for the Railway, mainly for the section within Angola have been undertaken. The most notable of these include:

- (i) the Feasibility Study by Transmark/Partex in 1992/3 which recommended a two phased rehabilitation programme
- (ii) the contract entered in 1997 between the Government of Angola and Tor di Valle (Italian construction company) to rehabilitate CFB (Benguela Railway within Angola) but never took off
- (iii) the SITLOB Proposal (1998/9) to convert the Lobito – Benguela section to a high speed commuter trains and cargo traffic - no funding so far and then (iv) the ambitious Angoferro (2001) by a consortium of German firms (DAGAF) to undertake the entire railway system in Angola in four phases at an estimated cost of US\$ 262.4 million; and
- (iv) The latest effort to quantify the rehabilitation works for the CFB was carried out by a consulting firm in 2002. This study recommended that the work be carried out in three phases at a cost of US\$237.8 million

Despite all the past proposals and attempts to quantify and cost the works required to rehabilitate the Benguela Railway during the last one and half decades, very little actual work has been carried out and the bulk of this infrastructure continues to deteriorate. Yet after the signing of the peace agreement in 2002, the need to reconstruct Angola including rehabilitation of the infrastructure within the Lobito Corridor has become an emergency. This reconstruction is required as it builds into the common strategy of consolidating peace, stability and integration of the regions, through promotion of economic development.

2.2 Specific Problems to be Resolved

In order to get the rehabilitation work of the infrastructure within the Lobito Corridor started and the Benguela Railway line functioning again, the following problems will have to be addressed:

- a) The whole region and especially the three countries of Angola, DRC and Zambia need to demonstrate total commitment to this regional project if it is to be implemented. While there is general regional interest to have the infrastructure rehabilitated especially the railway, so far it is mainly Angola (within which the greater length of the railway lies), which has been pushing for the rehabilitation of the line, at least for the section falling within its borders;

- b) The prevailing inertia needs to be overcome to get serious reconstruction works started;
- c) Huge funding requirement for the rehabilitation of the entire infrastructure including the studies calls for concerted efforts to attract investment from both the public and the private sector;
- d) Current institutions are too weak to oversee the reconstruction process, let alone the management of the restored facilities;
- e) Mines along the Angolan side of the Corridor, which could affect the speed of implementation of the rehabilitation works.

2.3 Major Constraints to be Overcome

With the war over in Angola, the main constraints to be overcome to speed up the commencement of the proposed development include:

- a) Need to break the prevailing inertia as well as the wait and see attitude by potential financiers of the project.
- b) Putting together the huge level of funding required for the rehabilitation of the entire infrastructure will be a mammoth task. This calls for the need to prioritize the rehabilitation programme and carry out the work in phases. -

3. The Lobito Corridor Infrastructure Rehabilitation Programme

3.1 Project Area and Beneficiaries

The programme area comprises the entire Lobito Corridor, which stretches from the Port of Lobito lying on the Atlantic Ocean, and traverses Angola from West to East through the provinces of Benguela, Huambo, Bie' and Moxico. It continues to include the mining areas of the Katanga Province of DRC, and the Copperbelt of Zambia. It is expected that the rehabilitation of the railway will be considered a priority and hence be taken as Phase I works. Once operational, the railway would offer a launching platform for, and facilitate the rehabilitation of the rest of the infrastructure.

The Corridor almost dissects Angola into two, and passes through one of the most agriculturally rich areas of the country. The land is fertile and has the potential for commercial farming and cattle ranching. Before the war, Angola was sufficient in food and was a net exporter of maize, coffee, sisal, and tropical fruits. The climate is suitable for forestry and the country has plenty of tropical and exotic forests. The Lobito Corridor still has huge plantations of eucalyptus and pine, the former originally planted mainly to provide wood to fuel the trains. These natural resources including the huge potential for irrigation as well as hydropower production wait to be exploited to further promote crop production and development of agro-industries in the area. It is estimated that nearly 40% of the Angolan population lies within the areas of influence of the Corridor.

