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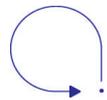
Study on Programme for Infrastructure Development in Africa (PIDA)

Phase III

➔ PHASE III REPORT TRANSPORT

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PHASE III REPORT TRANSPORT

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INTRODUCTION AND SCOPE OF THE REPORT

The aim of Phase III is to present the findings of the PIDA Study in the transport sector.

The report covers four modes: road, rail, river and air. It was prepared at the Continental and Regional (REC) levels.

This Phase III reports builds on the Phase I and Phase 2 reports and comprises:

- The Africa Transport Outlook 2040 (chapter 1)
- The strategic framework for transport (chapter 2)
- The infrastructure development programme with a Priority Action Plan 2012-2020; (chapter 3)
- The implementation strategy and processes; (chapter 4)

This report was prepared taking into account the findings of the Africa Transport Outlook 2040, The conclusions of the workshop for discussion of the Transport Sector Brief held in Tunis on July 7-8, 2011 and the recommendation made during the four regional workshops held in September-October 2011.

1. KEY FINDINGS FROM AFRICA TRANSPORT OUTLOOK 2040:

1.1 Africa Transport Outlook 2040

The Africa Transport Sector Outlook 2040 forecast Africa's regional and continental transport demand in the short, medium and long term and identified the potential infrastructure gaps in the transport system. These forecasts took into account all policies affecting regional and continental transport, the existing infrastructure status and efficiency, planned improvements and the potential for efficiency gains.

1.1.1 African Regional Transport Infrastructure Network

The Africa regional transport infrastructure network (ARTIN) is a core network that serves the existing and future development poles of Africa, as shown in Figure 1. ARTIN's purpose is to link large African centers of consumption and production (large cities, mining centres, large agriculture production projects, and so on) with the rest of the world via modern and efficient regional transport infrastructure networks and gateways. It includes gateway corridors and airports serving the different regions with all modes (road, rail, river and lake – See Figure 2) that will be more and more utilized for regional integration as Africa develops according to the Abuja treaty vision of a growing, self-sustained, competitive and regionally-integrated continent.

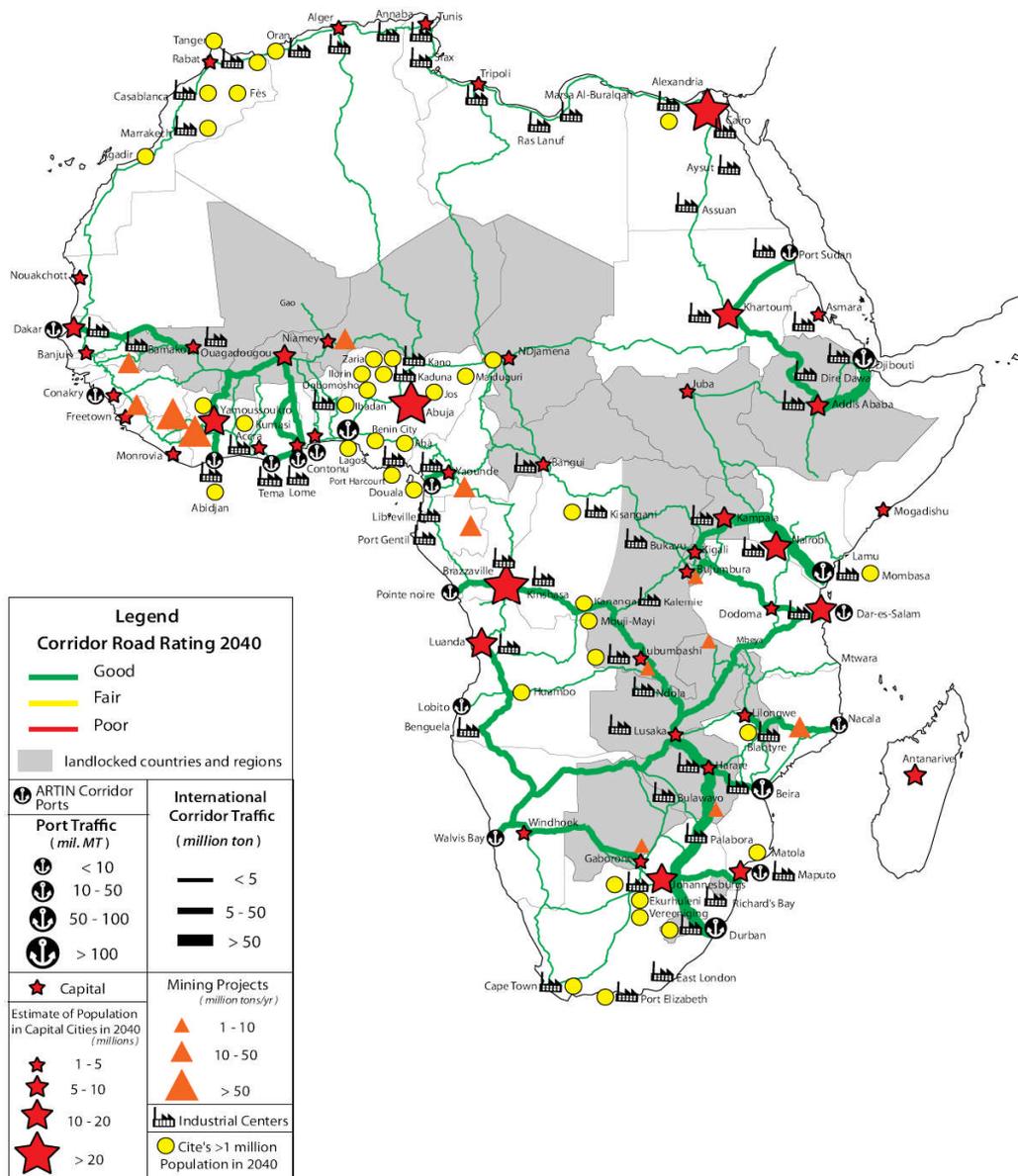
1.1.2 Drivers of Future Socio-Economic Demand for Transport

The PIDA transport outlook identified the drivers of transport demand as:

- Long-term, sustained GDP growth averaging 6.2% per year, resulting in a GDP of 5 to 6 times current GDP by 2040¹
- Continued population growth averaging 2% per year leading to a total population of 1.8 billion by 2040
- Continuing rapid urbanization leading to the concentration of 55% of the continent's population in urban centers by 2040
- Increasing development of value-added industries replacing goods and services imported from overseas
- Greater regional integration as regional trade and transport shifts from overseas partners to regional partners and the effects of new customs unions are felt
- International trade volumes increasing at growth rates of 6-8% per year with higher growth rates for container traffic
- Increasing number of passenger trips (by land and air) as per capita incomes increase
- Increased efficiency of the ARTIN leading to the realization of suppressed demand

¹ In terms of purchasing power parity (PPP).

Figure 1: Relationship of ARTIN to Socio-Economic Development Poles



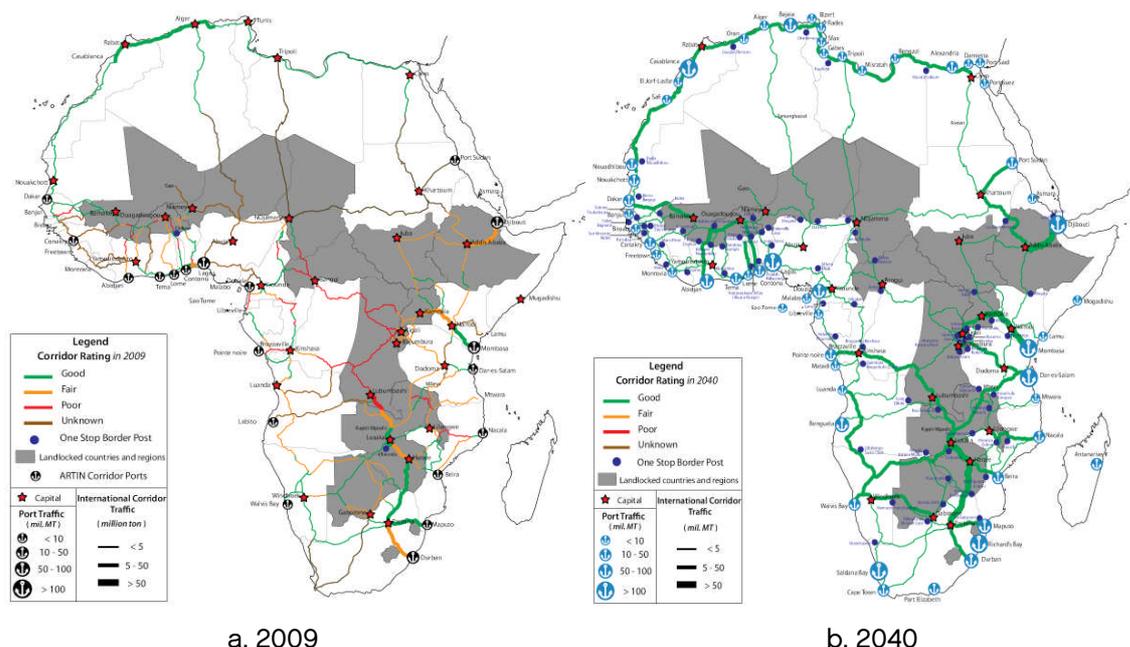
1.1.3 Demand for transport infrastructure through 2040

Due to these drivers growth in Africa's population, economic output, and trade flows will combine through 2040 to raise demand at the regional and continental levels for freight transport, port facilities, and air passenger transport. In order to meet rising demands it is necessary for:

- ARTIN corridors to achieve good efficiency and facilitate traffic migration to the most efficient corridors and modes.
- ARTIN network owners and operators to adopt best practices from Africa and other regions of the world to reduce costs and increase service levels.

This is illustrated in Figure 2.

Figure 2. The ARTIN Corridors in 2009 and 2040



Source: Africa Transport Outlook 2040, Annex 3.7.

Over the next three decades, Africa’s transport planners will have to deal with important changes in the transport environment. Demand presently suppressed by inefficiencies in the transport system will be unlocked by improvements in the system. Steady advances in regional integration will cause a shift from overseas trade to trade between countries within the same REC. Structural change in African economies will foster more value-added industries, changing the profile of goods traded and increasing regional integration. Also greater demand for intra-regional and inter-regional air travel will change future patterns of air transport demand.

1.1.4 Forecast Demand for Transport

Future freight transport demand in Africa is tied to growth in international trade, which is expected to grow seven-fold (to 3.6 billion metric tons) over the next 30 years (Table 1) as countries increase the value added of their exports through processing, consumers with rising incomes import more-expensive goods, and manufacturing and mining businesses import more expensive processing equipment.

Future port tonnage is expected to grow at 6% to 6.8% per year, excluding large new mining projects and crude oil, and at 5.8 to 7.8% per year including new mining projects.

Growth in container traffic is expected to outpace total tonnage. Container growth will average 10.6% per year to 2020 (including some suppressed demand released by corridor improvements) and 7.9% from 2020 to 2040 on a sustained basis (with all suppressed demand released). The net result will be an increase in container traffic to 38 million 20-foot equivalent units (TEUs) by 2020 and 176 million TEUs by 2040, a 14-fold increase.

Bulk traffic growth will depend on mineral development, particularly iron ore and bauxite exploitation. New coal shipments are also expected in ARTIN corridors, as well as more copper metal from the Copper Belt countries, but at lower tonnages than for iron ore and bauxite, which will utilize special purpose-built transport facilities.

Although the trade increases vary across countries, with the poorer countries growing faster from a small, base, future trade will still be dominated by five large countries (Algeria, Egypt, Morocco, Nigeria, and South Africa), which account for more than half of total African trade by volume.

For the five regions, trade forecasts show some variation in expected growth, with eastern Africa growing fastest and southern Africa growing slightly slower (from a larger base).

Table 1. Trade forecasts by region (millions of metric tons)

Region	2009	2020		2030		2040	
		Volume	Avg. growth (%)	Volume	Avg. growth (%)	Volume	Avg. growth (%)
North Africa	20	235	6.3	410	6.3	760	6.4
West Africa	7	176	6.7	300	6.0	556	6.3
Central Africa	21	43	6.8	77	6.4	145	6.5
East Africa	45	96	7.1	181	7.1	360	7.1
Southern Africa	240	408	4.9	617	4.7	1,001	5.0
Total Africa Base	513	958	5.8	1,585	5.7	2,823	5.9
With suppressed demand	513	1,056	6.3	1,822	6.1	3,397	6.4
With new minerals	513	1,175	7.8	1,998	5.5	3,630	6.2

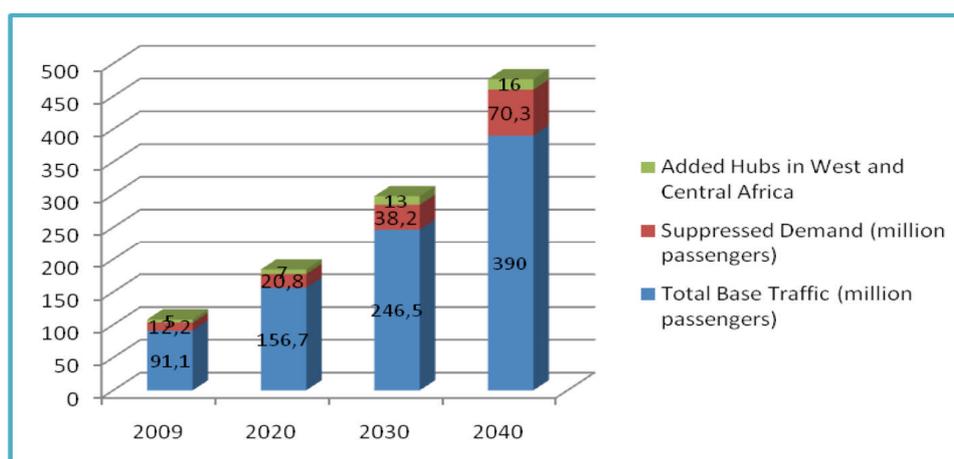
Source: Africa Transport Outlook 2040, Annex 3.2, excluding crude oil.

Transit traffic from landlocked countries is expected to increase 10–14 times over the next 30 years. In West Africa this transit traffic will rise from 6 million tons to 65 million tons in 2040. For Southern Africa, it will increase from 13 million to 148 million tons; and in East Africa from 10 million tons to 149 million tons as Southern Sudan exports through this region. Djibouti will face transit traffic increases from 9 million tons to 76 million tons. 2030 forecasts amount to a third to a half of the 2040 tonnages, but are still 4–5 times current traffic levels. Trade in ARTIN corridors is expected to grow faster than overall trade, expanding from 13% in 2009 to 18% of total trade in 2040.

1.1.5 Future demand for air passenger transport

International air passenger flows are forecast to increase 40–90% by 2020 and by factors of 2.5 to 6 by 2040, including suppressed demand (Figure 3). Air passenger flows increase for all countries and RECs but will continue to be dominated by nine countries that are major tourist destinations and major regional air transport hubs. Demand for transport to Europe will be substantial for all RECs, with demand for transport to the Middle East strong for several RECS and to Asia and North America for a few.

Figure 3. Forecast air passenger traffic through 2040



Source: Africa Transport Outlook 2040, Annex 3.5.

If two additional regional air traffic hubs are established, one in West Africa and one in Central Africa, air passenger demand in these regions would increase substantially as regional hubbing increases regional air travel and more efficient connections to other regions inflate inter-REC and intercontinental air travel.

1.1.6 Economic Costs of Transport Inefficiencies

The outlook report concluded that the economic cost of transport inefficiencies in the ARTIN is over US\$ 170 billion per year at the present time. These inefficiencies are primarily due to

- Non-implementation of trade facilitation measures along the ARTIN corridors (including ports and border posts),
- Transport sector policies leading to inefficient and high cost road transport and poor road condition in many countries,
- Transport sector and economic policies that prevent efficient operation and expansion of the rail system, and
- Air transport sector and economic policies that prevent the establishment of regional air hubs, leading to higher air fares.

The relative size of these economic costs is shown below:

Table 2: Summary of Economic Cost of Inefficiencies in ARTIN 2009

Type of Cost	Amount (US\$ billion)	%
Total ARTIN Corridor Inefficiency Costs	75	43
Total ARTIN Air Transport Inefficiency Costs	25	15
Total Value of Suppressed Freight Demand	65	38
Total Value of Suppressed Air Transport Demand	7	4
ARTIN total	172	100

The elimination of these costs represents an opportunity for the identification of programmes and projects with real impact on the economy.

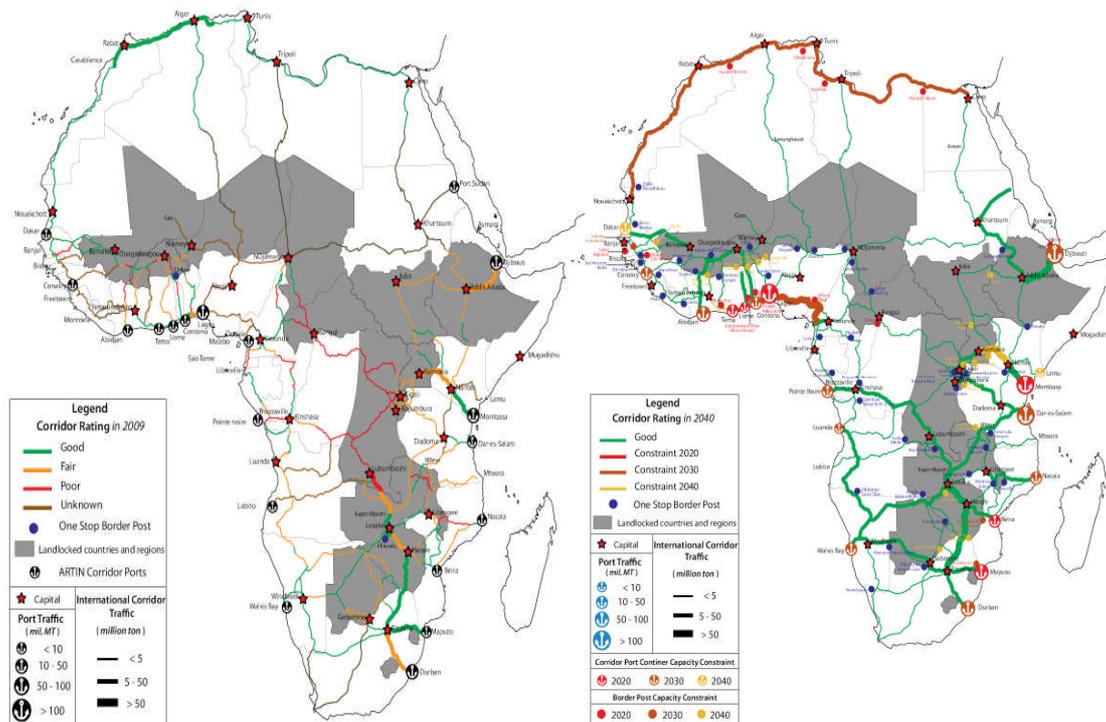
1.1.7 Anticipated gaps in transport infrastructure through 2040

Forecast demand is expected to exceed capacity in all areas of the ARTIN corridors by 2040, even with the completion of planned improvement projects (Figure 4). These gaps have been identified in each mode of transport along the ARTIN corridors, including road, rail, river, lake and ports. Some gaps will appear as early as 2020. North Africa will be less affected than the rest of the continent, because transit corridors are less a factor in that region. (see further discussion of specific gaps by region in Chapter 3 below.)

The two maps below summarize these findings and show that forecasted demand will exceed capacity in all regions and on all modes of ARTIN corridors by 2040. There will be a number of short term gaps by 2020 in some corridors, despite the added capacity provided by planned projects and even if the corridor infrastructure is operating at its highest efficiency level.

These gaps need to be addressed by infrastructure and service improvements as part of the PIDA programme. The proposed programme will also include improvements in policies, institutional practices, and IT systems, which also have the potential to greatly increase the efficiency and capacity of border posts, ports, railways, and airports.

Figure 5. ARTIN Corridor Condition in 2009 and Capacity Gaps by 2040



Source: PIDA Transport Outlook 2040.

2. STRATEGIC FRAMEWORK

The development and modernization of the ARTIN network is necessary for the achievement of economic growth and regional integration as described in the long term objectives for Africa by AUC and NPCA. This requires a vision for the transport sector, the identification of clear goals and objectives and the definition of a strategic framework that supports these macroeconomic development objectives as the transport sector is a key motor for economic development.

2.1 Vision for the transport sector

The PIDA vision for the transport sector for Africa in 2040 is:

An integrated African Continent where the transport infrastructure and services enable the free movement of goods and passengers by providing efficient, safe, secure, reliable and seamless transport options and reducing costs to support environmentally and economically sustainable regional development.

This vision is further elaborated in Chapter 3 below.

2.2 Sector Goals and Objectives

In order to achieve this vision, the five main goals for the transport system are to:

- Support a healthy, strong and competitive regional economy
- Maximize access to a modern, safe and efficient transport system that supports regional integration and meets future transport demand in the most cost-effective manner
- Promote improved transport/logistics systems for African businesses and the well-being of the travelling public
- Support a sustainable natural environment
- Support synergy with other infrastructure and economic investments

The development and modernization of the ARTIN network is necessary for the achievement of economic growth and regional integration as described in the long term vision for Africa by the AUC.

These goals are supported by specific objectives:

2.2.1 Goal 1: Support a healthy, strong and competitive regional economy

Objective 1.1: Maximize the economic return from the region's transportation investments

This would involve (i) focusing transport expenditures on facilities and services that meet a demonstrated need and are cost-efficient, and (ii) targeting new road, rail, port and border post investments that will fill the anticipated capacity gaps or significantly increase the efficiency of existing infrastructure.

Objective 1.2: Optimize utilization of the existing system

This would involve (i) promoting the preservation, rehabilitation and reconstruction of the region's existing infrastructure, and (ii) promoting the safe, effective and efficient management of the region's transportation infrastructure and services, using best practice methods from Africa and other regions.

Objective 1.3: Improve the continent's connections to national, regional and international markets for goods and services

This involves (i) enhancing and modernizing multimodal transport within the continent, (ii) enhancing connections among the continent's economic centers and (iii) supporting key components of the continent's economy, such as industrial and mineral developments. (iv) eliminating missing links between these poles, and (v) improving inter-capital connectivity.

2.2.2 Goal 2: Maximize access to a modern, efficient transport system that supports regional integration and meets future transport demand in the most cost-effective manner

Objective 2.1: Improve the availability of modern, safe, efficient transport systems

This would involve (i) setting standards for modern, safe and efficient systems, (ii) developing pilot projects for the implementation of these systems (using best practice methods from Africa and other regions), and (ii) expanding the most cost-effective pilots to entire corridors,

Objective 2.2: Expand and modernize the regional corridor and air transport systems to meet future demands

This would involve (i) creating incentives and an enabling environment for attracting private sector participants in these activities, (ii) supporting PPP financing where feasible and (ii) supplementing private investment with public investment where needed to ensure full use of these options.

Objective 2.3: Improve the availability, efficiency and use of rail, river, lake and multimodal transport

This would involve (i) creating incentives and an enabling environment for attracting private sector participants in these activities, (ii) supporting PPP financing where feasible and (ii) supplementing private investment with public investment where needed to ensure full use of these options.

2.2.3 Goal 3: Promote improved transport/logistics systems for African businesses and the well-being of the travelling public

Objective 3.1: Use modern technology to improve corridor efficiency and trade facilitation

This would involve (i) promoting trade facilitation improvements along ARTIN corridors, (ii) implementing smart corridor technology to improve corridor efficiency, cross-border communications and to integrate transport information for all transport system operators and users, and (iii) initiating high-visibility monitoring of corridor efficiency that compares performance with international benchmarks.

Objective 3.2: Improve the efficiency of people and goods movements

This involves (i) ensuring the implementation of agreed regional transport policies, and (ii) utilizing PPP agreements wherever they would improve the efficient management and operation of the transport system.

Objective 3.3: Increase the safety of the travelling public

This would involve (i) promoting safety improvements along ARTIN corridors in conjunction with modern corridor design, (ii) implementing air transport safety programmes and (iii) use intelligent corridor systems to track and communicate the location of accidents and options to avoid them.

2.2.4 Goal 4: Support a sustainable, quality natural environment

Objective 4.1: Improve the planning of transport infrastructure in relation to environmental impacts

This would involve (i) setting standards for identification and mitigation of environmental impacts, (ii) creating infrastructure project designs that reduce environmental impacts, (iii) encouraging the use of modes that minimize negative environmental impacts, and (iv) avoiding the placement of transport facilities in environmentally sensitive areas.

Objective 4.2: Introduce the consideration of climate change impacts into the planning and design of transport infrastructure

This would involve (i) setting standards for the inclusion of climate change impacts in planning and implementation of infrastructure projects, and (ii) implementing these standards.

2.2.5 Goal 5: Support synergy with other infrastructure and economic investments

Objective 5.1: Improve synergies with energy, water and ITC investments

This would involve (i) identifying and introducing synergies in a joint infrastructure planning stage for ARTIN corridors (e.g., fiber optics cables along corridors), (ii) plan power supplies for border posts and intelligent corridor components using modern energy options, and (iii) plan and design ITC aspects of smart corridors with the communications and information sectors.

Objective 5.2: Increase synergies with other economic investments

This would involve (i) taking into account the spatial development aspects of corridor improvements in a joint infrastructure planning process, and (ii) private and public partners working together for corridor investment planning.

2.3 Strategies

To meet these goals and objectives, there are three broad strategies that have been adopted for PIDA in the transport sector:

- Improve the connectivity of African capitals and major centres with modern paved roads
- Satisfy transport demand in the short, medium and long term on ARTIN at the least economic cost, in priority for the landlocked countries, while minimizing the environmental impact of transport infrastructure and transport services and improving transport safety, and
- Develop modern ARTIN Corridors and air transport services in order to bring ARTIN components performance up to best world practice in terms of efficiency, cost, reliability and safety

The objectives and the three strategies are linked together as shown in Table 3.

Table 3: Relationship of Strategies to Objectives

Strategy	Objectives to be Satisfied
1. Improve the connectivity of African capitals and major centers with modern paved roads	Objective 1.3: Improve the region's connections to national, subregional and international markets for goods and services
	Objective 2.2: Expand and modernize the regional corridor and air transport systems to meet future demands
	Objective 5.2: Increase synergies with other economic investments
2. Satisfy transport demand in the short, medium and long term on ARTIN at the least economic cost, in priority for the landlocked countries, while minimizing the environmental impact of transport infrastructure and transport services and improving transport safety	Objective 1.1: Maximize the economic return from the region's transportation investments
	Objective 2.1: Improve the availability of modern, safe, efficient transport systems
	Objective 2.2: Expand and modernize the regional corridor and air transport systems to meet future demands
	Objective 2.3: Improve the availability, efficiency and use of rail, river, lake and multimodal transport
	Objective 3.2: Improve the efficiency of people and goods movements
	Objective 3.3: Increase the safety of the travelling public
	Objective 4.1: Improve the planning of transport infrastructure in relation to environmental impacts
	Objective 4.2: Introduce the consideration of climate change impacts into the planning and design of transport infrastructure
	Objective 5.1: Improve synergies with energy, water and ITC investments
Objective 5.2: Increase synergies with other economic investments	
3. Develop modern ARTIN corridors and air transport services in order to bring ARTIN components performance up to best world practice in terms of efficiency, cost, reliability and safety	Objective 1.1: Maximize the economic return from the region's transportation investments
	Objective 1.2: Optimize utilization of the existing system
	Objective 2.1: Improve the availability of modern, safe, efficient transport systems
	Objective 2.2: Expand and modernize the regional corridor and air transport systems to meet future demands
	Objective 2.3: Improve the availability, efficiency and use of rail, river, lake and

Strategy	Objectives to be Satisfied
	multimodal transport
	Objective 3.1: Use modern technology to improve corridor efficiency and trade facilitation
	Objective 3.2: Improve the efficiency of people and goods movements
	Objective 3.3: Increase the safety of the travelling public
	Objective 5.1: Improve synergies with energy, water and ITC investments
	Objective 5.2: Increase synergies with other economic investments

2.4 Logical Strategic framework

Within each broad strategy there are a number of strategic options. A logical framework matrix for assessing the proposed strategic options and activities in the PIDA transport sector is presented in the table below.

