CONNECTING AFRICA: ROLE OF TRANSPORT INFRASTRUCTURE

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Executive Summary

Africa, the world's second largest and second most populous continent in the world, with a land area of 30.4 mn sq km, is a market of 1.2 billion people and an estimated GDP of US$ 2 trillion in 2017. According to the African Economic Outlook 2018, real GDP in Africa is estimated to have increased to 3.6 percent in 2017, from 2.2 percent in 2016, reflecting sound macroeconomic policies, and progress in structural reforms. Africa also has the advantage of a young and growing population and is projected to have the fastest urbanization rate in the world. Africa also has a huge potential to develop a strong manufacturing sector, which could play a significant role in the economic development of the continent, which include creating employment opportunities, catering to domestic demand, and generating exports surplus, among others. However, Africa is yet to climb the value chain of mineral processing and manufacturing, which would help the region to unlock its full potential of natural resources. One of the major factors that restrict Africa from reaching the global value chain is the huge deficit in infrastructure sector.

Growth, Trade and Infrastructure in Africa

According to the Office of the Special Advisor on Africa, the United Nations, approximately 60 percent of the continent's population lacks access to modern infrastructure, which isolates communities, prevents access to health care, education and jobs, and impedes economic growth. Inadequate infrastructure is a major deterrent for Africa to achieve its full growth potential. Hence, meeting the demand for key infrastructure, both physical and social is a priority area for the countries in the region.

Various reports indicate that inadequate transport infrastructure adds around 30-40 percent to the costs of goods traded among African countries. Since Africa is home to 16 landlocked countries, poor and underdeveloped transport infrastructure limit accessibility to consumers, hamper intra-regional trade and drive up import and export costs. A better transport and logistics infrastructure provide efficient transport services to other sectors apart from mining and natural resources, resulting in a better standard of living for its citizens by bringing agricultural and manufacturing products to market.

Although African Governments, financial institutions and the private sector have played instrumental role in boosting regional integration, the levels of continental integration have remained relatively low. Intra-regional exports stood at 17.7 percent of the total exports of Africa in 2016, increasing from 11.7 percent in 1996. This is almost insignificant compared to 55.2 percent of intra-regional exports in case of America, 59.4 percent in Asia, and 68.7 percent in Europe. Infrastructure insufficiencies play a major role in hindering Africa from fully reaching its potential – trade and growth.

Transport Sector in Africa: Current Scenario and Potential

Roads

Roads dominate the transport sector in most African countries, covering 80-90 percent of passenger and freight traffic. The World Bank has estimated that about US$ 200 billion of trade in Africa is carried by the region's trunk road network comprising strategic trading corridors linking deep sea-ports to economic hinterlands. Most rural areas of Africa completely depend on roads for connectivity. In spite of this, the density of road network, for both per person and per square kilometer of land area is much lower in Africa compared to other regions. Lack of proper and regular maintenance and upgrades resulted in depletion of the bulk of road surfaces. Only 0.8 million km out of the total 2.8 million km road network in Sub-Saharan Africa is paved. Out of the total paved roads, only around 50 percent are in good condition. The road to

population ratio in Sub-Saharan Africa is estimated at 27-km per 10,000 people. According to the UNECA, internal transportation raises the total cost of African exports by one-third compared to below one-tenth for all developing economies. Non-physical constraints including road blocks and trucking cartels are other major factors which significantly reduce the efficiency of transport of goods by road. North and Southern Africa comparatively are way ahead in terms of their road network. West Africa has the lowest road density and road quality compared to other regions.

Road transport is the principal mode of motorised transport in the region, accounting for over four-fifths of freight and passenger traffic in Sub-Saharan Africa, reflecting low availability of railway lines within the continent. Currently, around 27 countries in Sub-Saharan Africa have road funds to support funding of new roads and maintenance of existing roads and around 20 road agencies for the sustainable management of road network. Increased financing in this sector could support the activities of road funds and road agencies, along with setting up of funds in rest of the countries. It has been estimated that transport prices are expected to fall by 30 percent from their current levels through trade facilitation measures that reduce transit time and costs to a minimum. Innovative measures such as truck-only lanes and non-motorized modes and transit, including bus rapid transit (BRT) should be considered to be set up in the region.

Rail

Most of the railway lines in Africa were constructed by mining companies during the colonial times in order to connect mines and other natural resources to ports. The total rail network size for Africa as a whole is 82,000 km, and 84 percent of which are operational, with the remainder closed due to war damage, natural disasters, or general neglect and lack of funds. Most of the rail lines are low-speed, small-scale, undercapitalized networks carrying low axle loads. Except for the Republic of South Africa and few countries in North Africa, rail network in Africa lag behind those in most other regions in the world. Economic, technological and institutional conditions in the region have further aggravated the situation, resulting in outdated rail infrastructure. Passenger services account for around 20 percent of rail traffic. The costs of maintaining rail tracks and signalling systems would require spending in billions of dollars. Financial analysis suggests that railways that carry less than 1 million net tonnes of freight annually do not generate sufficient revenue to finance the capital costs of the infrastructure. Leaving aside the Republic of South Africa and the North African railway networks, there are very few African countries that have the requisite volume of freight traffic.