Both the Katanga Province and the Zambia Copperbelt through which the Lobito passes, are primarily mining areas. They also have potential for agriculture. But as the history of

the Benguela Railway indicates, the initial building of the rail line was driven by the urgent need to get the shortest route to Europe, for the copper and cobalt minerals abundantly available from the mines in the Katanga Province of the DRC and the Zambia Copperbelt. Following the closure of the of the railway in the Angolan side, any minerals now produced in these two regions, has to pass through other alternative but longer routes to the sea, including ports of Dar es Salaam, Beira and Durban.

Lobito Port on the Atlantic Ocean, and the start of the Lobito Corridor railway system, is the second largest in the country, second only to the Port of Luanda. It is a natural deep-sea port, which due to the effects of the war can now only handle approximately 440,000 metric tonnes per year, which is a far cry from its full capacity in the seventies. Some rehabilitation works including electricity system and the cargo handling equipment and plant have been undertaken. Further Port rehabilitation and/or extension works are required include the railway tracks, the pavement and storage facilities in order for it to operate at its optimum capacity.

For the Benguela Railway, the entire 1304 km within Angola has virtually ground to a halt. Only the section Benguela and Lobito (34km) and that of Sta-Iria to Caala (47km) have regular coaches. Large sections of the railway have totally been destroyed; with the rails, sleepers and even the ballast having been removed. Lack of maintenance, erosion, rains and creeping vegetation have also put large sections of the railway out of service. The signaling and telecommunication systems, which would in any case be outdated, have also been destroyed too. The rolling stock, coaches and wagons as well as the ancillary facilities including utilities, workshops, store, maintenance plant and equipment all require rehabilitation.

The section of the rail within DRC stopped operations in 1997. It is estimated that the damage to this section is not as extensive as that of the Angolan side, but would still need to be rehabilitated to ensure safety of operation. The railway line from the Zambian side is operational up to Lumbubashi in the DRC. Similarly, even though the line is operating, some rehabilitation work is required for the section from Lumbubashi to the Copperbelt of Zambia, to ensure top operational efficiency for the entire railway line.

As indicated above, all transportation systems within the Corridor have to work in synergy for the maximum utilization of the regional railway. Therefore, it is important that the road networks within areas traversed by the Corridor in each of the three countries, be rehabilitated urgently. While no comprehensive assessment has been carried on the status of for all the roads within the entire Corridor, preliminary investigations show that the bulk of the estimated total of 1800 km of roads within the Angolan side of the Corridor are in an extreme state of deterioration. It is estimated that the resources required to restore all these roads amount to billions of dollars. Although no detailed studies have been carried out to determine the current status of the roads within the areas of the Corridor in the DRC and Zambia, it is expected that the roads in these countries are in no better condition and would equally require a lot of resources to rehabilitate. The necessary assessment shall be included as part of the study proposed for the project.

The primary and main beneficiaries of the proposed infrastructure rehabilitation programme, are the people living in the entire length of the Corridor including the three provinces of Benguela, Huambo, Bie' and Moxico, and in both the Katanga Province and Zambian Copperbelt. In Angola, these are the people living in some of the parts of the country most devastated by the war. The area and hence the population is literally cut off as far as transportation is concerned, without which no serious development can take place. Lack of functioning infrastructure curtails Government's efforts to alleviate poverty and to bring peace in the region. The same applies to the people living along the Corridor in the other two countries.