For each strategic option there is a set of activities that help define that option along with the stakeholders that are involved with those activities. These activities are expected to lead to outcomes as indicated in the matrix. The assumptions on which these outcomes are based are then listed along with an assessment of the risks associated with the activities.

Table 4: PIDA Transport Logical Framework

<i>Objectives</i>	<i>Strategic Options</i>	<i>Activities</i>	<i>Outcomes</i>	<i>Assumptions</i>	<i>Risks</i>
Improve the connectivity of African capitals and major centers with modern paved roads	Completing Connectivity with TAH	RECs together with countries plan the completion of the missing links of the Tran African Highways Countries implement the missing links according to the plan	TAH are completed in due time	Funding is available for the programme as planned Countries are interested in completing the TAH	Lack of funding and other priorities delay the TAH
	Completing Connectivity with African Capitals not on TAHs	RECs together with countries plan the completion of the missing links Countries implement the missing links according to the plan	Missing links are completed in due time	Funding is available for the programme as planned Countries are interested in completing the missing links	Lack of funding and other priorities delay the programme
Satisfy transport demand on ARTIN at least economic cost while minimizing the environmental impact and improving safety	Increasing the Share of Rail and Multi-modal Transport	RECs plan together with countries and private sector long-term regional rail and multi-modal development in ARTIN corridors	Planning of long-term regional rail and multi-modal transport is effective	RECs have the technical capacity; The regional plan conclusions are integrated in national plans	RECs don't have the required technical capacity Countries don't integrate REC's plans
		Countries adopt and implement key policies aimed at levelling the playing field for rail and road transport	Rail transport competes effectively with road transport	Countries are ready to introduce a level playing field	The trucking interests stop the legislation
		RECs and countries adopt and implement a model rail concessioning agreement that overcomes the issue of inadequate railway infrastructure and reorganization funding	Sustainable model of concession contract for railways is in place	Funding for the concession agreement is available	Funding is not available
	Filling Short-Term and long term Gaps in ARTIN Corridor Infrastructure	RECs together with concerned countries and private sector parties plan ARTIN corridor port projects that fill 2020 capacity gaps. Countries and private sector implement resulting projects in a timely manner	Short-Term Gaps in ARTIN Corridor Port Infrastructure filled	Adequate and timely funding is available for studies and for investment	Planning studies are delayed; funding is not available
		RECs and countries plan and implement ARTIN corridor road projects that fill 2020	Short-Term Gaps in ARTIN Corridor Border-Crossing	Adequate and timely funding is available for studies and	

<i>Objectives</i>	<i>Strategic Options</i>	<i>Activities</i>	<i>Outcomes</i>	<i>Assumptions</i>	<i>Risks</i>
		capacity gaps	Infrastructure filled	investment	
		REC with concerned countries and private parties carry out regional ARTIN port and railway master planning to meet long term needs	Port master planning is coherent with long term needs New hub port locations are agreed New modern railways are agreed	RECs, countries and private sector are able to reach timely agreement on plan and on implementation	
		Continental institutions with the RECs and countries establish norms and standards for ARTIN corridor roads and border posts as a support of ARTIN corridor planning (including climate change and safety)	Common standards on the ARTIN road corridors	Continental institutions and RECs have the technical capacity to establish norms and standards	Proposed norms and standards are not relevant to the African context (too costly)
<i>Develop modern ARTIN Corridors and air transport services in order to bring ARTIN components performance up to best world practice in terms of efficiency, cost, reliability and safety</i>	ARTIN corridor efficiency and transport policy harmonization is monitored	Countries apply modern design standards in ARTIN corridor road projects	Modern design standards are used on the ARTIN	Countries will apply new norms and standards	Countries are not applying new norms and standards (cost)
	Improving road corridor efficiency and competitiveness	RECs plan together with the countries and the private concerned stakeholders the required improvements in ARTIN components	Corridor planning, operations and maintenance are operational and effective	Technical capacity of the RECs is strengthened to carry out task REC planning is integrated in national plans	Technical capacity insufficient Countries don't integrate REC planning
		Countries harmonize and implement regulations on trade facilitation and axle load limits	Convergence of regulations on trade facilitation and axle load limits	Countries are willing to harmonize. REC monitoring is efficient	National lobbies delay harmonization
		Countries and port authorities implement transit improvement programmes in ARTIN corridor ports	Transit traffic management is up to international standards	Private sector will support traffic management improvement	Vested interests oppose successfully traffic management improvement

<i>Objectives</i>	<i>Strategic Options</i>	<i>Activities</i>	<i>Outcomes</i>	<i>Assumptions</i>	<i>Risks</i>
		RECs and countries expand and speed up OSBP programmes and implement “Smart Corridor” development programmes	Trans-border shipments are accelerated	Technical capacity of the RECs is strengthened; Adequate financing is available, model smart corridor examples are available	Under the pressure of lobbies the countries are reluctant to implement OSBP and “smart corridors”
		RECs and countries adopt and implement policies to increase the competitiveness of the road transport industry and vehicle fleet in particular through the phasing out of policies restricting to free use of trucks along regional corridors	Road Transport Industry is competitive compared to other regions	Adequate policies are implemented	The transport lobby is successful in delaying the reforms
	Ensuring private involvement in investment, operation and maintenance of ARTIN components	NPCA and RECs monitor (i) the efficiency of transport services along ARTIN; (ii) the progress of harmonisation, and (iii) the implementation of OSBP and “smart corridors”.	Political decision makers are aware of performance of various ARTIN components and can take action.	RECS and continental authorities have the technical capacity to carry out monitoring and decision makers are willing to follow up.	Decision makers show little support for monitoring
		For road corridors: Corridor authorities are set up and private operators manage and operate toll roads through concession agreements	The ARTIN road network has harmonized characteristics and is well maintained	RECs and member states agree to treat the ARTIN road network as a separate network and bring in the private sector to operate and maintain it under concession contract	Lack of agreement by member states and lack of interest by private operators
		For rail corridors: Concerned countries establish concessions using a model to be established by NPCA in cooperation with UAR and remedying pats weaknesses	The ARTIN railway network has modern characteristic and is well operated and maintained	Playing field between roads and railways is leveled and private sector is attracted to rail concessions	Lack of agreement by member states and lack of interest by private operators
		For ARTIN ports (and hub ports): Concessions are established that ensure the neutrality of the concessionaires vis-a-vis the customers	Ports capacity is increased in a timely manner, hub ports are established and are efficiently managed (landlocked countries have satisfactory access to ports)	RECs to prepare ports master plans and assist with the localization of the hub ports and their concessioning	Lack of agreement on localization of hub ports and of surface access to landlocked countries.

<i>Objectives</i>	<i>Strategic Options</i>	<i>Activities</i>	<i>Outcomes</i>	<i>Assumptions</i>	<i>Risks</i>
		For ARTIN airports (and hub airports) concessions are established that remedy past weaknesses	Airport capacity is increased in a timely manner and efficient hub airports are set up	RECs to assist with the localization of the hub airports and their concessioning	Lack of agreement on localization of hub airports
	Upgrading the Africa air transport system service and Infrastructure	REC and countries complete implementation the Yamoussoukro Declaration	“Single African Sky” and “Open Sky” are implemented	Countries implement YD.	National airlines slow down the implementation of YD
		REC and countries adopt and implement policies facilitating airline partnerships that improve service and encourage regional airline hub	New airline hubs are established in West and Central Africa and competition between airlines companies improves	RECs and countries are able to agree on airline hubs in West and Central Africa	Vested interests slow down/prevents the establishment of required hubs
		RECs and countries adopt and implement policies to improve Africa airline safety	Airline safety is enhanced	Countries implement required policies.	Countries don't implement policies
		Create an implementation programme for a Single Africa Sky	A high-level, satellite-based, air navigation system is developed that extends over the entire continent	Close Technical cooperation with the EU and Regional Air Transport System planning agencies is achieved A financing plan is developed to fund this development	Lack of technical capacity limits or slows development No funding mechanism is established due to lack of agreement among stakeholders

2.5 Programme and Project Selection Criteria

The programme and project selection criteria to be used in PIDA were discussed and agreed among stakeholders during the workshop held in Tunis on June 2011. For the transport sector the agreed criteria and their relative weightings were as follows:

▪ Economic and Social	: 30
▪ Institutional and policy	: 30
▪ Financing	: 15
▪ Environment	: 10
▪ Technical	: 10
▪ Synergies with other sectors	: 5
TOTAL	100 Points

Each category was filled out with sub-criteria with weights adding to the total as noted in Annex 1. These criteria were then used to select PIDA programmes and projects as described in the following chapter.

3. INFRASTRUCTURE DEVELOPMENT PROGRAMME: PIDA

The PIDA programme is built on the conclusions of the Transport Outlook 2040 and the general strategic options outlined above. The logic of PIDA programme development is summarized below.

3.1 Increases in Transport Demand Identified in the Outlook 2040

As noted in Chapter 1, the main drivers of transport demand identified in the Outlook are:

- Long-term, sustained GDP growth averaging 6.2% per year, resulting in a GDP of 5 to 6 times current GDP by 2040²
- Continued population growth averaging 2% per year leading to a total population of 1.8 billion by 2040
- Continuing rapid urbanization leading to the concentration of 55% of the continent's population in urban centers by 2040
- Increasing development of value-added industries replacing goods and services imported from overseas
- Greater regional integration as regional trade and transport shifts from overseas partners to regional partners
- International trade volumes increasing at growth rates of 6-8% per year with higher growth rates for container traffic
- Increasing number of passenger trips (by land and air) as per capita incomes increase
- Increased efficiency of the ARTIN leading to the realization of suppressed demand

This leads to major increases in transport demand, most notably:

- Total regional freight traffic in 2040 will be multiplied by 6 for the coastal countries and by close to 14 times for some landlocked countries, including suppressed demand.
- Future port tonnage is expected to grow at 6% to 7% per year, excluding large new mining projects and crude oil, and at 6% to 8% per year including new mining projects.

² In terms of purchasing power parity (PPP).

- Growth in container traffic is expected to outpace total tonnage. Container growth will average 11% per year to 2020 and 8% from 2020 to 2040 on a sustained basis (with all suppressed demand released). The net result will be an increase in container traffic to 38 TEUs by 2020 and 176 million TEUs by 2040, a 14-fold increase.
- Bulk traffic growth will depend on mineral development, particularly iron ore and bauxite exploitation. New coal shipments are also expected in ARTIN corridors, as well as more copper metal from the Copper Belt countries, but at lower tonnages than for iron ore and bauxite, which will utilize special purpose-built transport facilities.
- International air passenger flows are forecast to increase 40–90% by 2020 and by factors of 2.5 to 6 by 2040, including suppressed demand

3.2 Key Conclusions from the Outlook 2040

3.2.1 Conclusions on Connectivity

- In order to speed up regional integration, it is necessary to complete the missing links in the Trans-African Highway (TAH) network as quickly as possible.
- Some African capitals, in particular in Central Africa are not currently connected by paved roads. As part of the regional integration process, these capitals should be rapidly interconnected and connected to the TAH network.

3.2.2 Conclusions on Expanding Capacity to meet Future Gaps

- The ARTIN corridors, the TAHs and the links between African capitals should be upgraded to modern and harmonized norms and standards and capacity increased by the construction of urban bypasses, climbing lanes and/or four-lane motorways when justified by traffic volume
- Modernized rail services with expanded capacities are needed in those corridors where there are substantial increases expected in long distance freight volumes and mineral development.
- For both environmental and transport efficiency reasons, multi-modal transportation should be encouraged and the role of rail, river and lake transport should be substantially developed in the future.
- Overall port capacity should be increased and selected ports should be used as regional hubs and designed to handle the very large Post-Panamax container vessels, which are now being deployed.
- Regional air hubs should be added in two regions (West and Central Africa) where there is a gap in air transport service and high air fares, and airport capacity expanded to meet future demand
- The continental air navigation system should be upgraded to meet future air transport needs

3.2.3 Conclusions on Improving the Efficiency of the ARTIN

- Major increases in corridor efficiency are needed to handle future traffic flows, This could be partly achieved through high-visibility corridor efficiency monitoring and modern corridor design, accompanied by the implementation of smart corridor systems and one-stop border posts (OSBPs) along ARTIN corridors.

- Key transport policy actions are needed to improve ARTIN efficiency, namely:
 - For ports and multimodal facilities, eliminate constraints on containers for inland use and reduce stripping of containers in ports or inland depots
 - For roads, complete harmonization of axle load policies and enforcement, develop modern corridor design standards, and adopt smart corridor information systems for road transport
 - For railways, restructure concession agreements to provide public funding for track improvement and rehabilitation and provide for modernized services, equipment and information systems
 - For border posts, support single window, integrated border management and smart corridor technology to reduce border times
 - For air transport, creating an enabling environment for the development of regional air hubs and developing a new means of financing for a continental satellite-based air navigation system

3.3 PIDA Programmes and Projects

3.3.1 Introduction to PIDA and PAP

The overall PIDA programme is comprised of a set of high-priority projects, policy actions and capacity-building actions. Investment or construction projects are called “hard projects” and policy or capacity-building actions are also called “soft projects”.

This PIDA programme is designed to cover the short and long-term, where short-term is to 2020, and long term is up to 2040. The PIDA short term programme is called the Priority Action Plan or PAP. The PIDA PAP is designed to be a rolling set of priority projects and programmes, which are redefined every 4-5 years, with new projects added as initial projects are completed.

The following sections explain how the proposed PIDA programme has been prepared and detailed for each region.

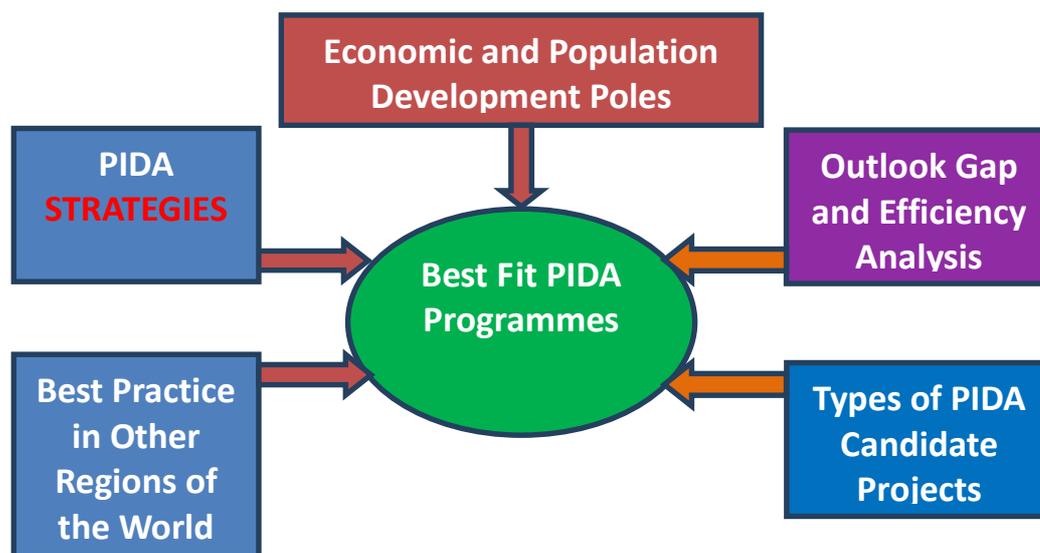
3.3.2 Identification of PIDA Strategic Activities

The PIDA programme is articulated around the following three basic strategies already described above:

- Improve the connectivity of African capitals and major centers with modern paved roads
- Satisfy transport demand in the short and long term on ARTIN at the least economic cost, in priority for the landlocked countries, while minimizing the environmental impact of transport infrastructure and transport services and improving transport safety, and
- Develop modern ARTIN Corridors and air transport services in order to bring ARTIN components performance up to best world practice in terms of efficiency, cost, reliability and safety

The PIDA programme also takes into consideration the patterns of development poles expected in the future with accelerated regional integration, capacity gaps identified in the Outlook 2040, best practices in other regions of the world, and the types of candidate projects identified by the RECs in the different regions.

Figure 6: Inputs to Identification of PIDA Projects and Programmes



3.4 PIDA Long-Term Programme

The overall PIDA long-term programme was derived for each region using the three long-term strategies noted above, taking into account the future capacity gaps for each region, corridor priorities, air transport system priorities, existing highly-ranked projects and opportunities for introducing best practices for increasing the capacity and efficiency of the ARTIN.

The long-term programme is summarized below under each strategy for Africa as a whole, then the long-term programme for each region is presented in graphic form below.

3.5 Summary of PIDA Long-Term Strategies for Africa

3.5.1 PIDA Vision of the Future Transport System for Africa

As stated in Chapter 2, PIDA envisions an integrated African Continent where the transport infrastructure and services enable the free movement of goods and passengers by providing efficient, safe, secure, reliable and seamless transport options and reducing costs to support environmentally and economically sustainable regional development.

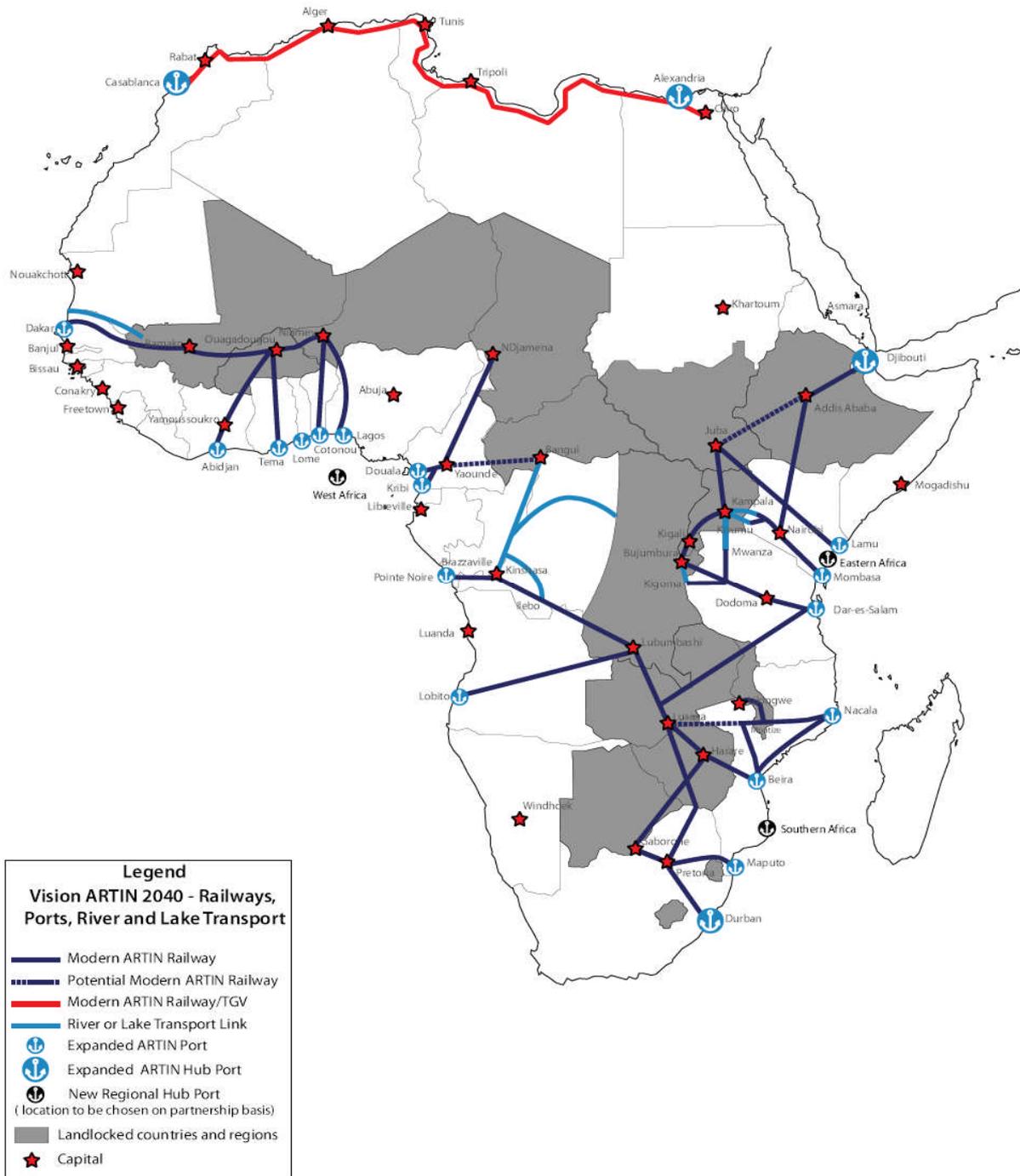
In order to implement this vision, the future transport system in 2040 would need sufficient capacity to meet 2040 demand, and the following characteristics:

- A connected, continental system of ARTIN road corridors with modern design standards and smart corridor technology for monitoring corridor efficiency
- A set of modernized railway lines that serve ARTIN corridors and major mineral developments
- Expanded ARTIN port facilities with new regional hub ports
- A continental satellite-based air navigation system
- Expanded airports with new air hubs in West and Central Africa

This vision is illustrated in Figures 7, 8 and 9, which show the future railway and port vision, the future highway, port and border post vision and the future air transport system vision.

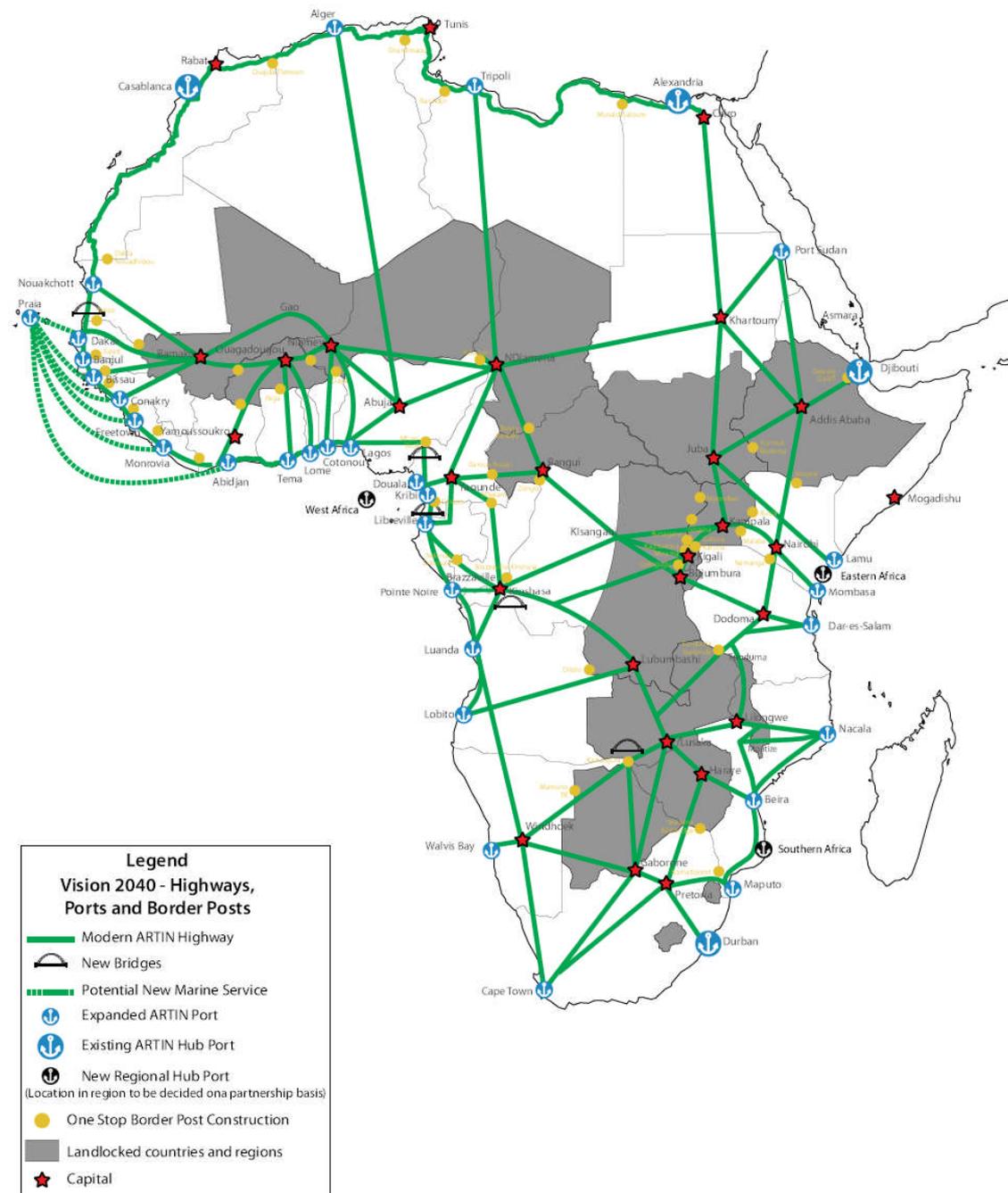
The strategies and related activities needed to achieve this vision are described below, along with the implications for each region.

Figure 7: Vision ARTIN 2040 - Railways and Ports



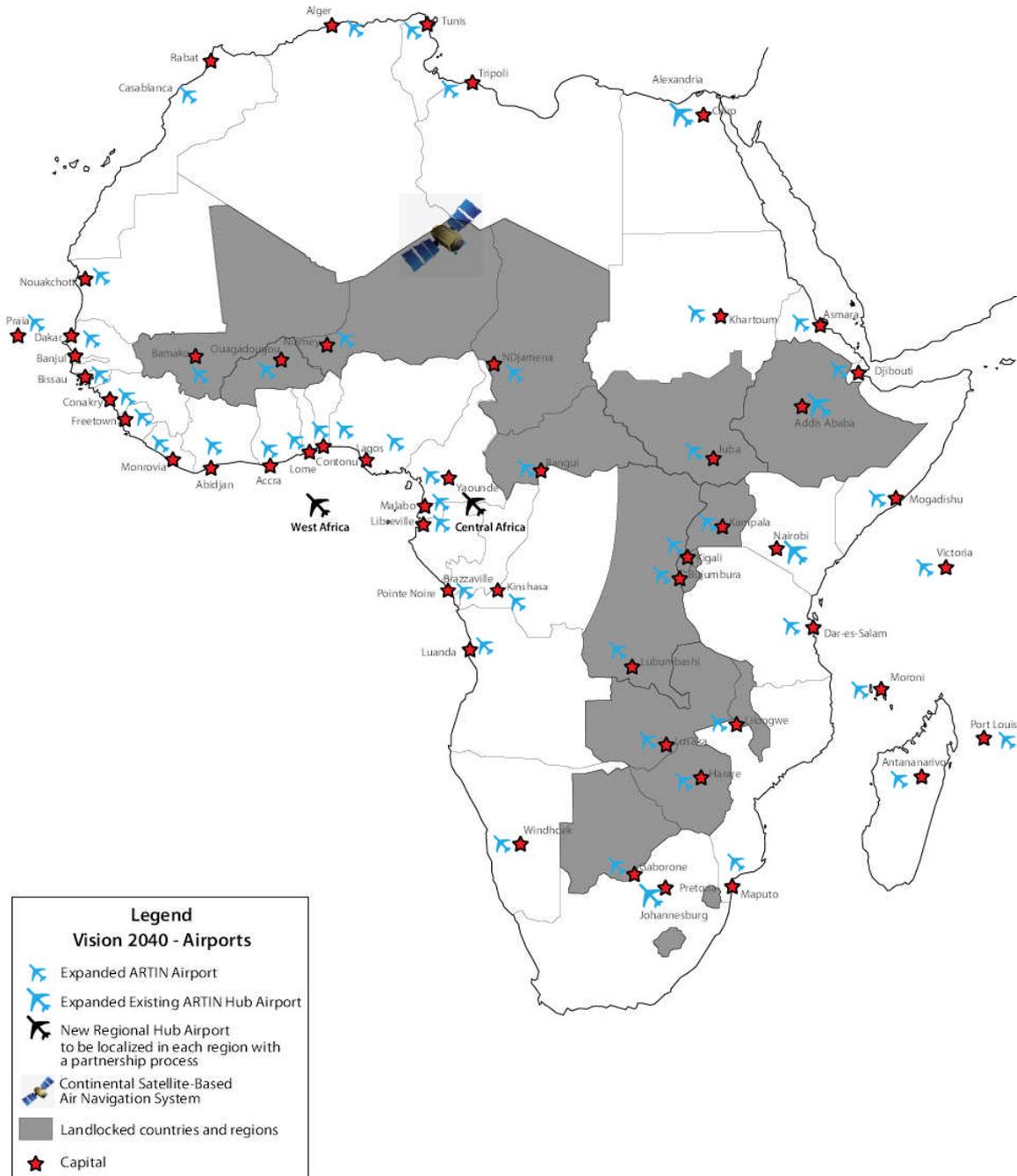
Note: New regional hub port locations are to be determined by technical and consensual agreements on a regional partnership basis.