As pointed in Section 2.3 above, the magnitude of rehabilitation works for the entire infrastructure within the Corridor is such that it will have to be carried out in a phased programme. Due to their multinational nature and the ease at which these works lend themselves to private sector participation, rehabilitation of the Lobito Port together with the Railway are a priority and should be considered as the phase one works. A functioning Port and Railway would assist in the rehabilitation of the rest of the infrastructure within the Corridor. The rehabilitation and improvement of the road network within the corridor and which should mainly be the responsibility of the individual Governments, still require a lot of preparation before implementation can start. Implementation of these works will therefore have to be undertaken during Phase II

3.2 Programme Objectives and Description

The over-arching goal of the Lobito Corridor infrastructure rehabilitation programme, is to contribute to economic development and regional integration and hence to peace and stability in the Southern and Central Africa Regions. The objective of the programme is to restore through rehabilitation, the transportation system including Lobito Port, Benguela Railway, and the road network within the Lobito Corridor, thus improve accessibility both internally (the southern and eastern parts Angola) and externally, to both Central and Eastern Africa Regions, and thus serve as a conduit of regional integration.

The programme activities will entail the rehabilitation of the Port of Lobito, and the entire railway line from the Port of Lobito up to the Zambian Copperbelt, and the main feeder roads within the corridor. The rolling stock, the ancillary facilities including workshops, operating plant and equipment as well as telecommunication system would have to be replaced, refurbished and modernized. Institutional support would be vital to ensure satisfactory implementation and adequate management of the railway system. For the road network, the rehabilitation works shall involve restoration of the bridges, drainage systems and reconstruction of pavements.

The expected project outputs would include:

- Rehabilitated entire railway line of approximately 2149 km (1304 km in Angola, 755 km, within DRC and approximately 90 km in Zambia) upgraded to BS 90 (45kg/m) (or UIC54);

- Rehabilitated buildings, workshops and stores, and refurbished or replaced operation and maintenance equipment and plant, and restored utilities including energy, water supply and sanitation services;
- Refurbished or replaced rolling stock including locomotives, freight wagons and coaches;
- Improved management through support and training of local staff, and an appropriate institution(s) to manage the rehabilitated railway line;
- Rehabilitated major roads feeding into the railway along the corridor and covering the three countries of Angola, DRC and Zambia.

3.3 Programme Costs

For the railway system, the estimated costs of the rehabilitation works are based on the latest study and assessment carried out in 2002 by a consultant on behalf of the Angolan Authorities. Contingencies (15% for Angolan side, and 10% for the DRC sections) have been added to allow for the lapse of time since time of study, and continued degradation. The total cost of rehabilitating the entire railway system and all the ancillary works, is approximately US\$ 390 million broken down as shown below. As for the road network, there has not been a comprehensive assessment of the rehabilitation works, which need to be carried out to put them back to full operation.

i)*	Port of Lobito Rehab	-	US\$ 22 million
ii)	Railway rehab works within Angola	-	US\$ 240 million
iii)*	Railway rehab works within DRC	-	US\$ 85 million
iv)*	Railway rehab works within Zambia	-	US\$ 9 million
v)	Institutional support and training	-	US\$ 4 million
vi)	Studies and designs	-	US\$ 10 million
viii)	Engineering services and management during construction	-	US\$ 20 million
	Subtotal for the Railway and Port	-	US\$ 390 million
ix)**	Sub-total for the corridor roads network	-	To be determined.

NB

- * In the absence of studies for the railway section within DRC and Zambia, these estimates are based on studies of similar works for the East Africa railway systems;
- ** Scope and costs to be determined by the proposed study

The above costs are tentative only. There has not been any detailed assessment of the damage and hence the cost of the railway sections passing through DRC and within Zambia. Similarly, a comprehensive study still needs to be carried out to detail the rehabilitation works of the entire corridor road network. In addition, the cost of the rehabilitation works including that of the railway increases substantially with each and

every passing year. Degradation of the infrastructure continues with attendant increases in the eventual costs of rehabilitation. Nevertheless, the cost estimates for the Port of Lobito and the railway components (comprising the Phase I of the works), are accurate enough to provide the basis for decision making on the funding and implementation modalities, as well as for service management strategies. It is recommended that the updating of these costs be carried out while the funding is being sought and these other issues are being discussed. As for the road network within the Corridor, a prefeasibility study will be carried out during the updating of the costs of the railway system.