Figure 8: Vision ARTIN 2040 – Highways, Ports and Border Posts



Note1: When the African Customs Union is implemented, the border posts shown on the map would cease to have customs functions and their functions would be scaled back to minimum border-crossing procedures. Note 2: New regional hub port locations are to be determined by technical and consensual agreements on a regional partnership basis.

Figure 9: Vision ARTIN 2040 – Air Transport System



Note: New regional air hub locations are to be determined by technical and consensual agreements on a regional partnership basis, with the participation of potential hub airlines.

3.5.2 PIDA Programmes resulting from the Strategy 1: Improve the connectivity of African capitals and major centers with modern paved roads;

The provision of new roads is essential for the development of new economic centers and for speeding up regional integration. Today there are several countries in Africa which are still isolated with limited access to commercial centers and to international gateways.

The Connectivity of the African Capitals and major centers will be largely accomplished through two programmes (i) the completion of the Trans-African Highways and (ii) the connection of capitals in selected regions where the connectivity is currently incomplete.

Trans-African Highways (TAH)

Today there are 9 Trans African Highways totaling about 59,000 km of which about 12,000 km of missing links are still to be constructed. The majority of these missing links are located in the Sahelian zone of West Africa and in Central Africa. (See Figure 10)

The situation is particularly problematic in Central Africa where there are six inter-capital connections that are not on Trans-African highways that remain to be completed.

To ease this lack of road connectivity, the AUC has started feasibility studies for:

- A new African Djibouti-Libreville link via Nairobi-Kampala-Kananga and Kinshasa. (This connection could become the 10th TAH)
- TAH 8 (Mombasa-Lagos) and of part of the TAH 3 (Tripoli-Windhoek-Cape Town).
- ECCAS has prepared an investment plan aiming at completing the missing road that link capital cities. This plan is divided into three levels of priorities and covers both the links that are part of the TAHs and the inter-capital links not included in the TAHs.

The PIDA programme includes the completion of all the missing links of the TAH or the construction of 12,000 km of roads

Inter-Capital Connectors

The PIDA programme would also complete the missing links of the following five ECCAS corridors (which are not part of TAHs):

- CD3 Yaounde-Bata (variation via Douala and Kribi)
- CD4 Yaounde-Libreville
- CD5 Libreville-Brazzaville (Also part of the new proposed TAH for Djibouti-Libreville)
- CD12 Lobito-Lubumbashi (also known as the Benguela corridor) and
- CD13 Kinshasa-Bangui-N'Djamena

These inter-capital connectors and TAH completion projects are shown in Figure 10.

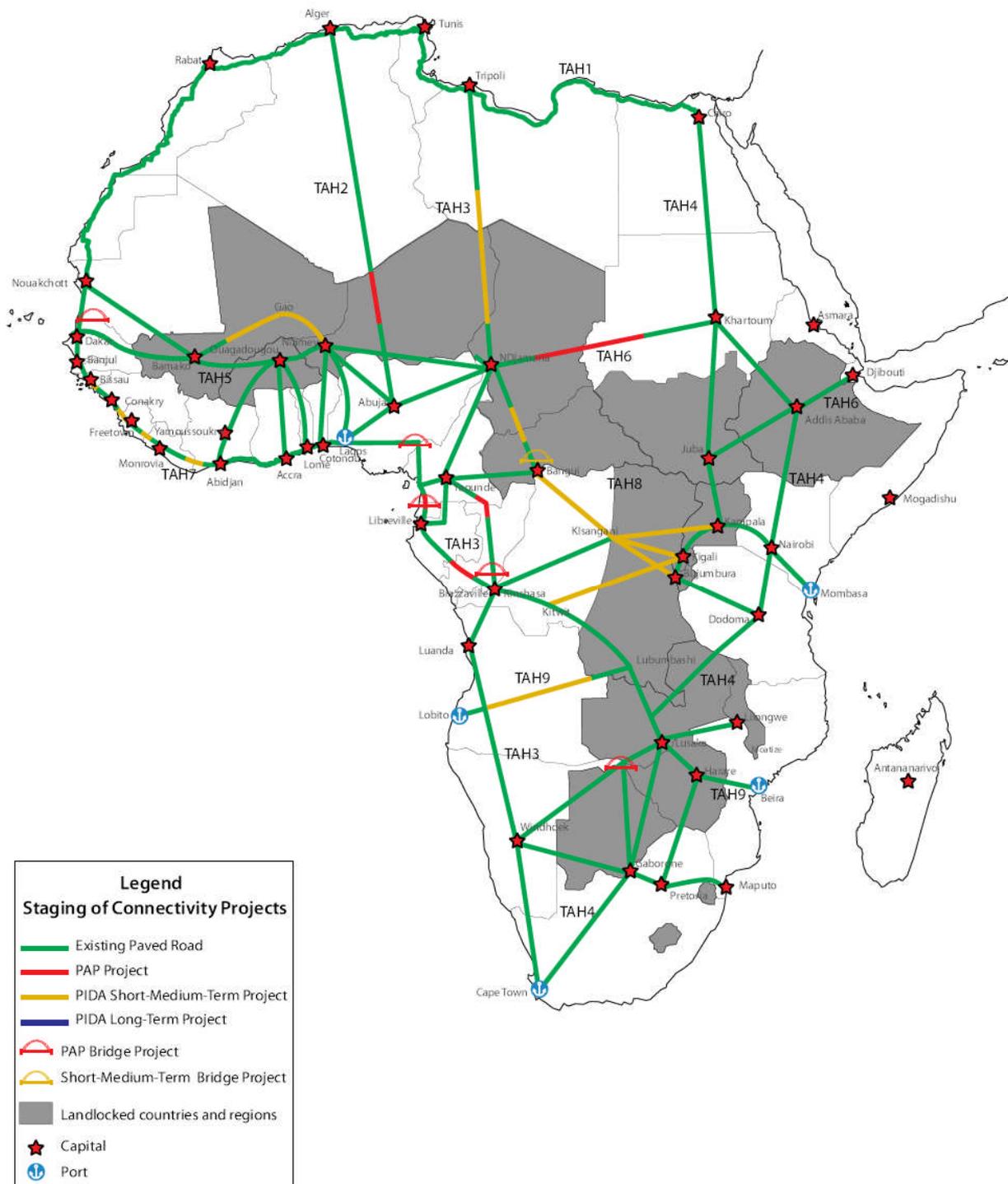
Table 5: Summary of Connectivity Programme Indicators

Kilometres of road to be built

Region	TAH (km)	Inter-Capital (km)
North Africa	2,700	-
West Africa	3,800	-
Central Africa	3,900	1,900
Eastern Africa	1,100	-
Southern Africa	400	-
Continental	-	-
Total	11,900	1,900

The total investment for TAH missing links is estimated at US\$ 5-7 billion, and the Inter-Capital missing link programme is estimated at US\$ 1 billion for a total of US\$ 6-7 billion.

Figure 10: PIDA Connectivity Projects for Short, Medium and Long Term



3.5.3 PIDA Programme resulting from Strategy 2: Satisfy transport demand in the short, medium and long term on the ARTIN at the least economic cost, in priority for the landlocked countries, while minimizing the environmental impact of transport infrastructure and transport services and improving transport safety

This strategy is specifically designed to fill the anticipated forecast capacity gaps identified in the Transport Outlook 2040. These gaps for each mode are described below.

In order to minimize costs and limit the impact of transport services on environment, the recommended strategy to fill these gaps is to use the most appropriate transport mode. In particular, it is expected that when long distance traffic (over 500 Km) reaches yearly volumes of 5 million tons along a corridor, preference should be given to rail over road traffic. This strategy will speed up the development of railways and slow down some road expansion projects.

Filling port capacity gaps

The Transport Outlook 2040 forecasts show that the lack of port capacity will be one of the major bottlenecks in Africa in the short and long term. This is particularly important for container traffic to and from landlocked countries which could see their economic development significantly slowed if enough port capacity is not provided on time by the coastal countries which will have difficulties in providing enough port capacity to handle their own national traffic. (See Table 6 for forecasts by region)

Table 6: Port traffic forecast by region

African regions	2009 Traffic	2040 Traffic	Increase Factor
North Africa (Algiers, Alexandria, Casablanca, Tunis)	92 million tons	571 million tons	6
West Africa (Abidjan, Cotonou, Tema, Lagos, Dakar, Lome)	32 million tons	490 million tons	15
Central Africa (Lobito, Douala, Pointe Noire)	15 million tons	84 million tons	5.5
Eastern Africa (Djibouti, Mombassa, Port Sudan, Dar es Salam)	34 million tons	364 million tons	11
Southern Africa (Beira, Maputo, Durban, Walvis Bay)	92 million tons	500 million tons	5

Six ARTIN corridors face short-term port container capacity gaps by 2020 even after currently planned port and terminal expansion projects are completed in West Africa (Tema and Lagos), East Africa (Mombasa), and southern Africa (all Mozambique ports).

In two of the three cases (East and West Africa), growth in domestic demand for port capacity will leave no room to meet the demand for transit traffic to and from landlocked countries. In the third case (Southern Africa) domestic demand plus transit traffic will exceed available capacity in 2030, despite a major port expansion in Durban. By 2040 these three regions will have much larger gaps that will require both additional port expansion and new port development.

The PIDA programme includes the extension of African port capacities, to 2,2 billion tons to satisfy long term transport demand.

Planning and implementing additional port capacity on time is one of the highest priorities of the PIDA programme. This port capacity increase can be done by expanding and modernizing the capacity of existing ports or by building completely new port facilities. Although currently the planning of ports extensions is done at country level, it is recommended that the planning of port capacity expansion be done on a partnership basis at regional level in order to deal with the requirements of the landlocked countries, and to resolve issues of competition between regional ports.

In all regions, there exist projects to extend existing ports. Some new ports are also being studied such as the Lamu port in Kenya, where the government is about to begin construction of the first berths. However, even with the full development of Lamu port and the planned expansion of other ports, the total demand in Eastern Africa will exceed available capacity by 2030. The same is true for West Africa and to a lesser extent in other regions.

In planning port expansion, each region should consider:

- The need to have at least one port in each region able to accommodate the large new Post-Panamax container vessels which are now being deployed
- The need to minimize land transport costs from and to landlocked countries by, when feasible, considering the building new, modern railway lines

The best locations to implement new ports or extend existing ports should be studied in the context of a regional port master plan. This will require a high level of cooperation between countries and possibly a compensation plan (see discussion of implementation issues).

Table 7: Estimated Size of the PIDA PORT Programme for ARTIN

Region	Ports* (no.)
North Africa	*
West Africa	10
Central Africa	6
Eastern Africa	7
Southern Africa	12
Continental	-
Total	35

* Only ARTIN corridor ports serving landlocked countries are shown here. There are no ARTIN corridor ports in North Africa serving landlocked countries.

The PIDA programme proposes to extend the port capacities in Africa by a total of 1,7 billion tons covering a total of 35 ports at a cost of about US\$ 46 billion.

Filling railway infrastructure gaps

In preparing the long term PIDA programme for rail transport the following points have been taken into consideration:

- **Rail transport** has a beneficial economic and environmental impact compared to road transport since it consumes about a third of the energy per ton. It is also much safer than road transport (in terms of damage to freight and harm to passengers from accidents).
- Rail transport is usually slower than road transport but for long haul traffic, bulk or container transport it is much cheaper per ton-km, and, in some cases, more reliable.
- For many cases of mineral transport rail may be the only viable transport mode (although road transport is used extensively for copper metal transport in Southern Africa).
- Due to the significant infrastructure investment cost, there is a minimum level of traffic needed to justify the construction of a new railway. These volumes vary in function of the type of terrain (flat, hilly or mountainous) and of other technical parameters, (such as the number of river crossings, etc.)
- The analysis of these factors indicates that for haul distances greater than 500 km, the modernization of an existing rail line can be economically feasible for traffic of 4 million tons per year in relatively flat terrain and 6 million tons in hilly terrain. For a new railway, these thresholds increase to 5 and 8 million tons respectively.

The PIDA analysis of freight rail capacity on cross-border railway lines reveals that 7 of the 11 ARTIN rail lines will need physical expansion by 2020, if their operations and equipment have been improved to reach good modern efficiency and they can attract a significantly greater share of traffic from the road transport sector.³

North Africa faces a second type of railway gap—efficient interconnections across borders. North Africa has been planning for connectivity across the region (and even for a high-speed rail link to Europe), but it has not been achieved.

The PIDA programme recommends the immediate modernization of existing railway lines and the construction of new, modern rail lines in nine of the 11 corridors, where demand by 2040 is expected to exceed 10 million tons. This would also allow for the introduction of standard gauge, where this could be efficiently done without major interruptions to existing train services. These forecasts assume that the railways will be run as efficiently as Transnet railways in South Africa, which already has modernized operations.

Regional rail master planning should play an important role as some railways compete for the same traffic within a region. Also new railway demand must be linked to new and expanded port development, particularly where the expanded port will function as a regional port with significantly larger traffic flows. This approach applies in the Nacala, Lamu, and Lome-Ouagadougou/Niamey corridors.

³ The forecast demand by corridor assumes shifts from 2009 corridor share to the most efficient corridor shares, assuming that railways and highways are operating with good efficiency and civil strife is resolved in Cote d'Ivoire and Congo DR and Southern Sudan acts as an independent country, using Djibouti and Mombasa ports (and possibly Lamu). This also means that Abidjan will pick up a greater share of transit traffic from Mali, and the Central and Dar corridors will increase their shares of regional transit flows. (See Transport Outlook 2040, Annex 3.1.) Similarly, traffic shares for railways in Northern, Central and Dar corridors will increase to levels similar to that realized by Transnet at its most efficient (50% for medium distance international traffic-e.g., Burundi, and 60% for very long distance traffic-e.g., DR Congo. Also the Beira Corridor is assumed to increase its traffic with a rail share returning to historical levels of 50% of total traffic, compared with 10% in 2009. The Nacala corridor is expected to accommodate the Moatize coal developments (although this could also be handled by the Beira rail line, if the financial conditions are made attractive, and the port is expanded accordingly.) The Maputo Corridor rail share is assumed to rise to levels similar to those found for long distance traffic in South Africa, and North-South corridor rail is assumed to increase its share of copper metal shipments

Considering the long term traffic forecasts on ARTIN corridors, and with the implementation of regional railway master plans of the appropriate scope, the following new railway lines could be built under PIDA:

- In Western Africa to link Mali, Burkina Faso and Niger to the sea (through one or two rail lines to be linked to the additional port capacities)
- In Central Africa to link Kinshasa to Ilebo and potentially to extend the Cameroon railway to Chad and CAR.
- In Eastern Africa to link:
 - Rwanda, Burundi, Uganda, East of RDC and Southern Sudan to the sea (including the possibility of a new rail line from Bujumbura to Dar es Salam, a new/upgraded rail line to Mombasa and/or a new rail line to the Port of Lamu)
 - Addis Ababa with the port of Djibouti (and possible extension to Juba)
- In Southern Africa to link production/consumption centers in landlocked countries to the pacific (Durban, Maputo or other ports) and/or to the Atlantic (Walvis Bay)

The existing rail master plans in these regions would need to be updated to take into account future regional port expansion and the location of new hub ports which will generate major new traffic flows.

Table 8: Estimated Size of Rail Construction and Modernization Programme

Region	Rail Construction (km)	Rail Modernization (km)
North Africa	500**	8,100
West Africa	3,000	2,400
Central Africa	3,000	800
Eastern Africa	2,500	1,800
Southern Africa	4,000	4,100
Continental	-	-
Total	12,000	17,200

* Only ARTIN corridor ports serving landlocked countries are shown here. There are no ARTIN corridor ports in North Africa serving landlocked countries.** not counting high speed rail construction

It is estimated that about 12,000 km of new rail lines would be built under the PIDA programme at a cost of about US\$ 36 billion and 17 200 Km of existing railway line modernized at a cost of US\$ 7 billion

Filling road infrastructure gaps

Priority being given to rail traffic, it is expected that part of the truck traffic will be diverted to rail. On this basis we anticipate road capacity constraints primarily in the high-traffic coastal corridors of North African and West Africa, as well as key sections of the most heavily trafficked corridors serving landlocked countries.

Four corridors will face demand of more than 15,000 vehicles per day already by 2030, and will require the construction of modern four-lane motorways: ⁴

- Trans-Maghreb Corridor

⁴ Note that the PIDA analysis focuses on links which have a high proportion of international traffic. Capacity gaps on other links in ARTIN corridors are considered national planning issues.

- Abidjan-Lagos Corridor
- Lagos-Douala Corridor
- Maputo Corridor

In addition other corridors will need to have some sections upgraded by adding capacity through urban bypasses, climbing lanes and additional lanes in key sections by 2020 and the rest by 2030. The Central Corridor in East Africa is a good example of this.

These corridors are:

- Djibouti-Addis Corridor (before 2020)
- Central Corridor (before 2020)
- Northern Corridor (before 2040)
- Dakar-Bamako (before 2040)
- Abidjan-Ouagadougou (before 2040)
- Tema-Ouagadougou (before 2040)
- Dar es Salam Corridor (before 2040)
- Beira Corridor (before 2040)
- Trans-Caprivi Corridor (before 2040)

These upgrading (four-lane highways and other civil works aiming at increasing capacity) totalled 15,200 km under the PIDA programme split by regions as follows:

Table 9: Estimated Size of PIDA Road Upgrading Programme

Kilometres of Road to be up graded

Region	Road (km)
North Africa	800
West Africa	5,800
Central Africa	1,100
Eastern Africa	3,600
Southern Africa	3,900
Continental	-
Total	15,200

The total investment expected under the PIDA road upgrading programme for ARTIN corridors is about US\$ 16-26 billion over a 30-year period for 15,200 km of construction, (of which 20-30% could be provided by the private sector).

Filling lake and river transport infrastructure gaps

River and lake transport are much less polluting than road transport, consume much less energy per tkm and are less expensive. However, they are slower and often require one or more intermodal transfers, thus causing delays and increasing the cost. This means that these solutions have been favored only for corridors where traffic is concentrated and efficiencies can be gained without reducing corridor competitiveness for shippers and passengers (e.g., rail ferry service between Kisumu and Port Bell, which may be revived by Rift Valley Railways, improvement of lake traffic on Lake Tanganyika or on the Congo River and its tributaries).

Lake and river ports and navigation infrastructure has been neglected over the last 10 years. However, various investment programmes are under study, particularly in the Lake Victoria region.

The Transport Outlook 2040 showed that lake and river transport should be developed for general cargo and container transport, in particular on Lakes Victoria and Tanganyika and on the Congo River

system. There is also some potential along the Senegal, Niger and Zambezi rivers and on Lake Malawi. These latter systems could be linked to mineral developments with private sector participation.

New port facilities, efficient navigation systems and dredging projects are needed as priority projects. Particular attention should be given to multimodal nodes (lake/river linked to rail transport, and lake/river linked to road transport).

This component of PIDA also includes a proposed new marine service from Praia to West African ports as part of a multi-modal corridor project.

It is estimated that investment totalling about US\$ 100 million would be required for lake ports and vessels under the PIDA programme, of which 70-80% would come from the private sector.

Filling gaps in the ARTIN air transport system

Surging demand will expose gaps in the ARTIN air transport system in the areas of air passenger service, air navigation systems, and airport capacity. All the 50 airports of ARTIN will need to be extended or supplemented by additional airports under the PIDA programme in order to handle the anticipated growth in air traffic (350% to 600% over current air passenger levels).

Seven airports face demand of more than 3 million air passengers per year by 2040 (over 2 million by 2030). They will need to be expanded. Two of these (Johannesburg and Cairo) may reach over 10 million passengers by 2040.

The capacity of 16 airports will be exceeded by 2020 under base case forecasts. Four are already programmed for expansion.

The high-level air traffic control system will reach saturation between 2020 and 2030 and will need to be replaced with a satellite-based air traffic control system. Gaps in the communications systems at and between airports in many areas of the continent will have to be filled to provide comprehensive safety and security. All of these gaps could be addressed through the creation of an African-based satellite navigation system, and the implementation of regional air safety programmes.

The total cost to modernize and expand the 50 airports is estimated at US\$ 4.5 billion. The estimated cost of implementing this system is estimated to be about US\$ 500 million

The staging of projects in the ARTIN under Strategy 2 is illustrated for highways in Figure 11, for railways in Figure 12 and for airports in Figure 13.

3.5.4 PIDA programme resulting from the Strategy 3: Develop modern ARTIN Corridors and air transport services in order to bring ARTIN components performance up to best world practice in terms of cost, reliability and safety

As mentioned in Chapter 1, the costs of the inefficiencies of transport services along the ARTIN corridor are very large and present major bottlenecks to economic development and regional integration in particular for the landlocked countries.

The PIDA programme proposes to develop modern corridors and to bring transports services to world best practice in terms of cost, reliability and safety.

The long term objectives of this programme to modernize and upgrade all the ARTIN corridors with well-designed roads, new hub ports, efficient trade facilitation system with smart corridor technology and one stop border posts (OSBP) and, when relevant, modern and efficient rail, lake and river transport services.

The PIDA corridor programme should be implemented in phases, starting with the corridors having the highest priority.

The PIDA programme considers that all the 40 ARTIN corridors should be modernized, on a step by step basis, before 2040. The programme is comprised of the following components:

- Expanding port capacity
- Implementing modern road corridor design for key sections by using norms and standards to be fixed on a continental basis for the entire ARTIN road network
- Upgrading some road sections with urban bypasses, climbing lanes or the construction of four-lane highways when justified by the traffic
- Modernizing the existing rail system
- Implementing smart corridor systems,
- Building OSBPs

Road Corridor Modernization

The modernization of road corridors includes the development of modern corridor design standards in each region on high-priority corridors (potentially with continental coordination of design standards). Once these designs are tested out on the high priority corridors they would serve as pilot designs for other corridors..

One investment-related aspect of road corridor modernization is the design and implementation of by-passes around urban areas and port access roads. These are typical corridor bottlenecks that are being addressed in several corridors, but should be systematically addressed by all corridors. Due to the high-traffic nature of these bottlenecks, they are particularly suitable for the introduction of PPP financing and management for upgrading and maintenance.

It is estimated that 9,500 kilometres of key sections of corridor roads would be implemented with modern corridor design in ARTIN corridors as part of PIDA road modernization at a cost of US\$19 billion.

Railway Modernization

The modernization of railways in ARTIN corridors is a key element to the success of the programme in reducing corridor inefficiencies. This activity involves the upgrading of

management, equipment and infrastructure (but not necessarily replacing track) in order to allow a modern railway operation that is competitive with road transport.

The ARTIN railways systems are part public and part publicly-owned with concession agreements for management and PPP financing. In a properly organized PPP concession agreement there will be investment from both the public and private sectors and this investment will include all aspects of rail modernization. This is the case with Rift Valley Railway in the Northern Corridor, where its six year investment plan includes all necessary items including rolling stock, signaling systems and modern management information systems.

The Transnet rail system in South Africa, which is not a PPP, runs like a modern railway and competes successfully with road transport, carrying 45-50% of long distance traffic in the North-South Corridor. However, it is handicapped by the inefficient operations of the railways in Zambia and DR Congo in terms of competing with road for the traffic with those countries.

The modernization of three railways is planned as part of the PIDA programme, and the modernization of all the remaining ARTIN corridor railways by 2040.

It is estimated that 17,200 kilometres of rail lines would be implemented in ARTIN corridors as part of PIDA rail modernization at a cost of US\$7 billion.

Border post efficiency improvements

A key part of improving corridor efficiency involves the construction of OSBPs and the improvement of customs, immigration and other border functions to create efficient border-crossing. The traditional border posts are very inefficient and completely unconnected to the national and cross-border information systems that need to function effectively. This has been recognized by the RECs and has led to the generation of many one-stop border post projects of which 27 are on ARTIN corridors.

The Transport Outlook 2040 found that eleven of the 43 most important ARTIN border crossings will experience a capacity constraint by 2020.⁵ Thirty additional border crossings will need improvement by 2040.

The PIDA programme recommends that all border posts on ARTIN corridors be converted to one-stop border posts, unless that change is overtaken by the effective implementation of the African Customs Union. The process of improving inter-country coordination at border posts will be valuable even if the customs functions are later phased out as the result of a Customs Union.

The PIDA border post construction and implementation programme is estimated to cost about US\$ 2 billion.

Smart Corridor Technology

The PIDA definition of a smart corridor is a cross-border ICT system for corridors that contains the following modules:

- Single Electronic Window
- Cargo Tracking
- Container Tracking
- Freight Train Tracking
- Commercial Vehicle Tracking (with vehicle weight – similar to CVISN in North America)
- High-Visibility Corridor Efficiency Monitoring

⁵ There is a major push in all RECs to implement one-stop border posts (OSBPs). Presently, only two are operating (Cinkase in Burkina Faso and Chirundu in Zambia), but there are projects to implement 55, of which 27 are in ARTIN corridors.

The introduction of smart corridors is recommended to start with the development of one or more smart corridor models at the continental level (using NPCA as the lead) with implementation in phases on the regional level starting with high-priority corridors and moving to all ARTIN corridors by 2040.

Over the 30-year PIDA period the modern smart corridor programme would be phased as shown in Table 10 (See Figure 14 for the locations of these corridors).

Table 10: Staging of Modern Corridor Improvements

Network Component	2020 Objectives	2030 Objectives	2040 Objectives
High Priority Corridors (with road and rail transport)	Expanded port capacity	Completion of modern road corridor design	Complete, modern smart corridor system with new hub ports
	Modern road corridor design for key sections (with capacity increases)	Increased road and rail capacities	
	Rail modernization	New hub ports	
	Smart corridor systems		
	OSBPs		
	Increased role of PPPs		
Second Priority Corridors	Expanded port capacity	Completion of modern road corridor design	Complete, modern smart corridor system
	Modern road corridor design for key sections	Rail modernization	
	Key OSBPs	Increased road and rail capacities	
	Increased role of PPPs	Smart corridor systems	
		Complete OSBPs	
Other Corridors	Expanded port capacity	Modern road corridor design for key sections	Modern smart corridor system
	Key OSBPs	Smart corridor systems	
		Complete OSBPs	
		Increased role of PPPs	

Figure 11: PIDA Smart Corridor Projects for Short, Medium and Long Term

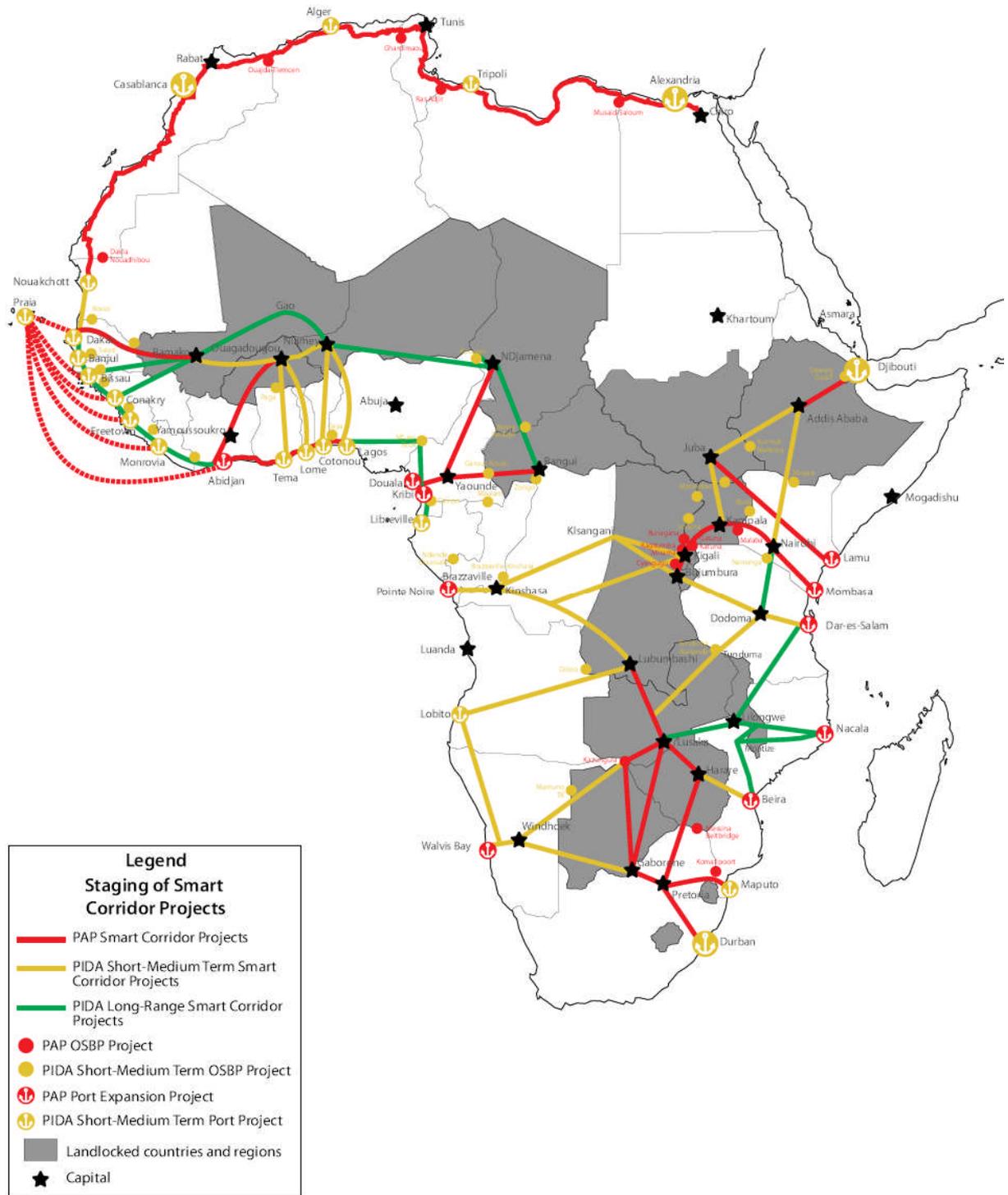


Figure 12: PIDA Railway River and Port Construction and Modernization Projects, for Short, Medium and Long Term

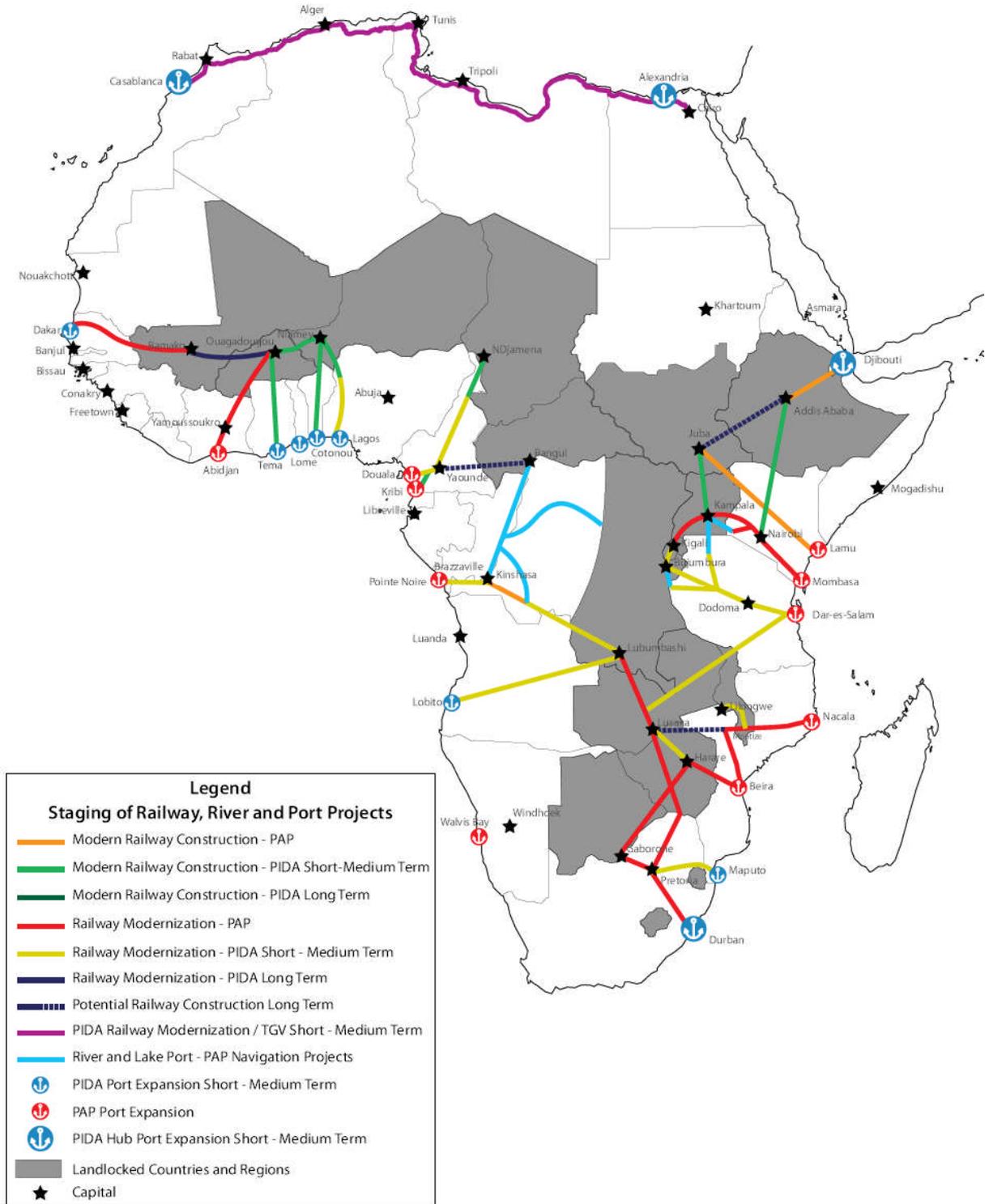
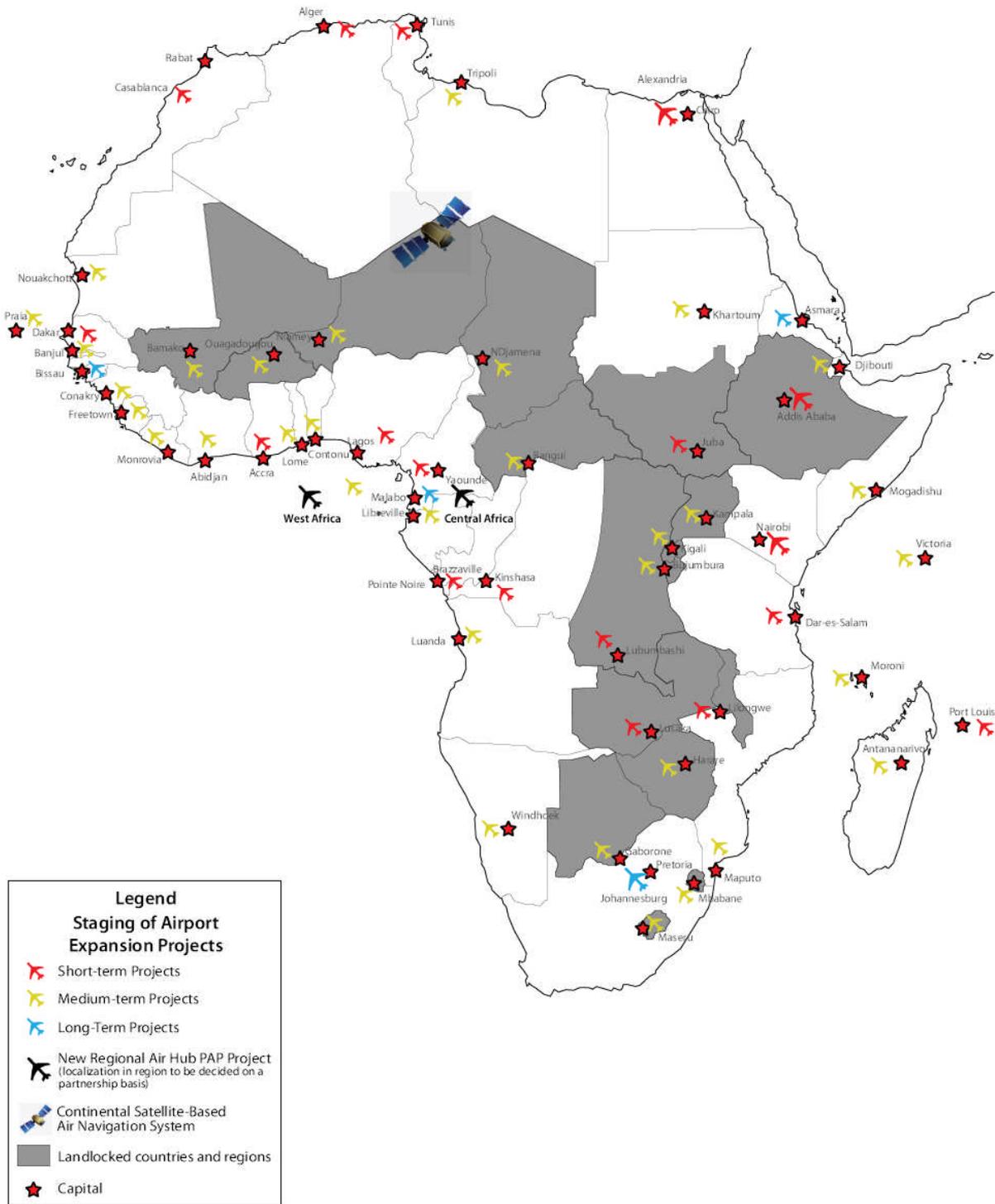


Figure 13: PIDA Airport Expansion Projects for Short, Medium and Long Term



3.6 Summary of the PIDA Programme

The total PIDA projects retained to comply with the three basic strategies as described above can be summarized as follows:

ARTIN road network	
▪ Construction of missing links	13 800 Km
▪ Up grading of existing roads	15 200 Km
▪ Modernization of the 40 corridors	9 500 Km
TOTAL	32 500 Km
ARTIN Railways	
▪ Construction of new railway lines	12 000 Km
▪ Modernization of existing railways	17 500 Km
TOTAL	29 500 Km
Ports	
▪ Extension of existing ports or new ports	1 700 million Tons (35 Ports)
Airports	
▪ Extension of existing airports or new ports	54 Airports

The total cost of the PIDA Programme is estimated between US\$ 112 to 163 billion over a 30- year period. Its components are shown in Table 10 and 11 below

Table 11: Estimated Size of the PIDA Regional and Continental Programme for ARTIN

Region	Connectivity			Filling Gaps			Modernization			
	TAH (km)	Inter-Capital (km)	Ports* (no.)	Road (km)	Rail (km)	Air-ports (no.)	Road (km)	Rail (km)	Air	OSBP (no.)
North Africa	2,700	-	*	800	500**	5	800	8,100	-	5
West Africa	3,800	-	10	5,800	3,000	16	2,000	2,400	-	21
Central Africa	3,900	1,900	6	1,100	3,000	7	1,400	800	-	10
Eastern Africa	1,100	-	7	3,600	2,500	8	2,400	1,800	-	20
Southern Africa	400	-	12	3,900	4,000	14	2,900	4,100	-	17
Continental	-	-	-	-	-	-	-	-	1	-
Total	11,900	1,900	35	15,200	12,000	50	9,500	17,200	1	73

* Only ARTIN corridor ports serving landlocked countries are shown here. There are no ARTIN corridor ports in North Africa serving landlocked countries.** not counting high speed rail construction

Table 12: Estimated Costs of the PIDA Regional and Continental Programme for ARTIN (US\$ billion)

Region	Connectivity		Filling Gaps				Modernization				Total
	TAH	Inter-Capital	Ports	Road	Rail	Airports	Road	Rail	Air	OSBP	
North Africa	1.4	-	-	0.8	1.0**	0.6	1.7*	4.1**	-	0.2	9.8
West Africa	1.9	-	12.0	4.6	9.0	1.4	4.1*	0.6	-	0.5	34.1
Central Africa	2.0	1.0	7.6	0.8	5.2	0.7	2.8*	0.2	-	0.3	20.6
Eastern Africa	0.6	-	15.4	2.9	9.0	0.8	4.6*	0.4	-	0.5	34.2
Southern Africa	0.2	-	14.0	3.1	12.0	1.0	5.9*	1.5	-	0.5	38.2
Continental	-	-	-	-	-	-	0.1*	-	0.5	-	0.6
Total	6.1	1.0	49.0	12.2	36.2	4.5	19.2	6.8	0.5	2.0	137.5

* Including smart corridor development, with smart corridor technology models developed at the continental level and smart corridor implementations at the regional level.** not counting high speed rail construction.

Note: Road modernization includes by-passes and port access roads which also add capacity. All numbers are estimates which should be taken as approximate with + 20% accuracy

3.7 PIDA Long-Term Transport Strategies by Region

The PIDA transport strategies at the continental level and for each region are shown in Figures 16-21. The costs of each regional programme by subcomponent are given in Table 10.