3.4 Programme Financing

Even on the basis of the 2002 cost estimates, it is evident that the financing requirement for the entire rehabilitation programme is huge. Taking this into account and also considering the nature of the services to be provided following reconstruction works, both public and private financing will be required. At one time or other, interested parties including bilateral, private sector and multilaterals, have in the past, expressed interest to provide financing for part or for the entire rail line within Angola. Some of the funding agencies, which have shown interest to finance the railways rehabilitation works include the World Bank and the AfDB. Private sector consessioning for the railways has also been considered in the past. It is understandable that it was not possible to reach conclusive agreements while civil war raged on. But following the signing of the peace agreement in 2002, this should encourage these financiers to make firm commitments in funding the project.

3.5 Way Forward

There is an urgent need to break the cycle of studies, discussions and more studies. It is therefore recommended that, in order to quickly arrive at concrete arrangements on the financing of this rehabilitation works of Lobito Corridor transport infrastructure, it is necessary to organize a donors'/financiers' conference as soon as possible. This should enable an assessment to be made of the level of interest generated by the programme, and hence try to arrive at the best mix of both public and private funding. At the same donors' meeting, funding should also be sought to undertake the additional preparatory work for the programme required before implementation can start. This includes detailed designs and updating of cost estimates for the railway and the Port (Phase I works), and prefeasibility studies for the road network within the Lobito Corridor. Brief details of the scope and cost of the required project preparation are given in the following sections.

3.6 Programme Preparation Studies

The studies carried out in 2002 on the rehabilitation works for the Benguela Railways shall be undated. At the same time, detailed assessment of the rehabilitation works shall be carried out for the sections of the railway in Katanga Province of DRC and the section between DRC/Zambia border up to Kapiri-Mposhi in Zambia, i.e. up to the junction with the Tazara Railway. A socio-environmental study shall also be carried out in connection with the Phase I rehabilitation works. For the road network within the Corridor, a

prefeasibility study shall be carried out in order to define the magnitude and the cost of the works. Briefly these services are described below:

a) Detailed Designs for the Railway Rehabilitation Works

The objective of these studies is to elaborate in details both scope and costs, of the rehabilitation works required to put both the Port of Lobito and the railway system back to normal operation. The study shall also recommend the most appropriate institutional arrangement for the operation the railway services, as well as the best way to finance the rehabilitation of the infrastructure. A firm of consultants shall be engaged to update the 2002 railway studies and cost estimates. These services shall be extended to cover the whole railway system from the Port of Lobito up to Kapiri-Mposhi in Zambia, where the Lobito Corridor railway line meets that of the Tazara and also the Southern Africa railway system. The consultant shall undertake the following:

- i) Review previous studies carried out on the rehabilitation of the Benguela Railways including the latest carried out in 2002 and others which might have been carried out for the railway sections within DRC and in Zambia, and also for the Port of Lobito;
- ii) In close liaison with the railways authorities in Angola, DRC and Zambia, carryout inspection of the whole railway system and detail the rehabilitation works that need to be carried out to enable the Lobito Corridor railway to resume normal operations. Similar investigations shall be carried out for the Port of Lobito;
- iii) Carry out field surveys and tests to enable identification of the full scope of rehabilitation works to be carried out;
- iv) Prepare the necessary designs adequately detailed to levels agreed with the railway authorities, to facilitate rehabilitation works to be carried out;
- v) Carry out a detailed socio-environmental study to assess the impacts the propose rehabilitation works of the Lobito Corridor Railway as well as the Port, shall have on both the environment as well as the people of the region and particularly those living along the railway line and are directly affected by the proposed works. Factors including the effect of improved transportation for the people living in the Corridor, environmental issues arising from improved accessibility to natural resources and re-opening up the region to the external world shall be among those considered. The impacts from the construction work shall be assessed and analyzed. The study would in particular analyze the impacts the project will have on the most vulnerable groups in the area including the poor, women and children. The potential risks posed by migrant workers coming into the Corridor in aggravating transmittable diseases including the HIV/AIDS epidemic shall be thoroughly studied. Recommendations on the required mitigation measures and costs involved to address the identified significant impacts shall be clearly elaborated and specific components to address these considered;

- vi) Prepare detailed costs estimates for the rehabilitation works broken down to logical components, and separately for each of the sections of the railway falling within each of the three countries;
- vii) Review past studies on the future management of the railway system including private sector participation. Using such studies and from experience from other parts of the continent with privatization of railway services, recommend the most appropriate strategy for sustainably operating the Lobito Corridor Railway as a regional infrastructure. Recommendations shall then also be made on the most suitable financing options for the rehabilitation works, including public-private partnerships. A detailed implementation schedule of the rehabilitation works shall also be prepared;
- viii) Undertake project's economic and financial analysis to justify the proposed investment and its sustainability;
- ix) Prepare draft bid documents for the different contracts of the rehabilitation works.

A cost breakdown of carrying out the above services is given below. It is estimated that these services would be carried out in 5 months.

Table 3.1 Detailed Designs for the Railway Rehabilitation Works - Cost Estimates
Summary Breakdown (in US\$)

No	DESIGNATION	NUMBER		Unit Price \$	Total Amount \$
		Field	Home Office		
1	HONORARIUM				
1.1	Key Consultant's Staff				
	Project Director (at the Consultant's Headquarters)	1mm	1mm	10,500	21,000
	Study Manager (Rail Engineer)	5	1	10,500	63,000
	Rail Engineer	5	1	10,500	63,000
	Rail Operations Specialist	5	1	10,500	63,000
	Civil Engineer	5	1	10,500	63,000
	Surveyor	4	1	10,500	52,500
	Geo-technical Engineer/ Geologist	2	1	10,500	31,500
	Hydrologist	2	1	10,500	31,500
	Finance Specialist	2	1	10,500	31,500
	Transport Economist	2	1	10,500	31,500
	Socio-Economist	2	1	10,500	31,500
	Environmentalist	2	1	10,500	31,500
	Legal and Institutional Specialist	1	1	10,500	21,000
1.2	Support Personnel				

	Technician	6		2,000	12,000
	Assistant Surveyor	6		2,000	12,000
	Secretary	6	-	1,500	9,000
	Driver	12	-	1,200	14,400
	Messenger	6	-	1,000	6,000
	SUB TOTAL HONORARIUM				588,900
2	ACTIVITIES AND FIELD WORKS				
	Topography				25,000
	Cartography				20,000
	Geological Investigations				20,000
	Miscellaneous				10,000
	SUB TOTAL FIELD WORKS				75,000
3	PER DIEM, LOGISTICS AND TRAVELS				
	Per Diem	1140days	250		285,000
	Air Transport	15 trips	2000		30,000
	Surface Transport				40,000
	Computers and related office work	4 units	1500		6,000
	Reproduction and Documentation				25,000
	Office accommodation				15,000
	Communications				12,000
	SUB TOTAL ITEM 3				413,000
4	STAKEHOLDERS SEMINARS				15,000
5	COORDINATION AND MANAGEMENT (Study Coordination and Steering Committee)				15,000
	Miscellaneous				9,600
	TOTAL COST (1+2+3+4+5)				1,116,500

b) Prefeasibility Study for the Road Network within the Lobito Corridor

The purpose of this part of the study is to elaborate within each of the three countries, i.e. Angola, DRC and Zambia, the magnitude of the rehabilitation works of the road network within the Lobito Corridor, relevant to effective functioning of the railway system in the

transportation of goods within the region. To save costs, the same consultant updating the cost of the works on the railways shall also carry out this part of the study (Alternatively, a separate consultant can be engaged). Briefly, the consultant shall undertake the following:

- (i) Collect and analyze all available information including previous studies, and discuss with the relevant road authorities their development plans for the roads within the Lobito Corridor, and particularly proposed ongoing or programmes of rehabilitation of the existing network;
- (ii) Visit the identified key roads and assess first hand their current status, and determine required rehabilitation works, including preliminary field surveys, necessary for this work. Tentative sources of materials for the rehabilitation works shall also be identified;
- (iii) Prepare typical designs including horizontal and vertical profiles, for the recommended rehabilitation works, as well as typical specifications for both materials and for the works;
- (iv) Considering the magnitude of the work involved and the huge level of financing required to rehabilitate all the roads, prepare a prioritized list, clearly stating the criteria followed, of the proposed rehabilitation works;
- (v) Make preliminary identification of the impacts of the rehabilitation works on both the people and environment within the Corridor, also giving indications on how significant negative impacts can be mitigated and positive ones enhanced;
- (vi) Carryout preliminary cost estimates of the rehabilitation works of the roads within the Lobito Corridor, broken down by road and by country;
- (vii) Carryout a preliminary assessment of the capacity and capability of the authority in each country charged with the responsibility of rehabilitation of these roads, and recommend areas of improvements in order to fulfill their mandates.
- (viii) Prepare an implementation programme for rehabilitation of these roads, based on the established prioritization, and taking into account any institutional weaknesses and financial constraints;
- (ix) Prepare terms of reference and cost estimates of the further studies or services including detailed designs, required to prepare and start the implementation of the rehabilitation works of these roads.

3.7 Cost Estimate for the Preparation Services

Tentative breakdown of the cost of carrying out the roads prefeasibility studies describe is given below. It is estimated that the study will take a total of 7 months to complete.

Table 3.2 Lobito Corridor Road Network Prefeasibility Study - Cost Estimates Summary Breakdown (in US\$)

No	DESIGNATION	NUMBER		Unit Price \$	Total Amount \$
		Field	Home Office		
1	HONORARIUM				
1.1	Key Consultant's Staff				
	Project Director (at the Consultant's Headquarters)	1mm	1mm	10,500	21,000
	Study Manager (Roads Engineer)	6	1	10,500	73,500,
	Roads/Transport Engineer	6	1	10,500	73,500
	Civil Engineer	5	1	10,500	63,000
	Materials Engineer	5	1	10,500	63,000
	Transport Economist	4	1	10,500	52,500
	Surveyor	5	1	10,500	63,000
	Geologist	2	1	10,500	31,500
	Hydrologist	2	1	10,500	31,500
	Finance Specialist	2	1	10,500	31,500
	Socio-Economist	3	1	10,500	42,000
	Environmentalist	3	1	10,500	42,000
	Legal and Institutional Specialist	2	1	10,500	31,500
1.2	Support Personnel				
	Technician	7		2,000	14,000
	Assistant Surveyor	7		2,000	14,000
	Secretary	7	-	1,500	10,500
	Driver	21	-	1,200	25,200
	Messenger	7	-	1,000	7,000
	SUB TOTAL HONORARIUM				690,200
2	ACTIVITIES AND FIELD WORKS				
	Topography				60,000
	Cartography				50,000
	Geological Investigations				50,000
	Miscellaneous				20,000
	SUB TOTAL FIELD WORKS				180,000
3	PER DIEM, LOGISTICS AND TRAVELS				
	Per Diem	1350 days	250 USD		337,500

	Air Transport	15 trips	2000		30,000
	Surface Transport				60,000
	Computers and related office work	6 units	1500		9,000
	Reproduction and Documentation				45,000
	Office accommodation				21,000
	Communications				20,000
	SUB TOTAL ITEM 3				522,500
4	Consultations with Stakeholders				30,000
5	COORDINATION AND MANAGEMENT (Study Coordination and Steering Committee)				21,000
	Miscellaneous				20,800
	TOTAL COST (1+2+3+4+5)				1,464,500

4. Role of Respective Programme Sponsors

The rehabilitation programme would be sponsored by the three governments directly involved i.e. Angola, DRC and Zambia. These Governments as the owners of the programme, would have to decide on the best way forward with the assistance of the regional economic organizations. For the railway works, the respective Rail Authorities of the three countries would provide support and technical know how throughout the study and implementation of the works. Similarly, the Road Authorities in the three countries would also support the prefeasibility studies of the road network within the Lobito Corridor. One of the RECs in the region would have to take the leadership of the project implementation in order to foster cooperation between the three countries. SADC because of its continued involvement in the development of the Corridor would be suited to take up the project implementation responsibilities.