Figure 16: PIDA Long-Term Continental Strategies

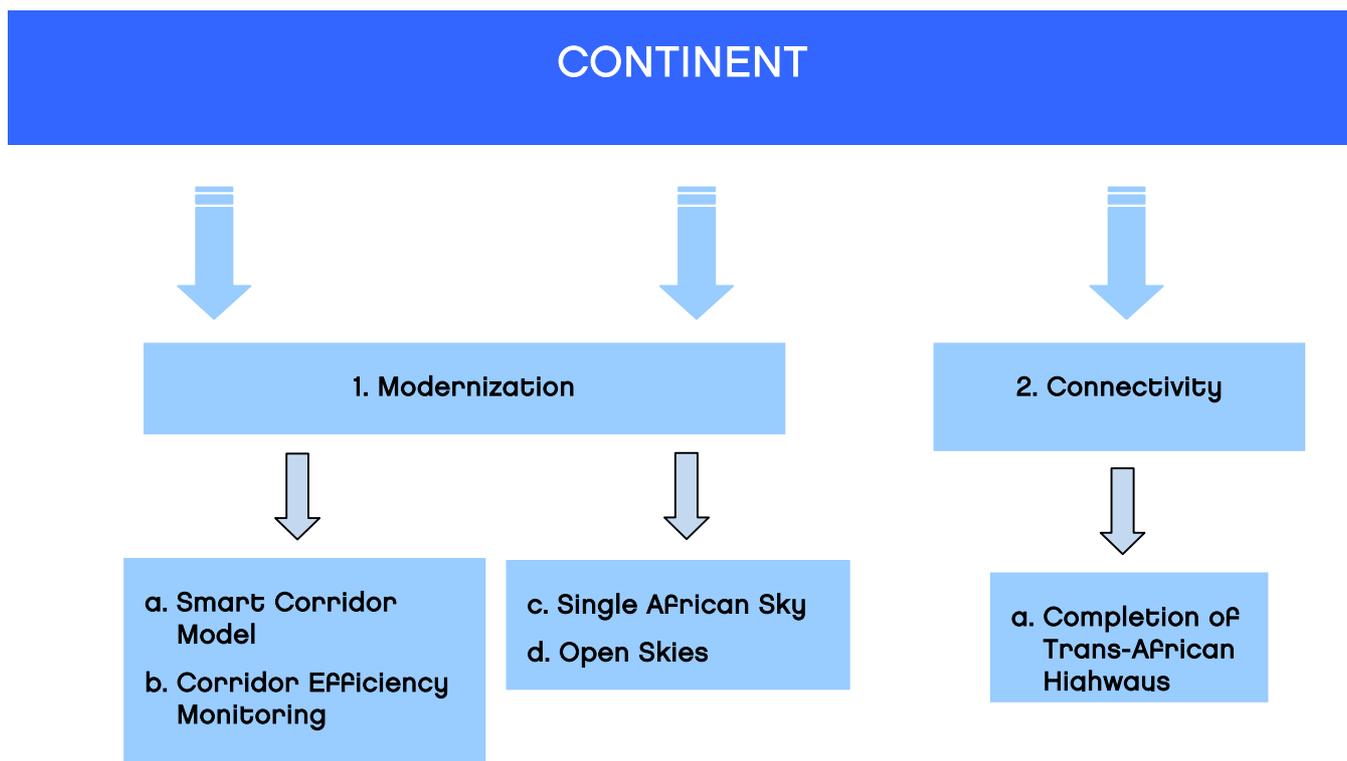


Figure 17: PIDA Long-Term Strategies for North Africa

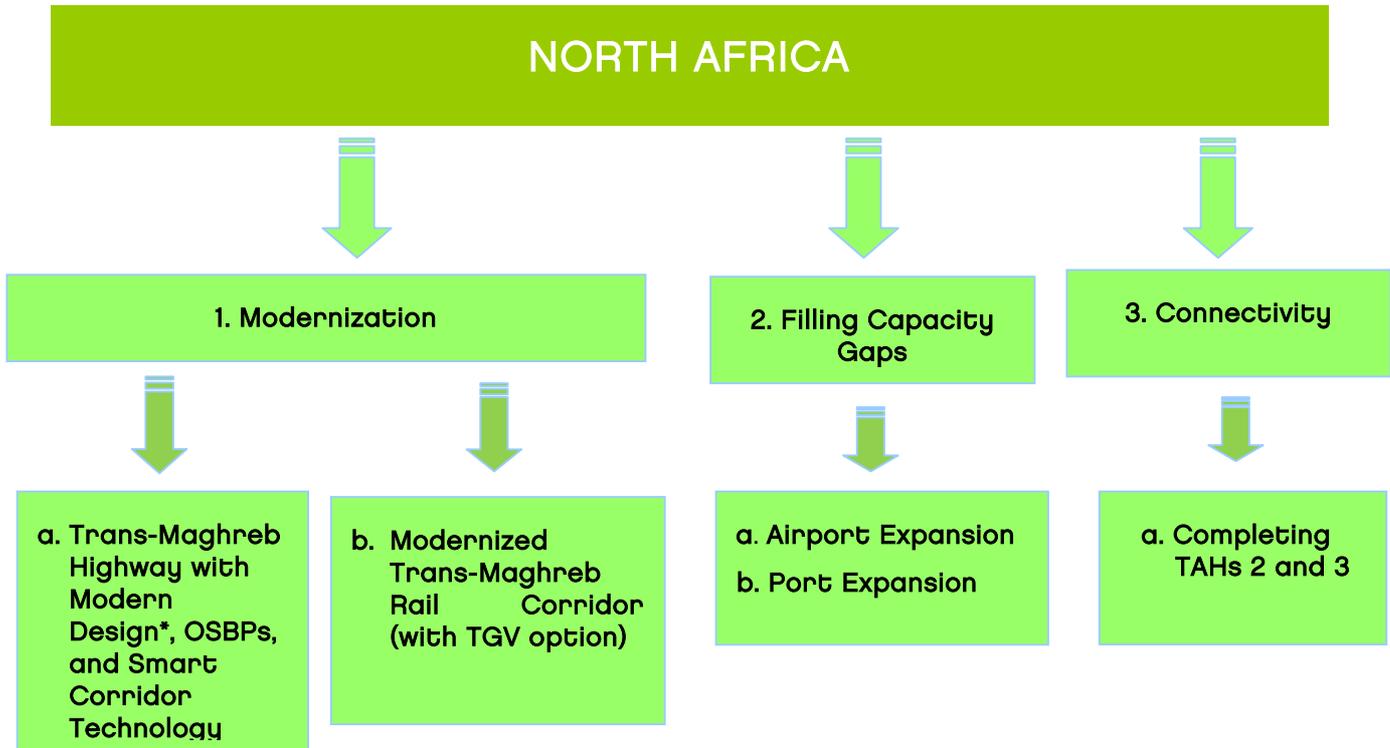


Figure 18: PIDA Long-Term Strategy for West Africa

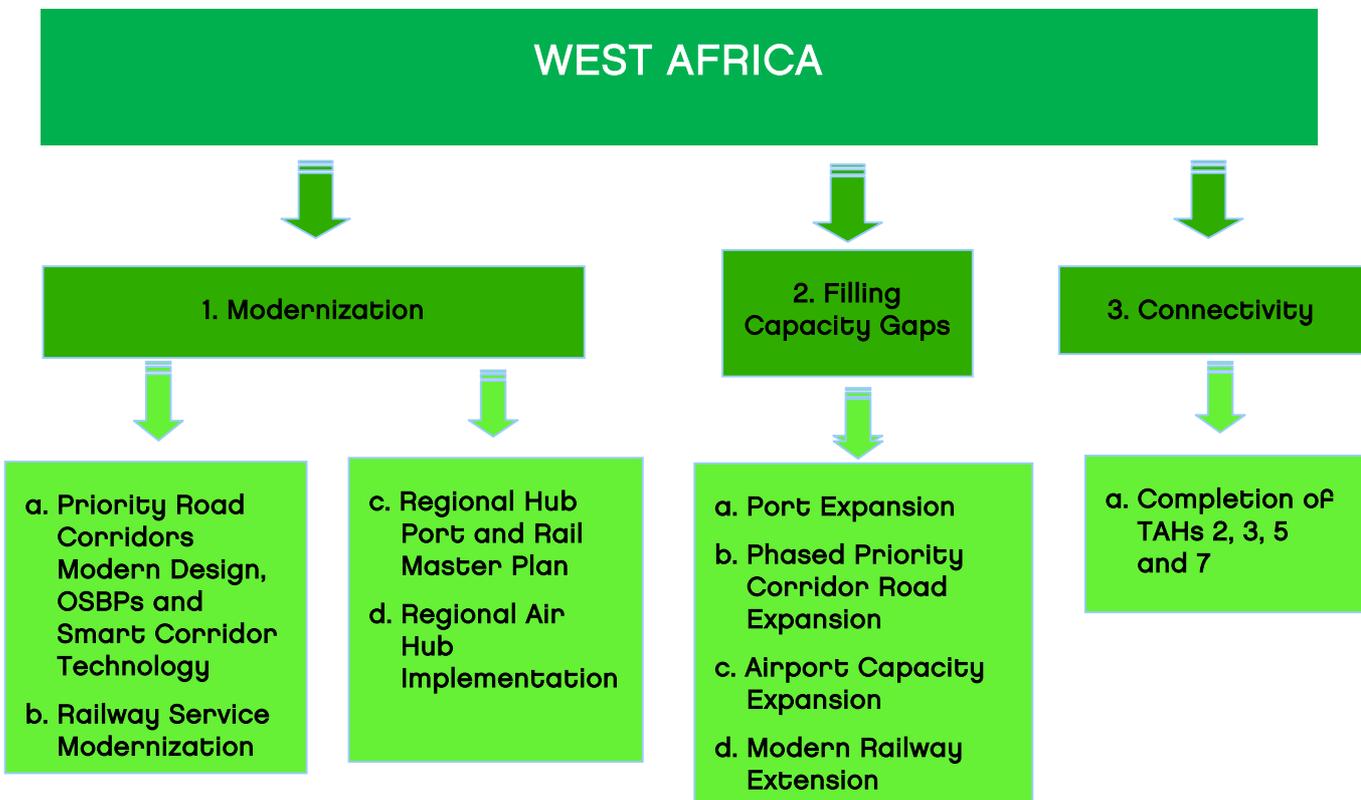


Figure 19: PIDA Long-Term Strategies for Central Africa

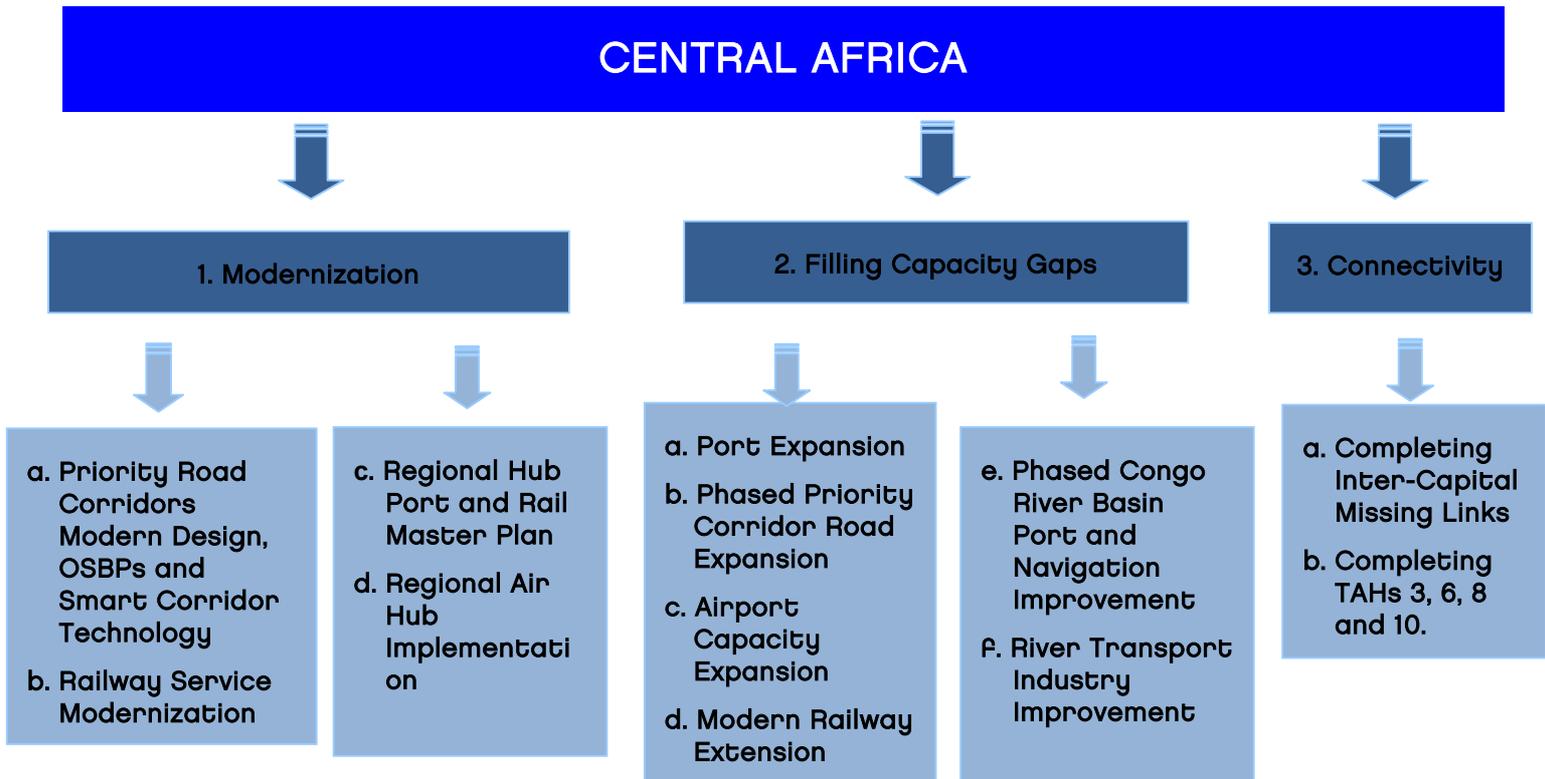


Figure 20: PIDA Long-Term Strategies for Eastern Africa

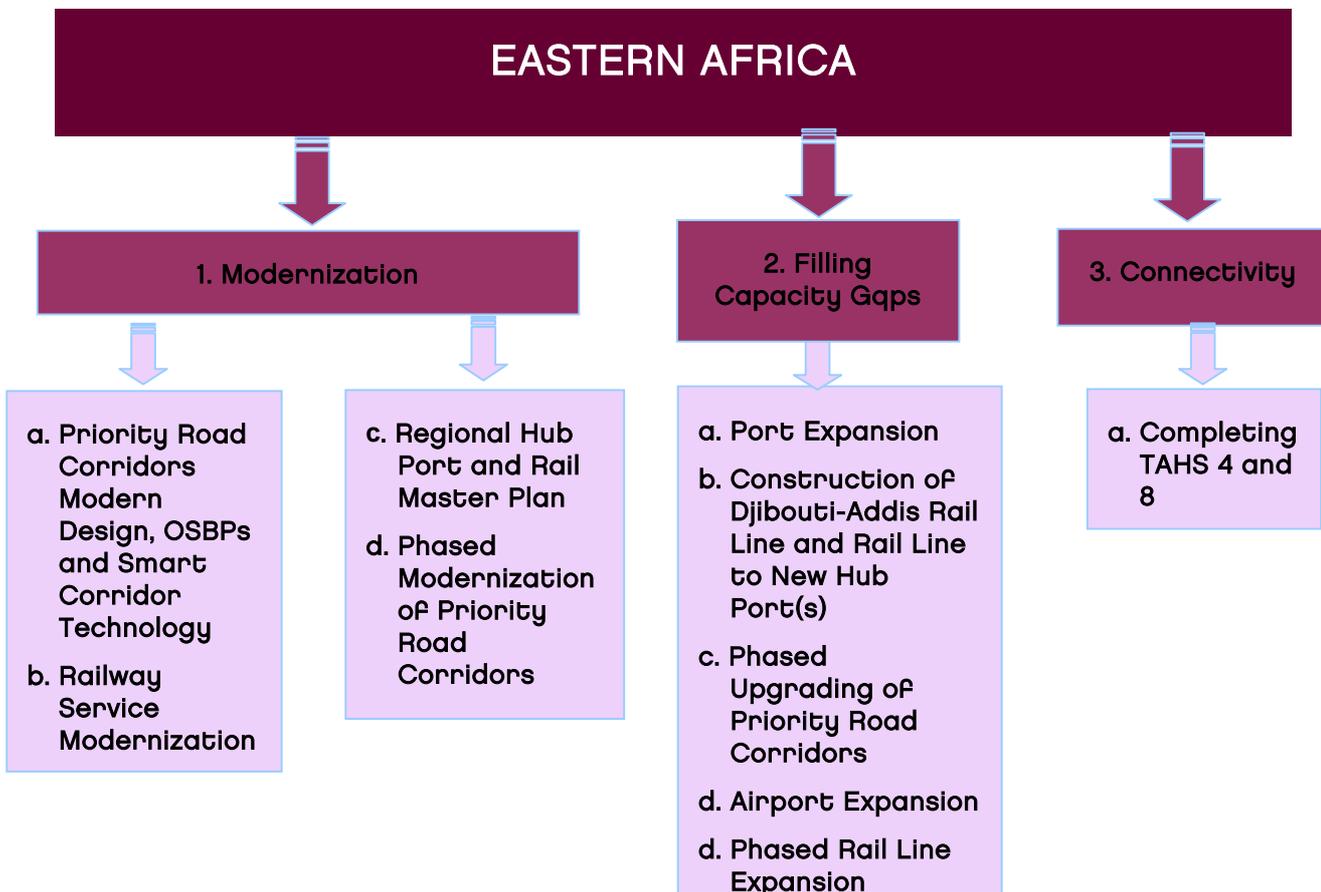
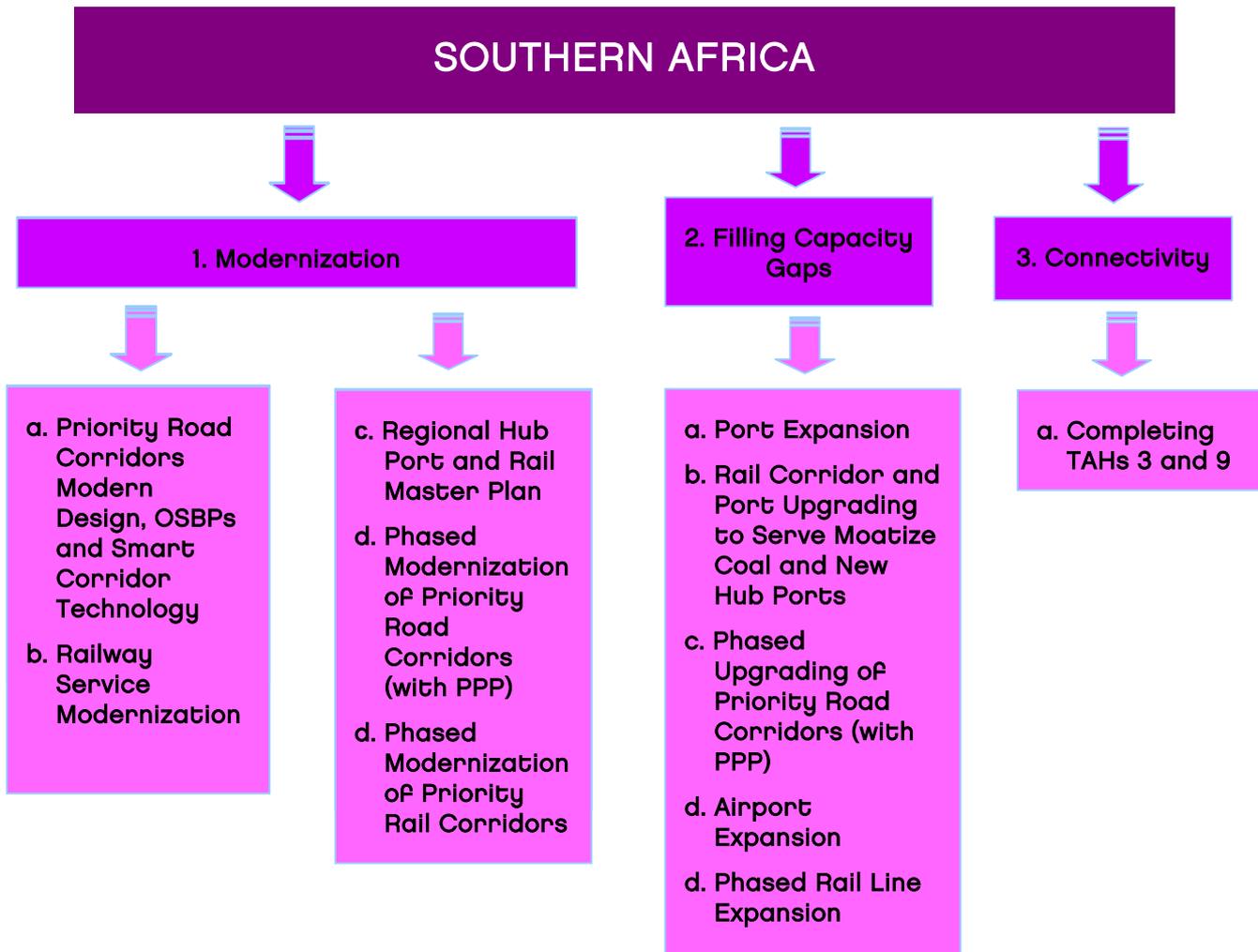


Figure 21: PIDA Long-Term Strategies for Southern Africa



3.8 Identification of the Priority Action Programme (PAP)

3.8.1 Identification and Selection of PAP Projects

PAP projects for corridors and airports were identified from existing project information and selected using the multi-criteria evaluation method describe in Annex, while TAH projects and Intercapital projects were identified on the basis of connectivity criteria, then prioritized using the multi-criteria process

Then new projects or project preparation activities that are needed to meet short-term PIDA priorities were identified to supplement existing projects where the existing projects did not fill all the forecast gaps.

PAP Project Identification and Selection Process

The PAP project identification and selection process for corridor and airports followed five steps:

- **Step 1:** Compile the candidate list of projects for ARTIN corridors or airports
- **Step 2:** Determine which of these projects are eligible for the PAP
- **Step 3:** Rank the ARTIN corridors and all eligible projects using multi criteria analysis
- **Step 4:** Select the best ranked corridors and the PAP projects located on the priority corridors.
- **Step 5:** Add new ideas for PAP projects from PIDA strategies and PIDA programme
- **Step 6:** Package the projects in terms of PIDA Programmes

Each of these steps is discussed below.

Step1: Compile the candidate list of projects

The first set of candidate projects were collected from visits to RECs in 2010 where the latest investment plans were discussed. This initial set of projects was then discussed with stakeholders in each region (as coordinated by the RECs) during PIDA workshops held in September and October 2011. From the feedback of the RECs during and after these workshops, an additional set of candidate projects were gathered.

More than 300 candidate projects were identified during this process. The list of all candidate projects has been given in the diagnostic report, PHASE I report.

Step 2: Determine PAP project eligibility

PAP project eligibility was determined using different processes for connectivity projects and for other candidate projects.

PAP Process for Connectivity Projects (TAH and Inter-Capital Connectors)

All TAH and Inter-Capital corridors with missing links were identified for each region. Then the data required for multi-criteria analysis were estimated for each missing link. From this analysis the missing links with the highest priority were used to select TAH completion projects for the PAP and a similar process was used to identify the high priority Inter-Capital corridors for the PAP in each region.

A total of 64 connectivity projects were considered eligible (See Annex 2, Tables 2.2 and 2.3 for lists of these projects).

PAP Process for All Other Projects

All candidate projects other than connectivity projects were screened for eligibility using the size and readiness criteria, which were agreed during the Tunis Workshop of July 2011. (See Annex 1 for details.)

A total of 195 non-connectivity projects were considered eligible (See Annex 2 for a list of these projects).

Step 3: Rank the ARTIN corridors and all ARTIN projects

The ranking of ARTIN corridors was carried out using the multi-criteria analysis process described in Chapter 2. The results of this evaluation and the ranking of ARTIN corridors are summarized below:

Table 13: PIDA Corridor Priority Analysis

ID	Corridor	PIDA Score	Ranking
S4	Maputo	80	1
E3	Northern	76	2
S3	Beira	73	3
E1	Djibouti	67	4
S5	North-South	66	5
W6	Praia-Abidjan-Lagos (Coastal)	65	6
W2	Dakar-Bamako-Niamey	63	7
S1	Dar es Salaam	61	8
W1	Nouakchott-Bissau (Coastal)	59	9
C1	Douala-N'Djamena/Bangui	58	10
E4	Central	58	11
S7	Trans-Caprivi	56	12
W5	Abidjan-Ouagadougou/Bamako	54	13
S2	Nacala	53	14
S8	Trans-Cunene	52	15
N1	Trans-Maghreb (Coastal)	51	16
W7	Tema-Ouagadougou	51	17
C3	Pointe Noire-Lubumbashi	49	18
S6	Trans-Kalahari	49	19
W8	Lome-Ouagadougou	47	20
W4	Bissau-Monrovia-Abidjan (Coastal)	45	21
W9	Cotonou-Ouagadougou/Niamey	45	22
C2	Libreville-Brazzaville	43	23
E2	Addis-Tunduma	42	24
W3	Bissau-Bamako Southern	40	25

Note: N= North Africa, W=West Africa, C=Central Africa, E=East Africa, S=Southern Africa

All the 195 eligible projects have also be ranked, the results of the analysis are summarized in Appendix 2.3

Step 4: Select the best ranked Corridors

As agreed during the Tunis meeting, the PAP has been focused on key corridors with the highest priority. The following corridors have been retained for the PAP

- The Northern Corridor (rail/road/lake)
- The Central Corridor (rail/road/lake)
- The North-South Corridor, including extensions to Maputo, Beira and Nacala (rail/road)
- The Addis Ababa-Djibouti Corridor (rail)
- The Abidjan-Lagos Coastal Corridor (road)
- The Dakar-Niamey Corridor (rail/road)
- The Praia-Dakar-Abidjan multimodal corridor (maritime/road)
- The Douala-Bangui-Ndjamena Corridor (rail/road)
- The Brazzaville-Bangui multi-modal corridor
- The Trans-Maghreb Corridor (rail, road)

All the eligible projects located along these 10 corridors and scoring 50 points or more have been retained in the PAP

- In agreement with the PIDA strategies described above, the proposed PAP projects on the priority corridors have two basic components
 - **Increase of efficiency** (modernization of road lay out, harmonization of norms and standards, setting up of smart corridor systems and one stop border posts, modernization of existing railways etc ;
 - **Increase of Capacity** (Ports, climbing lanes for heavy vehicles, four lanes highway, by pass of urban centers etc ;) All projects located along the corridors scoring 50 points or more have been selected.

The projects included in the PAP for each priority corridors are detailed below Tables 14 and 15.

Step 5: Add new project ideas from PIDA strategies

The projects identified for the PAP using the processes described in the previous steps were considered necessary but not sufficient to meet the needs of PIDA for filling future capacity gaps and for modernizing the ARTIN in the short term and preparing to implement the PIDA strategies for the medium and long term. Therefore, additional projects and strategic activities were added to the PAP.

Four types of new projects were identified from the PIDA strategies and the results of the analysis in the Transport Outlook 2040 as described above. These were:

- Ports capacity development and new rail lines construction to link the landlocked countries to these ports. Possibly to set up Hub ports in West, East and Southern Africa to serve the increased demand in general and accommodate the needs of the landlocked countries in particular;
- Improvement of air transport services, (Hub airports in West and Central Africa) and extension of some existing airports reaching capacity before 2020.
- High-level, satellite-based air navigation system

- The completion of the first tranche of the missing links of the TAH and other inter capital connectivity

Step 6: Package projects in terms of PIDA programmes

Finally the PAP projects were packaged into 24 programmes, which help to define the PAP in a homogeneous manner. A brief description of these programmes is given in Table 12:

Table 14: Brief Description of PAP Projects

Region	Programmes	PAP Programmes Components	Type
Continent	1. Single African Sky	▪ Design satellite-based air navigation system and create implementation and financing plan (Phase 1)	Soft
		▪ Initial implementation of satellite-based air navigation system	Hard
	2. Open Skies	▪ Full implementation of Yamoussoukro Decision	Soft
	3. Model Smart Corridors and Efficiency Monitoring	▪ Design of Model Smart Corridor System(s) and Selection of Corridors for Implementation (Phase 1)	Soft
		▪ Design and implementation of efficiency monitoring system	Soft
	4. TAH 2 and 6 Missing Links	<ul style="list-style-type: none"> ▪ Construction of Missing Links - TAH 6: 1,582 km of earth track in Chad and Sudan (out of 4,200 km overall length) - TAH 2: 1,950 km of paved road construction and rehabilitation in Algeria, and Niger (out of 4,500 km) 	Hard
North Africa	5. Trans-Maghreb Road Corridor	▪ Develop joint standards for modern road corridor design (8,100 km) (with PPP)	Soft
		▪ Design and implement Smart Corridor system and six OSBPs	Soft, Hard
West Africa	6. Abidjan-Lagos Coastal Corridor	▪ Develop joint standards for modern road corridor design (with PPP)	Soft
		▪ Design and implement Smart Corridor system and three one-stop border posts	Soft, Hard
		▪ Modernize key road sections (384 km in the PAP, and 288 in medium term) and upgrade the remaining 288 km in medium term (960 km total).	Soft, Hard
	7. Abidjan-Ouagadougou/Bamako Multimodal Corridor	▪ Develop joint standards for modern corridor road design (with PPP)	Soft
		▪ Design and implement Smart Corridor system and two one-stop border posts	Soft, Hard
		▪ Design and implement road upgrading (500 km out of 1,800 km)	Soft, Hard
		▪ Design and implement modernization of railway between Abidjan and Ouagadougou (1,200 km with modern equipment, signalling and information systems) in coordination with rail master plan	Soft, Hard
	8. Dakar-Niamey Multimodal Corridor	▪ Develop joint standards for modern corridor road design (with PPP)	Soft
		▪ Design and implement Smart Corridor system and three one-stop border posts	Soft, Hard
		▪ Design and implement road upgrading (500 km out of 1,200 km)	Soft,

Region	Programmes	PAP Programmes Components	Type
		<ul style="list-style-type: none"> Design and implement modernization of Dakar-Bamako railway (1,200 km with modern equipment, signalling and information systems) in coordination with rail master plan 	Hard Hard
	9. Praia-Dakar-Abidjan Multi-modal Corridor	<ul style="list-style-type: none"> Develop standards for modern marine transport infrastructure and operations from Praia to West African ports, based on regional port master plan (with PPP) Implement marine transport system for operations from Praia to West African ports (with PPP) 	Soft Hard
	10. West Africa Hub Port and Rail Programme	<ul style="list-style-type: none"> Develop Master Plan for regional port capacity and regional rail linkages (Phase 1) Implement short-term port expansion plans for Dakar, Abidjan, Tema, Lome, Cotonou, including: <ul style="list-style-type: none"> Ile Boulay (Abidjan) New Port/Container Terminal Construction 	Soft Hard
	11. West Africa Air Transport	<ul style="list-style-type: none"> Develop joint plan for regional air hub PPP implementation and identify any needed policy reforms then implement plan. Implement policy reforms Implement planned expansions at three airports (Ghana, Nigeria, Senegal) (Phase 1) including: <ul style="list-style-type: none"> Kotoka International Airport (Accra) Upgrading 	Soft Soft Hard
Central Africa	12. Pointe Noire Brazzaville-Kinshasa –Bangui N'Djamena Road/River Corridor	<ul style="list-style-type: none"> Develop joint standards for modern corridor river transport infrastructure design (with PPP) Design and implement Smart Corridor system and three one-stop border posts Design and implement river port upgrading (4 ports to start with and 15 others in the medium term) Design and implement modernization of river transport (with modern equipment, navigation aids and communications and information systems) 	Soft Soft, Hard Soft, Hard Hard
	13. Douala-N'Djamena/Douala - Bangui Corridor	<ul style="list-style-type: none"> Develop joint standards for modern road corridor design (with PPP) Design and implement Smart Corridor system and three one-stop border posts Road upgrading (523 km) 	Soft Soft, Hard Hard
	14. Central Africa Air Transport	<ul style="list-style-type: none"> Develop joint plan for regional air hub PPP implementation and identify any needed policy reforms then implement plan. Implement policy reforms Implement planned expansions at 2020 gap airports (Cameroon, Congo, DR Congo) (Phase 1) 	Soft, Hard Soft Hard
	15. Inter-Capital Connector Missing Links	<ul style="list-style-type: none"> Construction and paving of missing links in inter-capital connectors not on TAHs (CD3-70km + bridge, CD5-236 km, CD12-855 km) 	Hard
	16. Central Africa Hub Port and Rail Programme	<ul style="list-style-type: none"> Develop Master Plan for regional port capacity and regional rail linkages (Phase 1) Implement short-term port expansion plans for Dakar, Douala, Kribi, 	Soft

Region	Programmes	PAP Programmes Components	Type
		Pointe Noire, Matadi and Banana, including: <ul style="list-style-type: none"> - Pointe Noire Container Terminal Expansion - Kribi Deep Water Port Construction - Banana Port Construction 	Hard
	17. Brazzaville-Kinshasa Bridge . Kinshasa-Ilebo Railway	<ul style="list-style-type: none"> ▪ Construct road/rail bridge (with PPP) ▪ Design and implement one-stop border post ▪ Design and build Modern Railway from Kinshasa to Ilebo (1,015 km) 	Hard Hard Soft, Hard
Eastern Africa	18. Djibouti-Addis Ababa Corridor	<ul style="list-style-type: none"> ▪ Develop joint design standards for modern rail transport corridor infrastructure (with PPP) ▪ Design and implement Smart Corridor system and one one-stop border post ▪ Design and Construct Djibouti-Addis Ababa Rail line (710 km) 	Soft Soft, Hard Soft, Hard
	19. Northern Corridor	<ul style="list-style-type: none"> ▪ Develop joint design standards for modern road corridor infrastructure (with PPP) ▪ Design and implement Smart Corridor system and six one-stop border posts ▪ Implement three road modernization projects (129 km) ▪ Implement four road upgrading projects (602 km out of 1,900 km of core corridor roads) ▪ Implementation of lake port modernization and navigation aid projects for 6 ports 	Soft Soft, Hard Hard Hard Hard
	20. Central Corridor	<ul style="list-style-type: none"> ▪ Develop joint design standards for modern road corridor infrastructure (with PPP) ▪ Design and implement Smart Corridor system and four one-stop border posts ▪ Implement three road modernization projects (176 km) ▪ Implement seven road upgrading projects (890 km out of 1,600 km of core corridor roads) 	Soft Soft, Hard Hard Hard
	21. Lamu Gateway Development and East African Hub Port, Rail	<ul style="list-style-type: none"> ▪ Develop Master Plan for regional port capacity and regional rail linkages (including Lamu Port) (Phase 1) ▪ Implement short-term port expansion plans for Mombasa, Dar-es-Salaam and Ethiopia Dry Ports including: <ul style="list-style-type: none"> ▪ Mombasa Port Extension of Capacity ▪ Dry Ports at Modjo and Semera Construction ▪ Lamu Port Construction. Design and build road and rail connections from Lamu to Nairobi, Kampala and Juba 	Soft Hard Hard Hard Hard Soft, Hard
Southern Africa	22. North-South Multi-modal Corridor	<ul style="list-style-type: none"> ▪ Develop joint design standards for modern road corridor infrastructure (with PPP) ▪ Design and implement Smart Corridor system and four one-stop border posts 	Soft Hard

Region	Programmes	PAP Programmes Components	Type
		<ul style="list-style-type: none"> ▪ Implement three road modernization projects (176 km) ▪ Implement seven road upgrading projects (890 km out of 1,600 km of core corridor roads) ▪ Develop cooperative master plan for modern North-South Corridor rail development (Phase 1) ▪ Carry out short term rail modernization programmes for North-South Corridor and Dar Corridor, including: <ul style="list-style-type: none"> - TAZARA Rail System Improvements - SNCC Railway Network Upgrading - Chingola to Solwezi Railway Construction 	Hard Hard Soft Hard
	23. Moatize to Sea Links in Rail Corridors	<ul style="list-style-type: none"> ▪ Design modern Nacala and Beira Rail Systems to support Moatize coal exports with PPP inputs (Phase I) ▪ Carry out short term rail upgrading of Beira and Nacala Corridor rail lines (Phase 1) 	Soft Hard
	24. Southern Africa Port and Rail Programme	<ul style="list-style-type: none"> ▪ Develop Master Plan for regional port capacity and regional rail linkages (Phase 1) ▪ Implement short-term port expansion plans for Nacala, Beira, Maputo, Durban, Walvis Bay, Luanda (Phase 1) including: <ul style="list-style-type: none"> - New Coal Terminal at Nacala Port - Nacala Port Container Terminal Expansion - New Coal Terminal at Beira Port - Beira Port Dredging - Maputo & Matola Port Rehabilitation and Dredging Programme - Walvis Bay New Container Terminal 	Soft Hard Hard Hard Hard Hard

Note: In addition to the projects included in this table, it is expected that additional projects will be identified during the next few years which would qualify to be included in the PIDA short-term investment programme and which could significantly increase its size.

Each of these programmes is described in more detail in section 4.3 below.

The cost of each component of these 24 programmes is given in Table 15 below.

Table 15: PAP Programme Costs by Region, Mode and Strategy

Progr	Name	Region	Mode	Strategy	Cost (US\$ million)
1	Completing TAHs Phase I (TAH 6 and 2)	Continental	Road	Connectivity	2,150
2	Single African Sky Phase 1 (Design and Initial Implementation)	Continental	Air	Modernization (Design)	50
			Air	Modernization (Implement.)	225
3	YD Implementation (Open Skies)	Continental	Air	Modernization (Implement.)	5
4	Smart corridor programme Phase 1 (Design)	Continental	Road/Rail/Port/OSBP	Modernization	100
5	Trans-Maghreb Highway (Smart Corridor System)	AMU	Road/Port/OSBP	Efficiency Improvement	75
6	Abidjan-Lagos Coastal Corridor Phase 1 Modernization	ECOWAS	Road/Port/OSBP	Modernization	50
			Road	Upgrading	240
7	Dakar-Niamey Multimodal Corridor Modernization	ECOWAS	Multi-modal	Modernization	50
			Road	Modernization	250
			Rail	Modernization	290
8	Abidjan-Ouagadougou/ Bamako Multimodal Corridor Modernization	ECOWAS	Multi-modal	Modernization	50
			Road	Modernization	250
			Rail	Modernization	240
9	Praia-Dakar- Abidjan Multimodal Corridor Phase 1 (Design and Equipment)	ECOWAS	Multi-modal	Modernization	50
			Marine	Modernization	100
10	West Africa Hub Port and Rail Programme Phase 1	ECOWAS	Port and Rail	Master Plan	50
			Port	Expansion	1,800
			Rail	Modernization	290
11	West Africa Air Transport Phase 1	ECOWAS	Air	Modernization	20
			Airport	Expansion	400
12	Pointe Noire- Brazzaville-Bangui-N'Djamena Road/River Modernization	ECCAS	River/Port	Modernization	100
			River	Palambo Dam Construction	200
13	Douala-Bangui-Ndjamenam Corridor Modernization	ECCAS	Multi-modal	Modernization	50
			Road	Upgrading	240
14	Central African Inter-Capital Connectivity	ECCAS	Road	Connectivity	800
15	Central Africa Air Transport Phase 1	ECCAS	Air	Modernization	20
			Airport	Expansion	400

Progr	Name	Region	Mode	Strategy	Cost (US\$ million)
16	Central Africa Hub Port and Rail Programme Phase 1	ECCAS	Port and Rail	Master Plan	50
			Port	Expansion	1,350
17	Brazzaville-Kinshasa Bridge, Kinshasa-Ilebo Railway	ECCAS	Bridge	Construction	450
			Rail	Construction	1,200
18	Djibouti-Addis Corridor Modernization	EAC+IGAD	Rail	Modern Rail Construction	1,000
19	Northern Multi Modal Corridor Phase 1 Modernization	EAC+IGAD	Multi-modal	Modernization	75
			Road	Modernization	130
			Road	Upgrading	780
			Lake	Modernization	20
20	Central Corridor Phase 1 Modernization	EAC	Multi-modal	Modernization	50
			Road	Modernization	330
			Road	Upgrading	460
21	Lamu Gateway Development and Eastern African Hub Port-Rail	EAC+IGAD	Multimodal	Master Plan	50
			Port	Expansion	2,000
			Port	Construction	1,000
			Road	Construction	480
			Rail	Construction	2,400
22	North-South Multi-modal Corridor Phase 1 Modernization	SADC	Multi-modal	Modernization	75
			Road	Modernization	150
			Road	Upgrading	800
			Rail	Modernization	1,000
			Rail	Construction	300
23	Moatize to Sea Links in Rail/lake/river Corridors (Design and Construction)	SADC	Rail	Upgrade and Modernization	450
24	Southern Africa Hub Port and Rail Programme Phase 1 (Master Plan)	SADC	Port and Rail	Master Plan	50
			Port	Expansion	2,220
Total					25,415

The costs of the PAP are summarized by mode and region in Table14 below.

Table 16: Size of the Proposed PAP Programme by Mode and Region (US\$ millions)

Region	Multi-modal	Road	Rail	Port	Lake, River and Marine	Air	Total
North Africa	75	750	-	-	0	0	825
West Africa	250	1,340	820	1,900	100	420	4,830
Central Africa	100	1,990	1,200	1,350	200	420	5,260
Eastern Africa	175	2,480	3,400	3,000	20	0	9,075
Southern Africa	125	950	1,750	2,220	0	0	5,045
Continental	100	*	0	0	0	280	380
Total	825	7, 510	7,170	8,470	320	1,120	25,415

* TAH projects allocated to regions.

4. IMPLEMENTATION STRATEGY OF THE PIDA TRANSPORT PAP

4.1 Factors Influencing Transport Sector Financing

There are several major factors that will influence financing of the transport sector:

- PIDA recommendations and vision for the transport sector includes more reliance on efficient railways, which will increase rail financing needs, but will also reduce part of the need for funding future road expansion projects
- A major increase is seen in the role of the private sector in the financial sphere as well as in sector management and operations, but this role needs to be carefully supervised and managed, and supported by key policies that provide an enabling environment.
- A major increase in the use of domestic funding sources is foreseen, especially in the area of development bonds. This has special implications for project design from a financial perspective.
- Incentives are needed to encourage both public and private investment in ARTIN
- Cohesion and structural funds established by the AUC can be used to leverage more budget allocation from governments who are under-investing in transport infrastructure
- A variety of PPPs can be mobilized for improving management and increasing the share of private funding, namely:
 - Loan guarantees (full or limited) for large projects (as for the Trans-European Transport Network Projects or for ASEAN transnational infrastructure funding)
 - Toll roads for improvements and maintenance funding
 - Performance-based maintenance for roads to get more cost-effective maintenance practices (which also reduce the need for road rehabilitation and reconstruction)

Different options will need to be applied in different circumstances and for different parts of the ARTIN as described below.

4.2 Sector-specific mobilisation of financing

There is a significant diversity in the structure of PAP projects in the transport sector, some of which are likely to be in the public sector, others being suitable for PPP under various arrangements. Similar types of projects in the PAP will be conducted by each REC and the issues faced for their financing are the same.

The inclusion of programmes in the PAP comprised of various projects and not considered previously as single programmes by the RECs will create a need to carefully plan financing and actions for each programme to be put in place. The preparation of these programmes should

also aim at achieving consensus on the action plans from all the stakeholders and to search for financing in a coordinated manner.

The rapid availability of funds for the financing of the preparation of these programmes is essential for the success of the PAP. These funds should be provided by Donors interested in the development of Africa through Project/programme Preparation Facilities.

In order to examine their suitability for private sector financing, the recommended projects for the PAP can be grouped in 6 categories:

- Expansion of port capacity
- Improvement of air services and expansion of airport capacity
- Construction of modern railway lines and creation of modernized rail services
- Construction of OSBPs
- Upgrading and modernization of the roads along ARTIN corridors
- Construction of the missing links along the TAHs and between capital cities.

4.2.1 The financing of port capacity expansion projects

The studies required to identify the best ways to expand port capacities to meet future needs (through existing port expansion or through new ports) should be conducted under the leadership of the relevant RECs with the participation of relevant private and public sector stakeholders.

African port traffic amounted to about 310 million tons in 2009 will jump to 750 million tons by 2020 according to PIDA forecasts. Considering that most African ports are operating close to capacity and that a much larger share of traffic will be handled through containers (see Chapter 1), port capacity must be increased by between 350 and 400 million tons before 2020 at a total cost of approximately US\$ 4 billion.

Port capacity extension should be largely financed through PPP. However the review of recent port projects shows that it is important for the customers of a port not to have a port operator linked too closely with one specific shipping line as this could create a monopoly or at least an oligopoly situation.

It is therefore recommended that part of the port expansion projects, where this is a potential problem be financed with local resources through the use of local bonds or local commercial banks.

Some short term port projects such as dry ports and lake or river ports may be unlikely to attract private investors and the financing of these projects should be done by each concerned state with national or donor financing.

The expansion of port capacity is justified by the forecast national traffic but also by traffic to and from landlocked countries. It is recommended that private (or public) interests from these landlocked countries also contribute to the financing of these projects in order to be able to contribute to the final choices and the final design and make sure that their regional interest is taken into consideration.

The short term projects selected for ECOWAS, EAC and SADC should be implemented rapidly, as part of the financing is already available. However, the potential financing shortage should be assessed rapidly by the relevant RECs that should immediately begin search to fill any financing gaps.

4.2.2 The financing of Air service improvement and expansion of airport capacity

As mentioned earlier, the analysis of the potential for improvement of air services through the setting up of hub airports is particularly important in Western and Central Africa. As recommended above, these analyses will require the establishment of working groups in each region under the leadership of the relevant REC with the participation of the Member states, the air transport users, the existing national and regional airlines and the international airlines serving these regions

The cost of a new airport can vary substantially with the technical characteristics and the quality of services to be provided. A minimum estimate could be US\$ 25 million per million additional passengers. It is forecast that total air traffic, which was about 90 million passengers in 2009 will reach about 160 million passengers in 2020 and 390 million passengers by 2040.

Considering that the majority of the African airports are close to their capacity and that 17 would need to be upgraded by 2020, it is estimated that the total cost for these expansion projects will total US\$ 1.5 billion by 2020.

The financing of airport expansions could be done by the private sector through PPP and, in these cases, the relevant member states should ensure that they provide an enabling environment for PPP in their country.

4.2.3 Financing of new railway lines

Considering the forecast future volume of rail transport from the landlocked countries to the sea, the construction of new modern railways will become economically and financially feasible where the extensions of port capacities are concentrated in a few hub ports.

As mentioned in the Africa Transport Outlook 2040 , the development of these new rail services should largely be carried out by the private sector through concessions. Experience in other parts of the World, in particular in Latin America, shows that the private sector alone will not take the risks associated with the construction of a new rail lines but would stand ready to invest in rolling stock and telecommunication equipment and take responsibility for railway management. Experience also shows that better results are achieved when the financing from the private operators can be found locally; this would require the mobilization of national financing through local commercial banks, pension funds etc.

Assuming that two new lines could be built during the PAP, for a total of 2,000 km, the total financing requirement for the rail infrastructure would be around US\$ 4 billion. The financing of the infrastructure for these new rail lines should be the responsibility of the member states, with the assistance of financial institutions and bilateral agencies but also from their own investment budgets.

The PAP proposes also, in a few cases (such as the Northern Corridor and Dar Corridor), the upgrading of the existing railway lines and operations located along the corridor. Private operators presently operate these railways under concession agreements. Experience in other parts of the world, clearly shows that any substantial improvement of the infrastructure cannot be done by private operators and any upgrading should be financed by the relevant member states.

4.2.4 Financing of one stop border posts

So far all the OSBPs at present in operation in Africa have been financed by the bilateral agencies (such as Japan) and by IFIs (EU, World Bank and ADB). One (Heremankano) is proposed for PPP.

Once a OSBP is completed, its management can be handled by private operators under concession agreements and it may be possible to ask the private operators to finance the required infrastructure. However, taking into account that two countries are involved in each OSBP

project, it is likely that the proposed OSBP projects of the PAP continue to be financed from the same sources as recent OSBP projects.

4.2.5 Financing the pilot programme for the use of private operator for the upgrading and maintenance of ARTIN roads through PPP

The PAP pilot PPP projects are based on the following hypotheses:

- The REC or the Corridor authority together with the member states have reviewed the design of the road sections along the corridor, with corridor road designs applying the agreed norms, standards and characteristics for the ARTIN road network;
- The member states have agreed to place tolls on the selected sections of ARTIN road corridors,

Once these conditions are fulfilled, it would be the responsibility for each member state to call for bids to select private operators and sign concession agreements. The REC and the corridor authority should monitor these bids and encourage a corridor approach.

4.2.6 Financing of construction of missing links along TAHs.

As mentioned above, a special programme is proposed for completing the construction of the 9 TAHs before the end of the PIDA period. The missing links account for about 15,000 Km and their completion will cost about US\$ 7.5 billion. According to the proposed methodology; the completion of these TAHs for their portions not part of the ARTIN corridors should be planned at a continental level and then executed at national level. The identification of all the missing links, the evaluation of the costs to complete each of them and their ranking should be done at continental level.

The proposal is to implement these projects in tranches of 3 or 5 years. It is expected that the first tranche could reach US\$ 1.5 million and result in the construction or rehabilitation of about 3,000 km of missing links.

The search for financing of the first tranche should also be done at the continental level. The AUC/NPCA should approach each member state, the IFIs, the bilateral financing organizations, etc. with financing proposals as well as present the TAHs programmes to the Donors in order to assess the amount of funds that could be made available for the completion of the missing links. Once the volume of civil works is defined, the next step will be for the continental institutions to assess according to their priority, the missing links to be executed during each tranche period.

The implementation of the civil works should be delegated to the member states under the monitoring of the RECs.

4.3 Implementation strategy PAP projects

CNI: ADVANCED AIR NAVIGATION SYSTEM	
Components	<p>Single African Sky is a continental project which will create a high-level, satellite-based air navigation system for the African continent. There are similar systems operating in Europe and other regions of the world using different technologies and communications systems.⁶ The benefits of this project would be full coverage of the continent for air navigation (which will fill gaps in the existing air navigation system), shorter air routes and improved safety for air services. Airlines will also have cost savings due to efficiencies achieved.</p> <p>The first phase of this project includes (a) the design of an advanced air navigation system, b) development of an implementation and financing plan for the system and c) the initial implementation of the system in selected locations.</p>
Approach	<ul style="list-style-type: none"> ▪ The Civil Aviation Authorities of the African States being regulatory bodies with vested power to regulate the provision of Air Navigation Services of the States have embarked on the streamlining and harmonizing of Air Navigation Regulations with adjacent States. The proposed programme would build on this cooperation to support implementation of an advanced air navigation system. This requires harmonizing air navigation, flight safety and economic regulations and developing a funding mechanism different from the current system that is based on regional air traffic control and fees to regional air traffic control agencies. A technical committee should be formed at the continental level to (i) recommend appropriate technical and financial solution to this problem reflecting best practices (ii) and (ii) develop a financing plan for the different activities
Challenges	<ul style="list-style-type: none"> ▪ This project requires a fairly high level of technical competence to be implemented. It will also require close working relations with international technical experts and substantial human resource development. ▪ The exercise of harmonizing air navigation, flight safety and economic regulations in adopting and implementing rules with legislative power is currently being carried out throughout Africa within blocs such as SADC, EAC and ASECNA, etc. The strategy is to harmonize bloc by bloc and eventually to achieve the vision of having regulations that apply to the whole of Africa. This exercise is on-going and significant achievements have been realized within these blocs. MOUs between States have been signed regarding regulations in the AFI Region. ▪ The most challenging of these issues is the harmonization of economic regulations and developing a funding mechanism for the project and this depends on the political climate prevailing within the States. The key obstacle to implementing a new system is that this requires a tariff to be charged and collection and allocation of the accruing funds. Although the stakeholders would be willing to pay for its implementation, African States have different views on the air navigation charges. The challenge, however, is in identifying and defining the best practice that will ensure sustainability of the provision of adequate air navigation services regardless of the differences in the air traffic mix regarding aircraft weight in charging formula.

⁶ Some of these systems have coverage of the African continent, but are not extended to African use

CN2: YAMOOUSSOUKRO DECISION IMPLEMENTATION

Components

This project is a continental effort to achieve full acceptance of the Yamoussoukro Decision by all African States (also known as “Open Skies”). It is primarily a technical assistance project supporting a series of consultation workshops and reporting activities.

Approach

- NPCA, with AUC and UNECA support should play a leading role in organizing regional and continental workshops to identify and overcome the objections of national governments to YD implementation. Key stakeholders including RECs, AFRAA (African Airlines Association), ICAO (International Civil Aviation Organization), IATA (International Air Transport Association) will need to be closely involved as well. NPCA should create a project implementation committee with appropriate full time expert staff.
- This project would be closely coordinated with projects WA3 and CA3 for establishing new regional air hubs. The approval of YD could be linked to new incentives for cooperation among nations including regional partnership schemes for the sharing of hub airline and/or possible compensation arrangements for countries that do not get the primary benefits of higher air service.
- Another mechanism to demonstrate the benefits of full YD implementation (as proposed previously by NEPAD) would be to create a “Club of YD Implementers” that would fully implement the YD among themselves and admit on a trial basis those nations considering joining this club so that they could experience the benefits.
- This project would also be included as part of the high-visibility monitoring function proposed for the NPCA and the AUC, so that the heads of state could play a role in ensuring full acceptance of YD.

Challenges

- Over the last few years, NEPAD has been actively engaged in the process of securing YD acceptance for the remaining states that are not yet signatories. However, there is little interest in countries that are in the process of trying to set up national or regional airlines and these countries are proceeding on the basis of bi-lateral negotiations of air rights. This is despite the growing amount of data demonstrating the high costs and service deficiencies of the current system.
- There are no existing incentives for international cooperation in this area and perceived national interests in taking other actions not in accord with YD. This challenge would have to be overcome in a creative manner as suggested in the above approaches.

CN3: CONTINENTAL PILOT SMART CORRIDORS AND MONITORING

Components

This is a continental programme designed to improve the overall efficiency and capacity of transport corridors in Africa. It includes both the development of model smart corridor technology and the design and the implementation of a continental and regional corridor efficiency monitoring system.

Model smart corridors have several modules (single window, cargo, truck and train tracking, and high-visibility efficiency monitoring) which would be developed at the continental level and then implemented as part of corridor modernization projects.

The development of the corridor efficiency monitoring system includes the design of a set of efficiency performance measures and a reporting system that starts at the corridor level and is summarized at the regional and continental levels. The concept is to create a sustainable, high-visibility system that focuses attention on critical performance issues at all levels so that improvements can be made rapidly to corridor performance, which is a key to economic growth and trade in Africa, especially for landlocked countries.

Approach

- The introduction of smart corridors would start with the development of one or more smart corridor models at the continental level (using NPCA as the lead). These model systems would then be implemented in phases at the regional level (see smart corridor components of other PAP projects below).
- A technical committee should be created at continental level by NPCA, with UNECA, REC and priority corridor representation, to analyse smart corridor and efficiency monitoring processes on other continents, including Europe, Asia and North America. This committee would then select components appropriate for African corridors (e.g. single window, cargo tracking, vehicle load monitoring, etc.) and identify the pilot corridors for system implementation. Local corridor authorities would contract with international firms to design and implement the system, in consultation with the RECs and other stakeholders.
- The monitoring system should be supported at continental level by the NPCA which will need a special unit with the appropriate expertise, which can also provide technical assistance to the RECs and the Corridor Management Committees as needed.

Challenges

- This will be the first design of a smart corridor system in Africa, but it can call on experience from other continents, such as the CIVSN system in North America and other systems in Europe and Asia.
- One of the challenges is to meet the needs of all the stakeholders, both public and private in each corridor, including importers, exporters, shippers, transporters, freight forwarders, railway companies, port authorities and customs and immigration agencies. The smart corridor information system needs to be integrated into existing information systems and also designed to keep certain confidential information limited to the owners of that information and their clients.
- The smart corridor information system should be designed to aggregate information for display to regional and continental efficiency monitoring systems of the RECs and AUC. The monitoring system should include the tracking of policies and enforcement activities that affect corridor efficiency as well as implementation of regional policies by different countries.

CN4: TRANS AFRICAN HIGHWAY MISSING LINKS

Components

The project consists of finalizing the first tranche (Phase 1) of the construction of all the missing links along the TAHs. It includes two highways: TAH 2 (Algiers-Lagos) and TAH 6 (Ndjamena-Djibouti) which were evaluated as the highest priority among TAH projects.

These projects involve construction and paving of a modern roadway thereby upgrading 1,582 km of earth track in Chad and Sudan (out of 4,200 km overall length for TAH 6) and 1,950 km of paved road construction and rehabilitation in Algeria, and Niger (out of 4,500 km length for TAH 2).

Approach

- More than three decades ago, Africa identified a network of Trans African Highways (TAHs) aiming at improving the connectivity of the capital cities and large towns of the continent. The overall objective of the project is to complete all the missing links of the TAH before the end of PIDA (2040).
- First, AUC/NPCA/ECA and the relevant states should agree on the design standards of the TAH which should be the same standards as for the corridors, with adjustment for traffic levels. AUC/NPCA should complete the on-going studies of the TAHs (TAH 3, Djibouti-Dakar, Djibouti-Libreville, etc.) and finalize the analysis of their missing links through pre-feasibility studies, and determine the costs of completing each missing link. Then AUC/NPCA and the relevant countries would decide on the priority of completing the remaining missing links using the PIDA multi-criteria methodology.
- AUC/NPCA and the relevant countries would search for financing of these projects from donors and the relevant state budgets.
- Once the financing is identified, the relevant States would implement the projects.

Challenges

The key challenges are:

- To agree on the design standards of the TAHs; More particularly for the TAH "Tripoli-Cape Town" which crosses desert areas in the north and flooded areas in the center.
- To identify all the missing links and section to be rehabilitated or upgraded and to evaluate the costs of these civil works.
- To design the technical characteristics of these TAHs and identify best ways to ensure their sustainable maintenance by the relevant member states.
- To find financing for these projects.
- Coordination between countries involved in these projects may be difficult. Low levels of traffic will also make it difficult to attract donors.

NA1: IMPROVING EFFICIENCY OF TRANS-MAGHREB HIGHWAY**Components**

This project is designed to improve travel by people and goods across the Maghreb countries, which have had their trade and travel limited by artificial barriers between countries at the borders. Recently there has been rising expectations of freer movement between Maghreb countries and the timing is good for a project that facilitates these movements.

This project would design and implement a smart corridor system along the highway and install one-stop border posts at five locations: Dakla/Nouadhibou, Oujda Tlemcen (Morocco—Algeria), Ghardimaou (Algeria-Tunisia), Ras Adjir (Tunisia-Libya), and Musaid-Soloum (Libya-Egypt). There would be a substantial capacity building and policy aspect to the OSBP development in order to improve communications between ministries working at the border and also communications between countries.

Approach

- The AMU should first set up a committee with representation from each of the involved ministries to seek agreement on implementation of this project, to be confirmed by the respective Heads of State. In Phase II, another committee should be formed with technical representatives of the implementing agencies to supervise the contractors designing the OSBPs. The AMU should seek financing for the programme in coordination with the AfDB. Actual border post construction and equipping and staff training would be carried out by contractors under the supervision of the respective national ministries.
- The smart corridor system would have six modules: (i) single electronic window, (ii) cargo tracking, (iii) commercial vehicle tracking (including vehicle weight), (iv) container tracking, (v) freight train tracking and (vi) high-visibility corridor efficiency monitoring. This system would speed up regional integration, make African businesses more competitive and increase tourism among Maghreb countries.

Challenges

- Sometimes it may be difficult to reach agreement on the location of the single border post. For optimal efficiency, the customs and immigration authorities of both countries will need to reach agreement on the best ways to manage freight and passenger traffic across borders. Also, there needs to be a full electronic exchange of cargo customs information across the border. Project implementation at the national level may require more than one financing agreement.

WA1: MODERNIZING THE ABIDJAN-LAGOS COASTAL CORRIDOR

Components

This project is designed to modernize the most heavily traveled ARTIN corridor in West Africa and increase the ease of access for people and goods across the borders of five countries, Cote d'Ivoire, Ghana, Togo, Benin and Nigeria. This project would design and implement a smart corridor system along the highway and facilitate the four one-stop border posts.

The road modernization component includes the joint development of modern corridor highway standards among the five countries, and the construction of four highway sections totalling 384 km to these higher standards. This project would complement on-going road rehabilitation and upgrading projects.

Approach

- ALCO, in coordination with NPCA and/or the AfDB, should review best practices worldwide for modern corridor highway design and for smart corridor information systems. ALCO should then review all the road improvement projects proposed or on-going along the corridor and, when necessary, recommend modifications in order to improve the overall characteristics, even if this might delay part of the implementation.
- This project would complement the Trade and Transport Facilitation project which is being implemented by the countries concerned and provides important resources for inter-country coordination. However, one of the four OSBPs involved (Noepe on the Ghana-Cote d'Ivoire border) has not yet been agreed and financed. ALCO should take the initiative to seek agreement on and financing for this post. OSBP planning and implementation should be coordinated with the West Africa Border Posts project (WA4 below).
- This corridor might become one of the pilots for the smart corridor programme described above (CN3). The smart corridor system would have five modules: (i) single electronic window, (ii) cargo tracking, (iii) commercial vehicle tracking (including vehicle weight), (iv) container tracking, and (v) high-visibility corridor efficiency monitoring. This system would speed up regional integration, make African businesses more competitive and increase trade and tourism among the five countries.

Challenges

- ALCO was originally established to manage a World Bank project related to fighting AIDS. It has now been strengthened to monitor the implementation of the facilitation programme. However, it has not been involved in the definition of the characteristics or the design of the road along the corridor or in the best ways to manage and operate the corridors. No attempt has been made for example, to involve the private sector through PPP. Presently the Abidjan-Lagos corridor programme is primarily a series of road improvements at national level with numerous financiers, under the leadership of the World Bank. The layout and the characteristics of the roads being upgraded or rehabilitated are not homogeneous and will not result in a modern regional road which would bypass key city centers. The projects have not, as yet, started in two of the five countries (Cote d'Ivoire and Nigeria). The road crosses five countries and requires four modern one stop border posts. The presently available financing is not sufficient to complete all four posts.
- Four one-stop border posts are being implemented as part the on-going Trade and Transport Facilitation project which is being carried out by the countries concerned and provides important resources for inter-country coordination. However, one of the four OSBPs involved (Noepe on the Ghana-Cote d'Ivoire border) has not yet been agreed and financed.

WA2: MODERNIZING AND UPGRADING THE DAKAR-BAMAKO-NIAMEY MULTIMODAL CORRIDOR**Components**

This project is designed to modernize the highest priority multi-modal ARTIN corridor in West Africa and increase the ease of access for people and goods across the border between Senegal, Mali, Burkina Faso and Niger. Trade between Mauritania and Mali would also be increased. The first phase of the project would concentrate on Dakar-Bamako and include the design and implementation of a smart corridor system for both road and rail transport. The modernization project would also create a one-stop border post at Kidira/Diboli on the Senegal-Mali border.

The road upgrading component includes the joint development of modern corridor highway standards between Senegal and Mali (with ECOWAS lead), and the construction of highway sections totalling 500 km to these higher standards. This project would complement on-going road rehabilitation and upgrading projects. The road upgrading and modernization activities are expected to be extended to the Bamako-Niamey part of the Dakar-Niamey Corridor in a later phase.

Approach

- A corridor management committee has been recently established by UEMOA for this corridor. In order to manage the project, this committee should be strengthened and a permanent secretariat established. This secretariat, in coordination with NPCA and/or the AfDB, should review best practices worldwide for modern corridor highway design and for smart corridor information systems. It should then review all the road improvement projects proposed or on-going along the corridor and, when necessary, recommend modifications in order to improve the overall characteristics, even if this might delay part of the implementation.
- The location of the OSBP should be agreed between the secretariat and the concerned States. The Secretariat should take the initiative to seek agreement on and financing for these posts. OSBP planning and implementation should be coordinated with the West Africa Border Posts project (WA4 below).
- This corridor might become one of the pilots for the smart corridor programme described above (CN3). Since this is a multi-modal corridor, the smart corridor system would have six modules: (i) single electronic window, (ii) cargo tracking, (iii) commercial vehicle tracking (including vehicle weight), (iv) container tracking, (v) freight train tracking and (vi) high-visibility corridor efficiency monitoring. This system would speed up regional integration, make African businesses more competitive and increase trade and tourism between Senegal and Mali. This system would be integrated with the railway management system, which is run by a concessionaire. This would contribute to making the railway much more competitive with road, leading to a more efficient use of the multi-modal freight system.

Challenges

- The recently established committee should rapidly be strengthened with the setting up of a permanent secretariat
- The concerned States and ECOWAS should agree on the best ways to finance this secretariat. Presently, the Dakar-Bamako-Niamey corridor programme is primarily a series of road improvements at national level with numerous financiers. The layout and the characteristics of the roads being upgraded or rehabilitated are not homogeneous and will not result in a modern regional road which would bypass key city centers. The road crosses four countries and requires four modern one stop border posts. The presently available financing is not sufficient to complete all four posts.

WA3: MODERNIZING AND UPGRADING THE ABIDJAN-OUAGADOUGOU/BAMAKO MULTIMODAL CORRIDOR

Components

This project is designed to modernize the second highest priority multi-modal ARTIN corridor in West Africa and increase the ease of access for people and goods across the border between Cote d'Ivoire, Burkina Faso and Mali. Trade between these countries would also be increased. This project has four components (a) modern corridor design, (b) road upgrading and modernization, (c) railway modernization and (d) smart corridor development combined. The road modernization project would also create one-stop border posts at Pogo/Zegoua and Keraoua/Niangoloko on the Cote d'Ivoire-Burkina Faso border.

The road upgrading component includes the joint development of modern corridor highway standards between Cote d'Ivoire, Burkina Faso and Mali (with ECOWAS lead), and the construction of highway sections totalling 500 km to these higher standards. This project would complement on-going road rehabilitation and upgrading projects. The activities of the Sitarail operation would also be further modernized.