5. Implementation Programme and Modalities

As pointed out above, the study to update the costs of the rehabilitation of the Lobito Railway system would take a total of 6 months while the prefeasibility studies for the road network within the Corridor would take approximately 7 months. The actual rehabilitation works for the railway would therefore be expected to start approximately six months after the completion of the update studies. Previous studies have estimated that the actual rehabilitation of the railway would take approximately seven years, while more detailed studies would be required for the roads rehabilitation works. The bulk of the rehabilitation works of the railway would be carried out by contractors, most likely in three batches of contracts, one for the section in each of the three countries. Depending on the level of

commitment by each of the three concerned countries, it is possible for the project to attract private sector funding and management expertise for the services.

6. Coordination and Supervision

As indicated above, it would be most appropriate if SADC would take up the coordination role of the development of the Lobito Corridor transport system. This REC would need to have a Programme Coordination Office to be responsible for day-to-day implementation of the studies and subsequently for the works. In order to fully engage the concerned countries in the implementation process, and assume ownership of these developments, there would be a need to form a Steering Committee comprising representatives from the countries. The Committee would provide general advice, direction and policy guidance during implementation of the programme.

7. Monitoring and Evaluation

The programme Coordination Office would be required to prepare regular progress reports clearly showing achievement, planned activities and any issues and problems arising and which would require the attention of its sponsors. The reporting would cover progress on the studies and physical works, financial reporting, and also any institutional issues. The Office would also hold regular meetings with the various parties implementing the programme.-

There will be regular supervision of the project by both the sponsors and the financiers to assess progress against agreed annual work plans, clearly showing the various implementation milestones. Progress will be measured against prior agreed measurable performance indicators. Annual audit reports will be prepared based on a prior agreed format and remedial action taken to address any anomalies. A full review of the status of implementation will be undertaken every other year, during which a review report will be presented in a workshop to all stakeholders. An assessment will be made on the likelihood of the programme achieving its objectives and recommendations made on the course of action to address outstanding issues.

8. Legal and Institutional Framework

The programme sponsors will be the three governments of Angola, DRC and Zambia, assisted by SADC and NEPAD. It would be preferable to have the entire Lobito railway line operated by a private sector. Depending on the preferred modality of engaging the private sector, a contract will be drawn to define the responsibility of each, clearly assigning the various project risks to the party most suited to bear the same.

9. Risks and Mitigation Assessment

The main risk that the proposed Lobito Corridor Project faces is one of continued indecision with respect to the funding of the reconstruction works and its timing. There

have been too many initiatives to address the problem without much to show on the ground. Decision-making is slow and there has not been adequate commitment to move the project forward. However, this apparent lack of serious commitment could be due to the perceived risk of insecurity in the area and perhaps the possibility of resumption of hostilities within the region. It is therefore important that the Political Leaders continue to maintain the prevailing peace. The project countries should also demonstrate that they consider the project a priority, by leading in the commitment of resources to finance part of the costs of the rehabilitation works. In the spirit of regional integration, the RECs and international organizations too, have a crucial role to play in order to move the process forward, and to build and maintain the necessary momentum. These countries should also prioritize in their development plans, the rehabilitation works of the road network within the Corridor. Otherwise the railway system run the risk of operating at reduced capacity if there is no easy access to the railway service, of goods and people in the hinterland.

The other risk of delaying the rehabilitation works, is that the longer the global rehabilitation project is delayed the more each of the three countries will individually be forced to undertake isolated and uncoordinated rehabilitation works. Such an approach will certainly be more expensive and will eventually be difficult to operate the Lobito Railway as a regional infrastructure.