Approach

- A corridor management committee exists for this corridor, but it should be strengthened and a permanent secretariat established. This secretariat, in coordination with NPCA and/or the AfDB, should review best practices worldwide for modern corridor highway design and for smart corridor information systems. It should then review all the road improvement projects proposed or on-going along the corridor and, when necessary, recommend modifications in order to improve the overall characteristics, even if this might delay part of the implementation.
- The location of the OSBP should be agreed between the secretariat and the concerned States. The Secretariat should take the initiative to seek agreement on and financing for these posts. OSBP planning and implementation should be coordinated with the West Africa Border Posts project (WA4 below).
- This corridor might become one of the pilots for the smart corridor programme described above (CN3). Since this is a multi-modal corridor, the smart corridor system would have six modules: (i) single electronic window, (ii) cargo tracking, (iii) commercial vehicle tracking (including vehicle weight), (iv) container tracking, (v) freight train tracking and (vi) high-visibility corridor efficiency monitoring. This system would speed up regional integration and make African businesses more competitive. This system would be integrated with the railway management system, which is run by Sitarail. This would contribute to making the railway much more competitive with road, leading to a more efficient use of the multi-modal freight system.

Challenges

- The corridor committee should rapidly be strengthened with the setting up of a permanent secretariat
- The concerned States and ECOWAS should agree on the best ways to finance this secretariat. Like the Dakar-Bamako-Nyamey corridor, this programme is primarily a series of road improvements at national level with numerous financiers. The layout and the characteristics of the roads being upgraded or rehabilitated are not homogeneous and will not result in a modern regional road which would bypass key city centers.

WA4: MODERNIZING AND UPGRADING THE PRAIA-DAKAR-ABIDJAN MULTIMODAL CORRIDOR**Components**

This project is designed to improve marine transport and the connection between island and mainland countries by creating a new maritime service between regional ports and facilitating this with a modern information system that links the maritime service with ports and road corridor in the Dakar-Abidjan Corridor. It would be a pilot project for this type of improvement in other regions of Africa. It will also build on the West Africa Hub Port analysis being undertaken in programme 8 below, and the construction of missing links for TAH 7 in the short-medium term.

There are two project components in the PAP: (a) the design and implementation of a smart corridor system and (b) design and implementation of a new marine service based in the Port of Praia. The success of these components could lead to a port expansion programme in Praia and other ports along the Dakar-Abidjan corridor in the medium term, particularly if Praia developed regional hub port functions. This system would speed up regional integration, make African businesses more competitive and increase trade and tourism between the Cape Verde Islands and seven West African countries (Senegal, The Gambia, Guinea, Guinea Bissau, Sierra Leone, Liberia and Cote d'Ivoire). If successful, the service could also expand to other ports in West Africa.

This project is intended to utilize PPP financing options for establishing the marine service and the related port terminals. Both RoRo and container services are anticipated.

Approach

- A corridor management committee should be established by ECOWAS for this corridor. In order to manage the project, The Committee should involve all the concerned coastal countries. It should focus on the studies of the various ways to design and implement maritime services. This project will be coordinated with the regional port capacity master plan (WA5).
- It should also review all the road improvement projects proposed or on-going along the corridor and, when necessary, recommend modifications in order to improve the overall characteristics, even if this might delay part of the implementation.

The smart corridor system would have six modules: (i) single electronic window, (ii) cargo tracking, (iv) container tracking, (v) marine service tracking and (vi) high-visibility corridor efficiency monitoring.

Challenges

- One key challenge will be to rapidly establish a management committee for this corridor which can coordinate the modernization effort.
- Another key challenge is to design and implement the marine service in such a way as to make it financially viable and to link it to the development of the port of Praia.

WA5: WEST AFRICA HUB PORT AND RAIL PROGRAMME

Components

This project is designed to help West Africa deal with the major challenge of developing sufficient port capacity to handle future demand from both domestic sources and landlocked countries

This project has two components: (a) a regional hub port and rail linkage master plan and (b) port expansion. These would be carried out in parallel.

Approach

Total port traffic in Western Africa will jump from 52 million tons in 2009 to 144 million tons in 2020. Transit traffic from landlocked countries will jump from 6.4 million tons to more than 11 million tons in 2020 and is expected to increase more than six fold over the next 30 years. This will create major infrastructure capacity problems

ECOWAS together with the regional port association (PMAWCA) and the private sector, including shipping lines should launch a Master Plan study to:

- Identify and evaluate all the on-going and proposed port projects;
- Identify best location to expand or build new port capacities in the region from a technical point of view, considering the changes in global shipping;
- Assess present and future port traffics from both coastal and landlocked countries;
- Identify additional port capacity requirements in the short, medium and long term;
- Define best alternatives for port capacity extension from technical and economic points of view;
- Assess the best land transport system for the landlocked countries for each alternative.

The master plan would start as soon as possible, but it will require the cooperation of the countries involved, and preferably a partnership approach, which would minimize inter-country competition for port location. The private sector must also be involved in order to take into account shipping line concerns with hub port characteristics and locations.

The rail linkage part of the master plan would build on the previous rail master planning related to the Africa Rail project in West Africa. However, the critical consideration is to link the rail planning to the traffic flows expected from future new regional hub ports as well as existing ports. ECOWAS together with Africa Rail should review the rail master plan, taking into consideration the result of the ports master plan and the medium and long term traffic forecast from the landlocked countries of the region.

ECOWAS should then analyze in detail each alternative, highlight the ones which serve best the interest of the landlocked countries, and propose compensation mechanisms to encourage the relevant coastal countries to accept the proposed solutions. The key conclusions and recommendations of the studies should be presented and discussed with all the stakeholders through regional workshops and seminars to reach consensus

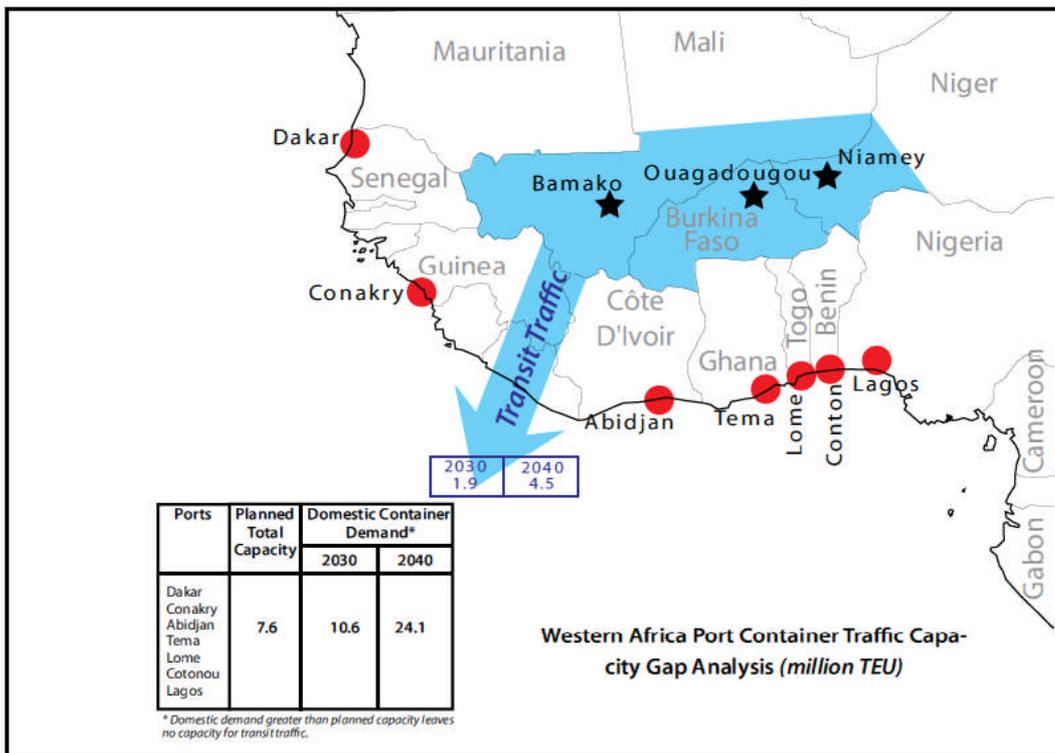
Once a consensus on the best alternatives is reached, ECOWAS, together with the member states should identify promoters willing to finalize the preparation of these port and rail projects and assist with the search for financing. ECOWAS should aim to ensure that the required port capacities in the region are available on time to satisfy the expected transport demand, avoiding port bottlenecks that might jeopardize the expected economic growth of their member states, especially of the landlocked countries.

The port expansion component initially involves implementing the existing port expansion plans as expeditiously as possible (while taking into account both port access to road and rail corridor infrastructure and the needs of landlocked country traffic). In West Africa this would include the Ile Boulay port expansion near Abidjan and the development of Niger River ports north of Lagos as major container ports. Other phases of port expansion will be needed to meet demand in the medium to long term along with the development of new ports.

Challenges

- Port projects are usually prepared and implemented at national level. One challenge will be to conduct the planning exercise at regional level with all the stakeholders to get the best regional approach, considering both national and regional priorities. Landlocked countries should ensure that enough port capacity will be available when and where needed at acceptable cost. For security they would like to have at least two alternative routes for access to the sea.
- Land transport from the sea to the landlocked countries is directly linked to the location of additional port capacity improvement. Development of large capacities in one or two locations might justify the construction of new, modern land transport infrastructures such as new rail lines or modern highways, resulting in substantially reduced land transport costs. However, the selection of one or more ports as hubs for the region might prove difficult as ports are major sources of revenues for the states.
- Another key issue is that domestic demand for port capacity (especially for containers) will be growing and in most cases it will take up port capacity and not leave any extra capacity to meet the transit traffic demand. ECOWAS should encourage international agreements to give an appropriate priority to transit traffic to the landlocked countries. This challenge is illustrated in Figure 22 for West Africa.

Figure 22: Future Demand and Planned Capacity for Container Terminals in West Africa



WA6: WEST AFRICA AIR TRANSPORT

Components

This project aims at increasing the air transport service levels in West Africa, which are currently limited by the lack of a regional air hub. Introducing regional air hub service is a major challenge as it is linked to policy issues including the non-compliance of certain countries in the region with the Yamoussoukro Decision, and the enabling environment for PPPs.

This programme has two components (a) creation of a regional process to establish one or more regional air hubs and (b) airport expansion. The first component has both technical and political dimensions and it would be best carried out as a partnership between countries for determining the location (with possible compensation for countries not receiving a hub). The private sector must also be closely involved, especially airlines which could be interested in a hub airport and service concession.

The second component will require expansion of most ARTIN airports in the region over the PIDA period with Ghana, Nigeria and Senegal having the highest priority for PAP projects.

Approach

From 2001 to 2004, ECOWAS plus Mauritania (together with ECCAS and Soa Tome & Principe), with funding from the World Bank, put into place a MOU concerning the Coordination and Monitoring Committee and a Committee for the Harmonization of Economic Regulations. This improved regional airlines operations.

The activities undertaken under the MOU led in particular to:

- Drafting of studies on air transport in Central Africa;
- The adoption of the Lome Action Plan in two aspects: Economic regulation and technical regulations;
- Adoption and implementation of three COSCAP projects currently underway: ECCAS plus Sao Tome and Principe, the Banjul Accord Group;
- Monitoring and assessment of the implementation of the Yamoussoukro Convention in the Member States.

Since the end of the World Bank involvement at the end of 2004, the implementation of the MOU is faced with financial problems, which threaten to undermine cooperation between the 23 Member States on air transport;

The recommended way forward is:

- The validation of existing texts on economic regulations and competition rules, air transport licenses, air carrier liability, market access conditions and settlement of disputes
- The harmonization of technical regulations such as those pertaining to air crew licenses, technical operations and aircraft airworthiness, licensing of aerodromes
- The creation of a regional Safety Oversight Agency and for the validation of existing texts on the creation of a databank
- The creation of a regional maintenance center and
- The upgrading of airports selected as hub(s)

Challenges

- No national airline in West Africa has yet reached the point where it would become the obvious regional airline around which regional and international air transport could be designed. Following the collapse of Air Afrique, many States in the region have tried to develop their own national airlines with the aim to cover not only the national demand but also regional needs. In order to protect these initiatives, often from private operators, ECOWAS member states are reluctant to

give traffic rights to potential competitors from the region or to international carriers from other African regions or from Europe.

- The key challenge is to organize efficient and competitive air transport services at regional, continental and international level by establishing agreements between regional and world base air lines that ensure the best level of services in term of flight frequencies and tariffs. The regional airline (s) should initially be responsible to work in close cooperation with the world based airlines to provide complementary services from hub airport to the other airports of the region, the world based airlines operating more flights from these hubs. It can be expected that these regional airlines could eventually also provide international connections from these dedicated hubs in competition with the world based airlines.
- In order to ensure quality of services and good prices, regional airlines should be authorized to compete among themselves and be given traffic rights whenever they request them. Such policy could lead to the regrouping of some national airlines into regional airlines, and the disappearance of others. The project should result in one or two airports being selected as hubs, having direct flights with high frequency to the rest of the world, the other airports being served by regional airlines operating in close harmony with the world based airlines. The capacity and efficiency of the airports selected as hubs should be improved in order to meet demand and to facilitate airline connections.

CA1: POINTE NOIRE –BRAZZAVILLE/KINSHASA-BANGUI-N'DJAMENA ROAD/RIVER CORRIDOR DEVELOPMENT

Components

This is a multi-modal programme which aims at resuscitating the role of river transport in the Congo-Ubangi River Basin, (as it is a low cost mode of transport) and linking it to road transport in a corridor context.

The project is designed to improve river transport infrastructure and services, including ports and navigation aids.

The project would improve the connection river service, river ports and the clients of multimodal road/river services by facilitating multimodal transport with a modern information system that links the river service with ports and the road corridors in the basin. It would be a pilot project for this type of improvement in other regions of Africa.

There are four project components in the PAP: (a) the design and implementation of a smart corridor system, (b) design and implementation of a new river service, (c) modernization of four river ports and (d) Construction of Palambo Dam which would regulate the river flow for transport uses

Approach

- The project should be managed by ECCAs and the member states. An investment programme is being finalized, it should be the basis to find the required financing. In relation to the border posts, the concerned states should sign memorandum of understanding with ECCAS to delegate the implementation of these projects to the REC. The management model for these OSBPs, prepared by the UEMOA and actually implemented in Cinkasse at the Togo/Burkina Faso border, should be used for all the border posts in the region.
- Cooperative agreements should be reached between neighbouring states, including specific clauses about exchange of information, creation of OSBPs, and implementation of a corridor information system for freight transport. Also, specific inter-ministerial agreements should be established for each state among ministries and police responsible for border activities.

Challenges

- The challenges to improve and develop a river transport programme are the difficulties to implement a good dredging and signalling systems as these services have to be financed by the government budgets and often involve two states, the river being used as borders.
- The challenges to an OSBP programme to improve border crossings are similar to those encountered in other regions. Sometimes it may be difficult to reach agreement on the location of the single border post. For optimal efficiency, the customs and immigration authorities of both countries will need to reach agreement on the best ways to manage freight and passenger traffic across borders. Also, there needs to be a full electronic exchange of cargo customs information across the border. Project implementation at the national level may require more than one financing agreement.

CA2: MODERNIZING AND UPGRADING THE DOUALA-N'DJAMENA/BANGUI MULTIMODAL CORRIDOR**Components**

This project is designed to improve the highest priority multi-modal ARTIN corridor in Central Africa and increase the ease of access for people and goods across the borders between Cameroon, Chad and the Central African Republic. Trade between Cameroon and the other two countries would also be increased. This project would design and implement a smart corridor system for both road and rail transport. The modernization project would also create one-stop border posts at Kousseri, Garoua Boulai (Cameroon-Chad border) and Bekay Bedayo (Chad-CAR border).

The road upgrading component includes the joint development of modern corridor highway standards between Cameroon, Chad and CAR (with ECCAS lead), and the construction of highway sections totalling 533 km to these higher standards. This project would complement on-going road rehabilitation and upgrading projects. The road upgrading and modernization activities are expected to be extended to the rest of the N;Djamena-Bangui corridor in a later phase.

Approach

- ECCAS should rapidly establish, with the three concerned states, a corridor authority to be responsible to implement this project. This Corridor authority should monitor the on-going World Bank project (under the model of ALCO in Western Africa) secretariat.
- then review all the road improvement projects proposed or on-going along the corridor and, when necessary, recommend modifications in order to improve the overall characteristics, even if this might delay part of the implementation.
- The location of the OSBP should be agreed between the secretariat and the concerned States The Secretariat should take the initiative to seek agreement on and financing for these posts. OSBP planning and implementation should be coordinated with the West Africa Border Posts project (WA4 below).
- In coordination with NPCA and/or the AfDB, ECCAS should review best practices worldwide for modern corridor highway design and for smart corridor information systems. (This corridor might become one of the pilots for the smart corridor programme described above (CN3) Since this is a multi-modal corridor, the smart corridor system would have six modules: (i) single electronic window, (ii) cargo tracking, (iii) commercial vehicle tracking (including vehicle weight), (iv) container tracking, (v) freight train tracking and (vi) high-visibility corridor efficiency monitoring. This system would speed up regional integration, make African businesses more competitive and increase trade and tourism. This system would be integrated with the railway management system used by the concessionaire for CamRail, which would contribute to making the railway much more competitive with road, leading to a more efficient use of the multi-modal freight system (although it only reaches 1/2 of the distance to the landlocked countries..

Challenges

- ECCAS should help establish a corridor authority with a secretariat.
- The concerned States and ECCAS should agree on the best ways to finance this secretariat.
- The road crosses three countries and requires modern one stop border posts. The presently available financing is not sufficient to complete all posts.

CA3: IMPROVING CENTRAL AFRICA INTER-CAPITAL CONNECTIVITY

Components

This project is specially designed for Central Africa where one of the key issues for regional integration is the missing links in several inter-capital connectors. There is a regional priority to connect all capitals by paved roads, and the region is well on its way due to a number of projects carried out in recent years on these corridors. Some of the corridors are covered by the TAH completion programme, but four corridors have missing links not on TAHs. These are:

- CD 3 Yaounde-Bata (variation via Douala and Kribi)
- CD 5 Libreville-Brazzaville, and
- CD12 Lobito-Lubumbashi

A total of 1,200 km of missing links have been identified on these three corridors. This includes Kribi-Campo (70 km) in Cameroon, Doussala-Dolissie (236 km) in Gabon and Huambo-Kuito-Luena-Dilolo (855 km) in Angola. These would all be completed by 2020 under this programme.

Approach

- ECCAS should up-date the studies related to these capital connections, identify all the missing links and ranked them by applying the PIDA multi-criteria analysis.
- ECCAS should then identify a first list of missing links along these roads. AUC/NPCA and the relevant countries would search for financing of these projects from donors, and the relevant state budgets.
- Once the financing is identified, the relevant States would implement the projects

Challenges

- There is a need to finalize the studies of these inter-capital links, which will require a financing source. The concerned States and ECCAS will have to agree on the best ways to finance them.

CA4: CENTRAL AFRICA AIR TRANSPORT

Components

This project aims at increasing the air transport service levels in Central Africa, which are currently limited by the lack of a regional air hub. As in West Africa, introducing regional air hub service is a major challenge as it is linked to policy issues including the non-compliance of certain countries in the region with the Yamoussoukro Decision, and the enabling environment for PPPs.

This programme has two components (a) creation of a regional process to establish one or more regional air hubs and (b) airport expansion. The first component has both technical and political dimensions and it would be best carried out as a partnership between countries for determining the location (with possible compensation for countries not receiving a hub). The private sector must also be closely involved, especially airlines which could be interested in a hub airport and service concession.

The second component will require expansion of most ARTIN airports in the region over the PIDA period with Congo, DR Congo and Cameroon having the highest priority for PAP projects. (a Kinshasa airport project is in the PDCT-AC priority project list).

Approach

From 2001 to 2004, ECOWAS plus Mauritania (together with ECCAS and Sao Tome & Principe), with funding from the World Bank, put into place a MOU concerning the Coordination and Monitoring Committee and a Committee for the Harmonization of Economic Regulations. This improved regional airlines operations.

The activities undertaken under the MOU led in particular to:

- Drafting of studies on air transport in Central Africa;
- The adoption of the Lome Action Plan in two aspects: Economic regulation and technical regulations;
- Adoption and implementation of three COSCAP projects currently underway: ECCAS plus Sao Tome and Principe, the Banjul Accord Group;
- Monitoring and assessment of the implementation of the Yamoussoukro Convention in the Member States.

Since the end of the World Bank involvement at the end of 2004, the implementation of the MOU is faced with financial problems, which threaten to undermine cooperation between the 23 Member States on air transport;

The recommended way forward is:

- The validation of existing texts on economic regulations and competition rules, air transport licenses, air carrier liability, market access conditions and settlement of disputes
- The harmonization of technical regulations such as those pertaining to air crew licenses, technical operations and aircraft airworthiness, licensing of aerodromes
- The creation of a regional Safety Oversight Agency and for the validation of existing texts on the creation of a databank
- The creation of a regional maintenance center and
- The upgrading of airports selected as hub(s)

Challenges

- No national airline in Central Africa has yet reached the point where it would become the obvious regional airline around which regional and international air transport could be designed. Following the collapse of Air Afrique, many States in the region have tried to develop their own national airlines with the aim to cover not only the national demand but also regional needs. In order to

protect these initiatives, often from private operators, ECCAS member states are reluctant to give traffic rights to potential competitors from the region or to international carriers from other African regions or from Europe.

- The key challenge is to organize efficient and competitive air transport services at regional, continental and international level by establishing agreements between regional and world base air lines that ensure the best level of services in term of flight frequencies and tariffs. The regional airline (s) should initially be responsible to work in close cooperation with the world based airlines to provide complementary services from hub airport to the other airports of the region, the world based airlines operating more flights from these hubs. It can be expected that these regional airlines could eventually also provide international connections from these dedicated hubs in competition with the world based airlines.
- In order to ensure quality of services and good prices, regional airlines should be authorized to compete among themselves and be given traffic rights whenever they request them. Such policy could lead to the regrouping of some national airlines into regional airlines, and the disappearance of others. The project should result in one or two airports being selected as hubs, having direct flights with high frequency to the rest of the world, the other airports being served by regional airlines operating in close harmony with the world based airlines. The capacity and efficiency of the airports selected as hubs should be improved in order to meet demand and to facilitate airline connections.

CA5: CENTRAL AFRICA HUB PORT AND RAIL PROGRAMME

Components

This programme is similar to the West Africa Hub Port and Rail Programme (programme 8 above) although it is faced with a lesser challenge in developing sufficient port capacity to handle future demand from both domestic sources and landlocked countries.

This project has two components: (a) a regional hub port and rail linkage master plan and (b) port expansion. These would be carried out in parallel. The master plan would start as soon as possible, but it will require the cooperation of the countries involved, and preferably a partnership approach which would minimize inter-country competition for port location. The private sector must also be involved in order to take into account shipping line concerns with hub port characteristics and locations.

Approach

Various ports studies are on-going or projected in the Central Africa region. These studies which are done at country level, would greatly benefit if they were conducted at regional level, involving all the interested parties, in particular the landlocked countries.

ECCAS together with the regional port association (PMAWCA) and the private sector, including shipping lines should launch a study to:

- Identify and evaluate all the on-going and proposed port projects;
- Identify best location to expand or build new port capacities in the region from a technical point of view, considering the changes in global shipping;
- Assess present and future port traffics from both coastal and landlocked countries;
- Identify additional port capacity requirements in the short, medium and long term;
- Define best alternatives for port capacity extension from technical and economic points of view;
- Assess the best land transport system for the landlocked countries for each alternative.

ECCAS should then analyze in detail each alternative, highlight the ones which serve best the interest of the landlocked countries, and propose compensation mechanisms to encourage the relevant coastal countries to accept the proposed solutions. The key conclusions and recommendations of the studies should be presented and discussed with all the stakeholders through regional workshops and seminars to reach consensus.

Once a consensus on the best alternatives is reached, ECCAS, together with the member states should identify promoters willing to finalize the preparation of these port and rail projects and assist with the search for financing. ECCAS should aim to ensure that the required port capacities in the region are available on time to satisfy the expected transport demand, avoiding port bottlenecks that might jeopardize the expected economic growth of their member states, especially of the landlocked countries.

The rail linkage part of the master plan would be the first of its kind in Central Africa. The critical consideration is still to link the rail planning to the traffic flows expected from future new regional hub ports as well as existing ports.

The port expansion component initially involves implementing the existing port expansion plans as expeditiously as possible (while taking into account both port access to road and rail corridor infrastructure and the needs of landlocked country traffic). In Central Africa this would include the expansion of Pointe Noire and the development of Kribi Port (with a planned capacity of 800,000 TEUs).

Challenges

- The current planned capacity for container handling in the ports of Douala, Kribi, Matadi and Pointe Noire is 2.0 million TEU, whereas the domestic demand in the coastal countries will exceed 3.5 million TEUs by 2030 according to PIDA forecasts⁷. To this demand must be added the demand from landlocked countries, which adds another 0.3 million TEUs by 2030 and 0.6 million TEUs by 2040. This means that major port expansion will be required and probably a new port (or two) in addition to Kribi to handle the demand. This capacity gap is made into a more difficult problem when the need to accommodate large-sized Post-Panamax container vessels which are now being put in service and which will proliferate with the deepening and widening of the Panama Canal. Deep-water hub ports will be needed and only Kribi would qualify.

⁷ These forecasts are « stretch forecasts » based on 6.2 % average GDP growth. However, even a more typical 4% GDP growth rate would lead to the same level of demand in 2040 instead of 2030.

CA6: BRAZZAVILLE-KINSHASA ROAD/RAIL BRIDGE AND RAIL TO ILEBO**Components**

This is a regional project linking the Republic of the Congo with the Democratic Republic of the Congo in the Pointe Noire-Lubumbashi corridor which also establishes a railway link between Central and Southern Africa across the DR Congo. This railway would contribute to regional integration within Central Africa and between the two regions and provide DR Congo with access to a deeper draft port at Pointe Noire. This project has Presidential and NEPAD support.

This project has five components: (a) the construction of a combined road and rail bridge over the Congo River and (b) construction and implementation of a one-stop border post linked to the bridge (with inter-ministerial and cross-border coordination), (c) the final design of the railway (1,015 km) connecting Kinshasa and Brazzaville to the existing rail line to Lubumbashi from Ilebo, (d) the construction of the railway and (e) creation of a modern railway operation with PPP.

In a following phase, this railway would be integrated into a smart corridor system.

Approach

- There is currently a feasibility study and design document being prepared for this project under ECCAS supervision and AfDB/AFD funding.
- ECCAS should continue to play a leading role in developing the final design for the bridge, working with the AfDB and the Joint Technical Monitoring Committee formed for the project. It should also follow-up in organizing the bid documents for construction and arranging for potential PPP participation in managing the bridge as a toll facility with private sector funding and maintenance and operations management. Special efforts will be needed to ensure that the legal basis is in place to encourage PPP participation. ECCAS should also lead in the establishment of the one-stop border post and related coordination between countries, and the procurement of contractors for that component, which should be a separate contract from the bridge construction.
- A financing plan for the bridge component of the project should be developed under ECCAS leadership, which should explore potential sources such as regional development bonds as well as donor and domestic budget support.
- Once a decision to build the bridge has been made, a supervision contract and a construction contract should be let and a special unit formed by ECCAS to manage the project. This will require technical assistance to ensure sufficient expertise is available.
- The railway project will be primarily the responsibility of the DR Congo government, which has already formed a Railway Technical Committee (CTF) to oversee the pre-feasibility study currently being undertaken with AfDB/ADF funding. ECCAS should continue to play a role in linking the railway and the bridge projects.
- The implementation of the railway component of the project is expected to take a PPP structure with investment, operations and management provided from the private sector to complement DR Congo investment in construction. The structure of the agreement should be similar to that for the Rift Valley Railway in Kenya or a similar successful PPP rail project of this scale. This will require a special government unit to manage the process.
- A financing plan should be developed for the railway, which would explore potential sources such as regional development bonds as well as donor, private sector and domestic budget support.
- The PPP plans for both components should be supported by legal and institutional arrangements to form an enabling environment that will attract active interest by the private sector. ECCAS and NPCA should support the government in creating an appropriate environment.

Challenges

- The bridge component is a very large project by itself with multiple aspects and will require special expertise to manage and expert consultants to supervise the construction. ECCAS and both governments should ensure that this is in place prior to letting the contracts

- The railway component is also a very large project with multiple aspects and will require special expertise to manage and expert consultants. This will require an effective management unit in the government of DR Congo with appropriate authority, which may be difficult to establish.
- Special expertise and institutional development will be needed to ensure that an adequate regulatory system is in place to regulate the new railway operation.
- Also special expertise will be needed to structure PPP agreements for both the bridge and the railway components and the briage agreement will need the support of the governments of both countries. This may also be difficult to achieve, despite the fact that this is a Presidential project.

EA1: RENEWING THE DJIBOUTI ADDIS ABABA CORRIDOR

Components

This project is designed to resuscitate the rail system in a high priority multi-modal ARTIN corridor in Eastern Africa and increase the flow of goods across the border between Djibouti and Ethiopia. This project would design and implement a smart corridor system for both road and rail transport. The rail modernization project would create a functioning railway system on a new alignment to replace the practically defunct existing rail system.

Since this is a multi-modal corridor, the smart corridor system would have six modules: (i) single electronic window, (ii) cargo tracking, (iii) commercial vehicle tracking (including vehicle weight), (iv) container tracking, (v) freight train tracking and (vi) high-visibility corridor efficiency monitoring. This system would speed up regional integration (particularly if it is extended to South Sudan), make Ethiopian businesses more competitive and increase trade. This system would be integrated with the new railway management system, which would contribute to making the railway much more competitive with road, leading to a more efficient use of the multi-modal freight system.

The rail construction component includes the joint development of modern rail corridor standards between Djibouti and Ethiopia, and the construction of railway sections totalling 710 km to these higher standards (it could also potentially use standard gauge rail).

Approach

- The implementation of the railway project is already under way with financing agreements in place. The new Ethiopian Railway Corporation will be responsible for contracting and supervision of design and construction, with appropriate technical assistance. This will improve on the previous arrangements between Djibouti and Ethiopia for rail services. The introduction of a PPP arrangement for rail operations and management is also anticipated.
- IGAD and EAC should take the lead in coordinating the international agreements and implementation plan for the OSBPs. To speed up the implementation of these border posts, the concerned states should sign memorandums of understanding with the relevant RECs to delegate the implementation of these projects. The management model for these OSBPs should draw on previous successful implementations of OSBPs in East Africa. Cooperative agreements should be reached between neighbouring states, including specific clauses about exchange of information, creation of OSBPs, and implementation of a corridor information system for freight transport. Also, specific inter-ministerial agreements should be established for each state among ministries and police responsible for border activities.

Challenges

- The challenges to construct a new rail lines are enormous, the largest ones being to get the required financing
- The challenges to an OSBP programme to improve border crossings are similar to those encountered in other regions. Sometimes it may be difficult to reach agreement on the location of the single border post. For optimal efficiency, the customs and immigration authorities of all three countries will need to reach agreement on the best ways to manage freight and passenger traffic across borders. Also, there needs to be a full electronic exchange of cargo customs information across the border. Project implementation at the national level may require more than one financing agreement. The implementation of PPP arrangements will require improvements in the enabling environment for PPP in Ethiopia.

EA2: NORTHERN CORRIDOR MODERNIZATION

Components

This project is designed to modernize the highest priority multi-modal ARTIN corridor in East Africa and increase the ease of access for people and goods across the borders between Kenya, Uganda, Rwanda, Burundi and DR Congo. It has three major components (a) corridor modernization, including modern design standards, smart corridor technology, and OSBPs, (b) road modernization and upgrading, and (c) railway modernization. Trade between all these countries would also be increased. This project would design and implement a smart corridor system for both road and rail transport. The modernization project would also facilitate the creation of 4 one-stop border posts at the following locations:⁸

- Cyangugu: OSBP Project - Rwanda/DRC
- Malaba: OSBP Project - Kenya/Uganda
- Katuna/Gatuna: OSBP Project - Uganda/Rwanda
- Mpondwe: OSBP Project - Uganda/DRC

The road modernization component includes the joint development of modern corridor highway standards between all five countries (with EAC/Tripartite lead), and the construction of key highway sections totalling 130 km to these higher standards. This project also includes a road upgrading component which would also total 130 km in the corridor (out of 1,900 km total). The road upgrading and modernization activities are expected to be extended to the Goma-Kisangani and Nairobi-Moyali parts of the Corridor in a later phase.

Approach

- Considering the numerous sections of the corridor to be either rehabilitated or upgraded, the consultant proposes to take this corridor as a pilot project and to try, as far as possible, to call on the private sector to conduct a large part of these civil works through PPP. This would require the introduction of sections of toll roads along the corridor.
- The EAC, with the assistance of the UAC/NPCA, should fix the norms/standards and characteristics of the road infrastructure along the entire corridor. Once these norms, standards and characteristics are agreed, each national road administration should review the existing condition of the road and propose a set of up-grading projects. These up-grading projects, together with the already proposed rehabilitation and up-grading projects should, after review by the EAC, form the new Northern corridor programme.
- At the same time, the EAC, through regional meetings with the member states, should establish the section of roads where the member states would accept the signing of PPP with private companies and the setting up of tolls. The EAC should also conduct studies to assess the level of experience and preparedness of the member states to attract PPP and make recommendations to establish an enabling environment in each state. Once all the activities above are completed, EAC should organize meetings/working sessions with private companies that might be potentially interested.
- Since this is a multi-modal corridor, the smart corridor system would have six modules: (i) single electronic window, (ii) cargo tracking, (iii) commercial vehicle tracking (including vehicle weight), (iv) container tracking, (v) freight train tracking and (vi) high-visibility corridor efficiency monitoring. This system would speed up regional integration, make African businesses more competitive and increase trade and tourism among all five countries. This system would be integrated with the railway management system which is run by the concessionaire for Rift Valley Railway (building on the information systems investments already planned by RVR). This would contribute to making the railway much more competitive with road, leading to a more efficient use of the multi-modal freight system.

⁸ Note that when a customs union is created the customs functions of the border posts would be eliminated.

Challenges

- The main challenge would be that the five countries crossed by the corridor, accept that the Northern corridor be considered as a pilot corridor for introduction of PPP. Upgrading sections through PPP would require the setting up of toll systems that might prove difficult to be accepted. The five road administrations with the assistance of the EAC and of the AUC would need to review the full lay out of the corridor and accept to apply the same norms, standards and characteristics along the corridor. These standards should result in a homogeneous road with no crossing of cities, grade separated crossings over railways or main roads, similar signalling systems, etc.
- Once the new layout of the corridor is finalized, the second challenge will be to find the required financing in particular from private companies that should be motivated by the projects. A key risk could be that these private companies are reluctant to enter into PPP for this type of project, or that countries fail to establish the policy environment in which public-private partnerships can thrive.

EA3: CENTRAL CORRIDOR MODERNIZATION

Components

This project is designed to modernize the third priority ARTIN corridor in East Africa and increase the ease of access for people and goods across the borders between Tanzania, Uganda, Rwanda, Burundi and DR Congo. Trade between all these countries would also be increased. This project would design and implement a smart corridor system for both road and rail transport. The modernization project would also facilitate the creation of 7 one-stop border posts at the following locations:⁹

- Rusumo: OSBP Project – Tanzania/Rwanda
- Kabanga/Kobero: OSBP Project - Tanzania/Uganda

The road modernization component includes the joint development of modern corridor highway standards between all five countries (with EAC/Tripartite lead), and the construction of key highway sections totalling 176 km to these higher standards. This project also includes a road upgrading component which would also total 330 km in the corridor (out of 1,600 km total).

The project includes the modernization of the ports on lake Tanganyika and the modernization of the Tanzanian Railways.

Approach

- Considering the numerous sections of the corridor to be either rehabilitated or upgraded, the consultant proposes to take this corridor as a pilot project and to try, as far as possible, to call on the private sector to conduct a large part of these civil works through PPP. This would require the introduction of sections of toll roads along the corridor.
- The EAC, with the assistance of the UAC/NPCA, should fix the norms/standards and characteristics of the road infrastructure along the entire corridor. Once these norms, standards and characteristics are agreed, each national road administration should review the existing condition of the road and propose a set of up-grading projects. These up-grading projects, together with the already proposed rehabilitation and up-grading projects should, after review by the EAC, form the new Central corridor programme.
- At the same time, the EAC, through regional meetings with the member states, should establish the section of roads where the member states would accept the signing of PPP with private companies and the setting up of tolls. The EAC should also conduct studies to assess the level of experience and preparedness of the member states to attract PPP and make recommendations to establish an enabling environment in each state. Once all the activities above are completed, EAC should organize meetings/working sessions with private companies that might be potentially interested.
- Although this is a multi-modal corridor, the smart corridor system would focus on five road-related modules and implement the rail module later: (i) single electronic window, (ii) cargo tracking, (iii) commercial vehicle tracking (including vehicle weight), (iv) container tracking, and (v) high-visibility corridor efficiency monitoring. This system would speed up regional integration, make African businesses more competitive and increase trade and tourism among all five countries.

Challenges

- The main challenge would be that the five countries crossed by the corridor, accept that the Northern corridor be considered as a pilot corridor for introduction of PPP. Upgrading sections through PPP would require the setting up of toll systems that might prove difficult to be accepted. The five road administrations with the assistance of the EAC and of the AUC would need to review the full layout of the corridor and accept to apply the same norms, standards and characteristics along the corridor. These standards should result in a homogeneous road with no crossing of cities, grade separated crossings over railways or main roads, similar signalling systems, etc.

⁹ Note that when a customs union is created the customs functions of the border posts would be eliminated.

- Once the new layout of the corridor is finalized, the second challenge will be to find the required financing in particular from private companies that should be motivated by the projects. A key risk could be that these private companies are reluctant to enter into PPP for this type of project, or that countries fail to establish the policy environment in which public-private partnerships can thrive.

EA 4: LAMU GATEWAY DEVELOPMENT AND EAST AFRICAN HUB PORT, RAIL

Components

This project is designed to help Eastern Africa deal with the major challenge of developing sufficient port capacity to handle future demand from both domestic sources and landlocked countries. This project includes the first phase in the creation of a new multi-modal ARTIN gateway deep-water port and corridor from Lamu to Nairobi, Kampala and Juba. This project will meet future demands for the transport of people and goods serving the Northern Corridor Countries and Ethiopia and increase regional integration and trade.

The project has five major components (a) preparation of a Lamu Corridor Master Plan, (b) port construction,

This project has six components: (a) a regional hub port and rail linkage master plan (including Lamu Corridor), (b) port expansion, (c) Lamu port construction, (d) road construction, (e) rail construction, (f) smart corridor and one-stop border post design and implementation.

Approach

Total port traffic in Eastern Africa will jump from 29 million tons in 2009 (Djibouti, Mombasa and Dar es Salam) to 75 million tons in 2020 and 228 million tons in 2040. Transit traffic from landlocked countries will jump from 12 million tons to more than 41 million tons in 2020 and is expected to increase more than tenfold over the next 30 years. This will create major infrastructure capacity problems. On-going expansion projects in Dar es Salam and Mombasa will provide added container capacity up to 2020, but this additional capacity will not be sufficient and additional port capacity will be required. One major contributor to future port capacity will be the development of Lamu, for which studies are on-going.

COMESA/EAC and IGAD, together with the port association (PAMESA) and Private Sector should launch a study to:

- Identify and evaluate all the on-going and proposed port projects, in particular the extension projects at Mombasa and Dar es Salaam and the Lamu Port project.
- Identify the best locations to expand or build new port capacity in the region from a technical point of view, considering the changes in global shipping.
- Assess present and future port traffic from both coastal and landlocked countries.
- Identify additional port capacity requirements in the short, medium and long term.
- Define the best alternatives for port capacity extension from technical, economic and environmental point of view
- Assess the best land transport system for the landlocked countries for Lamu and other alternatives.

The master plan would start as soon as possible, but it will require the cooperation of the countries involved, and preferably a partnership approach which would minimize inter-country competition for port location. The private sector must also be involved in order to take into account shipping line concerns with hub port characteristics and locations.

For Lamu Gateway Development:

- The Government of Kenya has been developing plans and designs for the this gateway corridor and has recently completed design for the initial port construction and development of the Lamu area, with associated plans for an oil pipeline and road and rail connections to South Sudan, Ethiopia and Uganda as well as Nairobi. Construction of the first three berths at Lamu has already begun. There is a Lamu planning unit located in the Ministry of Transport and a Corridor SDI scoping study has been carried out.
- The next step is for the Lamu Gateway Corridor Master Plan to be completed and accepted by the government and the key stakeholders. This should be done in coordination with the regional port and rail master plan (See project EA4 above) and with EAC and Tripartite coordination as well as

consultation with the member states. The planners should review the PIDA traffic forecasts and prepare alternative solutions depending on these forecasts and on the future location of development in the region.

- Next a financing plan should be created by the government. The government has been attempting to locate various types of financing with a PPP emphasis and also discussing proposed plans with Sudan and Ethiopia. Regional development bonds are also an available means of financing, if they can be tied to a revenue source.
- For the rail components of this project, EAC and SARA should play a leading role in developing modern rail services in the region and in deciding on the rail gauge to be used (Standard gauge has been proposed). COMESA and EAC should update the existing railway studies taking into account the results of the multimodal master plan and the long term PIDA traffic forecasts. The existence of the Rift Valley Railway concession agreement is a model for possible railway concessioning.
- For the road components of this project, modern corridor design standards should be adopted, drawing on the experience of the Northern Corridor pilot project (EA2 above). The potential for PPPs in road operation and maintenance should be explored.
- For the smart corridor information system component, SADC, with the assistance of the AUC/NPCA, should establish norms/standards and characteristics for a smart corridor information system along the entire corridor. After review by EAC, this system should be designed and implemented in the countries along the Lamu corridor following the example and design of the Northern Corridor pilot project. Since this is a multi-modal corridor, the smart corridor system would have six modules: (i) single electronic window, (ii) cargo tracking, (iii) commercial vehicle tracking (including vehicle weight), (iv) container tracking, (v) freight train tracking and (vi) high-visibility corridor efficiency monitoring. This system would speed up regional integration, make African businesses more competitive and increase trade and tourism among all five countries. This system would be integrated with the railway management systems for the railway concessionaire.

The port expansion component of this project initially involves implementing the existing port expansion plans and construction as expeditiously as possible (while taking into account both port access to road and rail corridor infrastructure and the needs of landlocked country traffic). This includes the Mombasa and Dar-es-Salaam port expansion projects and the development of the port of Lamu. Other phases of port expansion will be needed to meet demand in the medium to long term along with the development of new ports.

Where there is an issue in regional hub port development the final locations would be decided on a partnership basis to achieve a system that would best serve the interest of the landlocked countries. This could include compensation mechanisms to encourage the stakeholder countries to accept the most cost-effective solutions. The key conclusions and recommendations of the studies should be presented and discussed with all the stakeholders through regional workshops and seminars to reach consensus

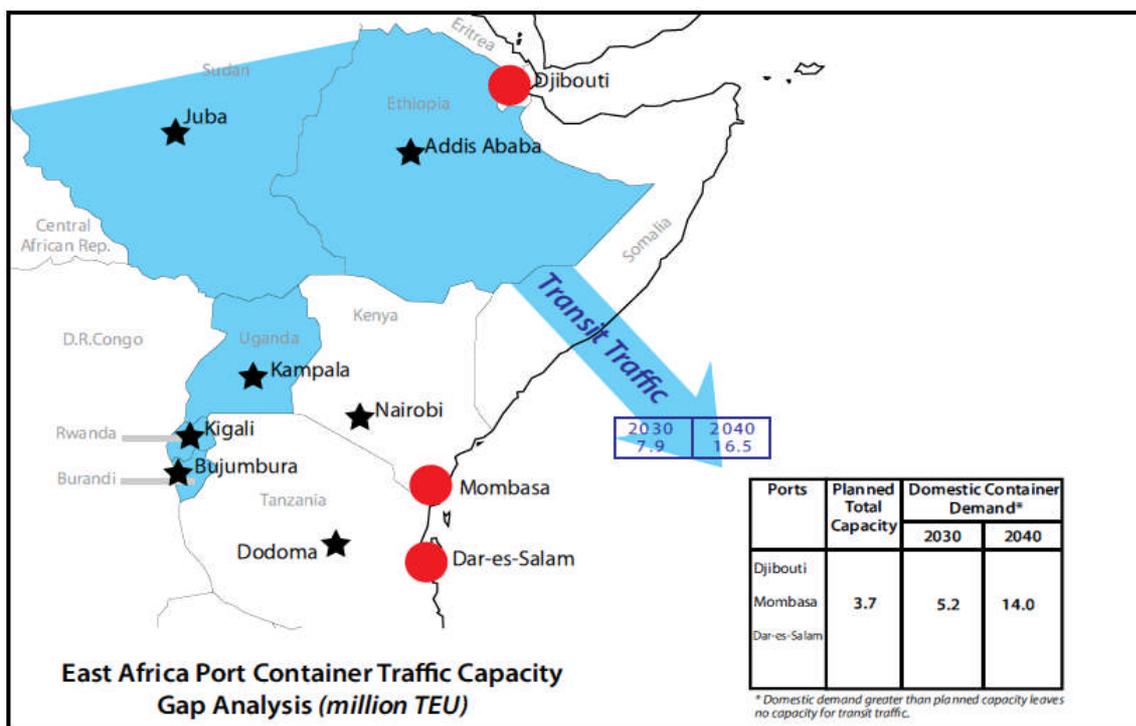
Once a consensus on the best alternatives is reached, the three RECs, together with the member states should identify promoters willing to finalize the preparation of these port and railway projects and assist with the search for financing. COMESA/ EAC and IGAD should make sure that the required port capacities in the region are available on time to satisfy the expected transport demand, preventing port bottlenecks that might jeopardize expected economic growth of their member states.

Challenges

- Port projects are usually prepared and implemented at national level. One challenge will be to conduct the planning exercise at regional level with all the stakeholders to get the best regional approach, considering both national and regional priorities. Landlocked countries should ensure that enough port capacity will be available when and where needed at acceptable cost. For security they would like to get at least two alternatives
- Land transport from the sea to the landlocked countries is directly linked to the location of additional port capacity improvement. Development of large capacities in one or two locations might justify the construction of new, modern land transport infrastructures such as new rail lines or modern highways, resulting in substantially reduced land transport costs.
- The selection of one or more ports as hub for the region might prove difficult, as ports are major sources of revenues for the states. Development of one specific regional port as hub might require compensation mechanisms at the regional level for the other ports.

- Port master plans need to be carried out with all the stakeholders (importers and exporters of coastal and landlocked countries, ports managers, shipping lines etc). The short and medium term port development programme should be prepared taking into account the long term ports requirement and the best land transport systems for the landlocked countries
- One key issue is that domestic demand for port capacity will be growing, especially for containers. In most cases it will take up port capacity and not leave any extra capacity to meet the transit traffic demand. The RECs should encourage international agreements to give an appropriate priority to transit traffic to the landlocked countries.
- There are a number of environmental and planning issues for Lamu, since it is a World Heritage Site with sensitive environmental areas. There has been minimal local participation up to this time and a process needs to be put in place to carry out the appropriate planning with the community and all stakeholders.
- The larger corridor and port development is a huge regional project and will require multiple sources of funding to be achieved. There are possible links to land development in the Lamu area which could be explored, but which have risks as well as advantages.
- There are also trade-offs between development of the Lamu Corridor and development of the Northern Corridor which must be made which requires balancing of objectives for serving the future traffic needs with meeting of more short-term objectives

Figure 23: Analysis of Forecast Demand and Capacity for Eastern African Ports



SA1: NORTH-SOUTH CORRIDOR MODERNIZATION

Components

This project is designed to modernize the highest priority multi-modal ARTIN corridor in Southern Africa and increase the ease of access for people and goods across the borders between South Africa, Botswana, Zimbabwe, Zambia, Malawi and DR Congo. It has four major components (a) corridor modernization, including modern design standards, smart corridor technology, and OSBPs, (b) road modernization and upgrading, (c) railway modernization, and (d) rail construction. Trade between all these countries would also be increased. This project would design and implement a smart corridor system for both road and rail transport. The modernization project would also facilitate the creation of 4 one-stop border posts at the following locations:¹⁰

- Messina/Beit Bridge: OSBP Project – South Africa/Zimbabwe
- Kasumbalesa: OSBP Project – Zambia/DR Congo
- Martin's Drift: OSBP Project – South Africa/Botswana
- Kazungula: OSBP and Bridge Project – Botswana/Zambia/Namibia

The road modernization component includes the joint development of modern corridor highway standards between all six countries (with SADC/Tripartite lead), and the construction of key highway sections totalling 560 km to these higher standards. This project also includes a road upgrading component which would also total 950 km in the corridor (out of 2,800 km total). The road upgrading and modernization activities are expected to be extended to other branches of the Corridor in a later phase.

Approach

- For the rail components of this project, SADC and SARA should play a leading role in developing modern rail services in the region. SADC should review the Consultants' traffic forecasts along ARTIN corridors and prepare alternative solutions depending on these forecasts and on the future location of port capacity development. These solutions should be discussed with the member states, the national railways and railway concessionaires, and presented to potential private investors. SADC should also prepare scenarios in which investment could be split between the relevant states (infrastructure) and the private operators (communications, rolling stock, etc.). SADC should also attempt to find or develop local private interests for the management and financing of rail projects, through workshops, seminars, and possibly training sessions. In addition, implementation of clear priority rail projects for TAZARA, SNCC and Chingola-Solwezi should be undertaken with a regional rail modernization approach.¹
- For the smart corridor information system component, SADC, with the assistance of the UAC/NPCA, should establish norms/standards and characteristics for a smart corridor information system along the entire corridor. After review by SADC, this system should be designed and implemented in the countries along the North-South corridor as a pilot project. SADC should contract for the design and implementation of the North-South corridor information system. Since this is a multi-modal corridor, the smart corridor system would have six modules: (i) single electronic window, (ii) cargo tracking, (iii) commercial vehicle tracking (including vehicle weight), (iv) container tracking, (v) freight train tracking and (vi) high-visibility corridor efficiency monitoring. This system would speed up regional integration, make African businesses more competitive and increase trade and tourism among all five countries. This system would be integrated with the railway management systems for Transnet and for the Zambian Railway (run by a concessionaire) and SNCC in DR Congo. This would contribute to making these railways much more competitive with road, leading to a more efficient use of the multi-modal freight system. (NRZ would be integrated at a later date.)
- At the same time for the PPP Pilot, SADC, through regional meetings with the member states, should agree on the sections of roads where the member states would accept the signing of PPPs with private companies in the context of toll roads. SADC should also assess the level of experience and preparedness of the member states to attract PPP and make recommendations

¹⁰ Note that when a customs union is created the customs functions of the border posts would be eliminated.

as needed to establish an enabling environment in each state. Then a selection of a proposed pilot PPP location would be made (e.g., Kata-Kazungula, which is designated a PPP road upgrade).

- Once all the activities above are completed, SADC should organize meetings/working sessions with private companies that might be potentially interested. The selected government and the concerned ministry should contract through PPP for upgrading of the pilot PPP road section and management and maintenance of a toll road.

Challenges

- There needs to be close cooperation with Transnet for North-South rail corridor development, including coordination of information systems. Establishing a smart corridor system and coordinated rail information systems will require cooperative agreements between countries, ministries and railway operators as well as one-stop border posts. This will be a challenge, but SADC is experienced in handling this type of coordination. One of the challenges will also be to coordinate this project with the pilot smart corridor project at the continental level (Project CN1).

SA3: SOUTHERN AFRICA PORT CAPACITY

Components

This project is designed to help Southern Africa deal with the major challenge of developing sufficient port capacity to handle future demand from both domestic sources and landlocked countries (See Figure 24)

This project has two components: (a) a regional hub port and rail linkage master plan and (b) port expansion. These would be carried out in parallel. The master plan would start as soon as possible, but it will require the cooperation of the countries involved, and preferably a partnership approach which would minimize inter-country competition for port location. The private sector must also be involved in order to take into account shipping line concerns with hub port characteristics and locations.

This programme will therefore comprise the development of Master Plan for regional port capacity as well as the implementation of short-term port expansion plans (Nacala, Beira, Maputo, Durban, Walvis Bay, Luanda).

Approach

- Total port traffic in Southern Africa located on the ARTIN corridor will jump from 92 million tons in 2009 (Nacala, Beira, Maputo, Durban and Walvis Bay) to 220 million Tons in 2020 and 500 million tons in 2030. Transit traffic from landlocked countries will jump from 12 million tons to more than 35 million tons in 2020 and is expected to increase to more than 100 million tons over the next 30 years. This will create major infrastructure capacity problems. (See Figure 24)
- SADC traffic increases show a need for major port expansion by 2020, especially with the realization of suppressed demand. This could be focused on existing deep water ports such as Nacala and Walvis Bay, expansion of other South African ports or new ports. When Moatize coal exports are developed in Mozambique, this will require expansion of Beira, Nacala or a new mineral port at the mouth of the Zambesi

SADC together with the port association (PAMESA) should launch a study to:

- Identify and evaluate all the on-going and proposed port projects in particular the extension projects at Maputo, walvis Bay and Durban
- Identify best location to expend or built new port capacities in the region from a technical point of view considering the changes in global shipping
- Assess present and future port traffics from both coastal and landlocked countries
- Identify additional port capacities requirement in the short, medium and long term
- Define best alternatives for port capacity extension from technical and economic point of view
- Assess best land transport system for the landlocked countries for each alternatives

SADC should analyze in detail each alternative, highlight the ones which serve best the interest of the landlocked countries and propose compensation mechanisms to encourage the relevant coastal countries to accept the proposed solutions

Once a consensus on the best alternatives is reached, SADC, together with the member states should identify promoters willing to finalize the preparation of these port projects and assist with the search for financing. The rail linkage part of the master plan would build on the previous rail master planning carried out for SADC. However, the critical consideration is to link the rail planning to the traffic flows expected from future new regional hub ports as well as existing ports.

The port expansion component initially involves implementing the existing port expansion plans as expeditiously as possible (while taking into account both port access to road and rail corridor infrastructure and the needs of landlocked country traffic). In Southern Africa this would include the Walvis Bay and Mozambican port expansion projects. Also the port expansion part of this programme will

include new coal terminals at Nacala and Beira. Other phases of port expansion will be needed to meet demand in the medium to long term along with the development of new ports.

Challenges

- The port projects are usually prepared and implemented at national level. One challenge will be to conduct the planning exercise at regional level with all the stakeholders to get the best regional approach considering both the national and regional priorities. In particular landlocked countries should ensure that enough port capacity will be available when and where needed at acceptable cost. For security they would like to get at least two alternatives
- Southern Africa is also faced with a major challenge in developing sufficient port capacity to handle future demand from both domestic sources and landlocked countries. However, it has a big advantage in the high level of development of South African ports, including Durban which is currently undertaking the largest container terminal expansion programme in Africa. The expected demand increase for this region is illustrated in Figure 24
- Land transports from the sea to the landlocked countries are directly linked to the location of additional port capacity improvement. Development of large capacities in one or two locations might justify the construction of new, modern land transport infrastructures such as new rail lines or modern highways and substantially reduced land transport costs.
- The short and medium term port development programme should be prepared taking into account the long term ports requirement and the best land transport systems for the landlocked countries

Figure 24: Analysis of Long-Term Port Capacity Gaps In Southern Africa