ANNEXES

A. Project Follow-up Matrix

	Activity	Responsible	Timing
1.	Approval of TOR for preparatory services by the three countries	Angola/DRC/Zambia/RECs/NEPAD	November 2007
2.	Sponsoring Countries and Donors Meeting	Angola/DRC/Zambia/RECs/Donors/NEPAD	January 2008
3.	Commission cost review/ Socio-EIA Studies/Roads Prefeasibility studies	Angola/DRC/Zambia	May 2008
4.	Financiers Conference	Angola/DRC/Zambia/RECs/NEPAD/Donors	March 2009
5.	Launch Tenders	Angola/DRC/Zambia	June 2009
6.	Agreement on Project Funding	Angola/DRC/Zambia, Financiers, Private Sector/NEPAD	November 2009
7.	Project Implementation	Angola/DRC/Zambia, Contractors, Financiers	January 2010 – December 2016

LOBITO CORRIDOR PROJECT MATRIX

Narrative Summary (NS)	Verifiable Indicators (OVI)	Means of Verification (MOV)	Important Assumptions
<p>Project Sector Goal:</p> <p>To contribute to economic development and regional integration and hence to peace and stability in the Southern and Central Africa Regions.</p>	<p>1. The current peace agreement in Angola is sustained and peace prevails in the DRC;</p>	<p>1. Information from international monitors and from the countries themselves;</p>	<p>(Goal to Supergoal)</p>
<p>Project Objectives:</p> <p>1. To restore through rehabilitation, the transportation system including Lobito Port, Railway, and the road network within the Lobito Corridor.</p>	<p>1.1 The entire railway opened up and delivering over 2 million tonnes per year;</p>	<p>1. Study Progress Reports; 2. Supervision and audit reports 3. Project reviews, monitoring and evaluation and reports;</p>	<p>(Project Objective to Goal)</p> <p>1. Adequate commitment and support for the project by the region governments and demonstration of strong political will; 2. Strong commitment for public and private funding for the project; 3. Timely implementation of the rehabilitation of road network.</p>
<p>Outputs:</p> <p>1. Rehabilitated of total railway line (1304 km within Angola and 755 km within DRC and 90 km) to BS90.</p>	<p>1.1 The entire railway line (2149 km) restored to BS90, and all the civil works completed.</p>	<p>1. Study progress reports 2. National statistical reports 3. Audit reports</p>	<p>(Output to Project Obj.)</p> <p>1. Project support by the countries in the region; 2. Political commitment to ensure that peace prevails in the region.</p>

<ol style="list-style-type: none"> 2. Refurbished ancillary facilities including buildings, workshops, stores, rolling stock, and utilities, as well as telecommunications and signaling systems; 3. Efficient management of the reconstructed railway put in place, and relevant staff trained; 4. Details of rehabilitation work required for the road network within the corridor 	<p>1.2 Degree of efficiency of operations (timeliness, number of breakdowns and downtimes, reliability, etc).</p> <p>2.1 The financial performance of the railway;</p> <p>4.1 Approved prefeasibility study reports and their recommendations</p>		
<p>Activities:</p> <ol style="list-style-type: none"> 1. Donors/Financiers conference; 2. Recruitment of Consulting Firm to update project costs and carryout socio-environmental studies and prefeasibility studies. 3. Secure project funding; 4. Procurement of goods and services; 5. Execution of works; 6. Project commissioning. 7. Institutional setting up. 	<p>Inputs:</p> <p>Railway Cost updates - US\$ 1,117 million Roads Prefeasibility Study – US\$ 1.465million Railway Rehabilitation cost: US\$ 390 million</p> <p>Resources: TBD</p> <p>Financing Plan: TBD</p>		<p>(Activity to Output):</p> <ol style="list-style-type: none"> 1. Timely sourcing of funding required for the project; 2. Faster decision making process.

LOBITO CORRIDOR PROJECT LOCATION MAP