The geographical nature of the continent with large number of landlocked countries and small sized economies necessitates development of high-capacity and efficient rail network. According to the International Union of Railways, trains in Africa carried about 133 billion tonne-kilometres of freight in 2016, decreasing from 136.5 billion in 2015. Out of that, 85 percent was in the Republic of South Africa, which has a modern network. Africa's share in total global tonne-kilometres of freight was just 2 percent in 2016. African rails carried 654 million passengers, with passenger kilometers of 23.0 billion in 2016. There are various drivers that could create further opportunities for railway development in Africa. Growing urbanisation and industrialization in the region will pose new transportation challenges which are better suited to be handled by railways. Africa, being home to a variety of natural resources could use railways to transport large volumes of goods such as bulk minerals and commodities.

Ports

There is a strong interdependence between maritime infrastructure and foreign trade in Africa. Maritime transport is estimated to handle about 90 percent of Africa's international trade; this is comparable to global standards. According to UNCTAD, around 80 percent of world trade and two-thirds of energy

supplies are carried by sea. With a total coastline of 30,725 km, Africa has around 90 major ports and a number of other ports providing services for fishing and tourism. According to 2050 Africa's Integrated Maritime Strategy, African owned ships account for about 1.2 percent of world shipping by number and about 0.9 percent by gross tonnage. African ports currently handle only 7.2 percent of worldwide seaborne cargo traffic and 4 percent of the global container traffic. A few African countries operate large shipping registries. Liberia is the second largest ship registry behind Panama, with 219.4 million dead weight tonnage and around 4170 vessels in 2017, representing 12 percent of the world's ocean going fleet. This does not reflect local ownership, as none of the ships registered in Liberia have domestic owners. African ports face challenges like under-developed infrastructure and inefficient operations, including long cargo clearance time, under-developed basic port and hinterland infrastructure, usage of outdated equipment and low levels of automation, and container and cargo theft, resulting in significant revenue losses.

UNCTAD projects that world seaborne trade volumes will be expanding at a CAGR of 3.2 percent between 2017 and 2022. During the same period, trade in the major commodities and containerized trade is forecast to grow by 5.6 percent and 5 percent, respectively. Though total seaborne trade volume of Africa fell to 745.3 million tons in 2016 from 755.1 million tons in 2015, it is expected to increase in the coming years.

Due to limited availability of good locations for deep water ports, only a few international ports handle large cargo volumes, resulting in long waiting times at the ports. Inadequate infrastructure in sea ports in Africa constraints the region's competitiveness as 80 percent of the world's trade is facilitated by sea ports linked to road and rail infrastructure. With the expected increase in seaborne trade in the region, there is an increasing need for innovation and development in the maritime infrastructure of Africa.

Airports

The performance of the African air transport industry lags behind those in the rest of the world. According to the African Development Bank (AfDB), the contribution of air transport could exceed seven times the contribution of road transportation in an economy's growth. Though Africa has over 4,000 airports and airfields, a significant number of them do not meet International Civil Aviation Organization (ICAO) standards and recommended practices. Also only a quarter of these airports have paved runways. Intra-African air transport growth has been subdued to a large extent due to underdeveloped infrastructure and partly due to the lack of a proper liberalisation policy among African nations. The challenges faced by African air transport industry include poor airport infrastructures, lack of physical and human resources, limited connectivity, and lack of transit facilities. The International Air Transport Association (IATA) reports that though the share of Africa in global aviation industry remains relatively small compared to other regions, it supports 6.8 million jobs and contributes US$ 72.5 billion to the African economy.

Air passenger transport demand has been growing steadily in Africa. In 2015, African airlines carried 79.5 million passengers, representing 2.2 percent of the total air passenger transport, up by 1.8 percent from 2014. 48.3 million passengers were carried on international routes, while 31.2 million were carried on domestic routes in 2015. Average passenger load factors (PLF) for African carriers' scheduled passenger traffic in 2015 was 68.2 percent, same as that recorded in 2014. PLF for African carriers in domestic routes was 73.8 percent while intercontinental routes recorded 67.4 percent.

According to Boeing Market Outlook, air traffic for Africa's carriers is expected to grow 5.9 percent annually over the next 20 years, which is above world average and is driven by overall economic growth and increasing numbers of travelers from, to, and within the region. Air freight carried by African airlines increased to 817,000 tonnes in 2015 from 777,000 tonnes in 2014. African airlines represented

1.6 percent of total global freight carried in 2015 compared to 1.5 percent of total global freight carried in 2014. In terms of freight tonne kilometres (FTKs), performance by African airlines dropped by 1.4 percent year on year in 2015. Although air transport in Africa is growing strongly, it is expensive with patchy connections, and hence require an infrastructure upgradation.

Transport and Insurance Cost in Africa

According to UNCTAD, low-income economies, landlocked developing countries and small island developing states face relatively higher transport costs than other economic groupings. Average transport costs represent around 21 percent of the value of imports for LDCs, 19 percent for landlocked developing countries and almost 22 percent for small island developing states, against the world average of 15 percent in 2016. According to OECD, there is a strong case for promoting intra-continental trade vis-à-vis inter-continental trade from cost perspective. Inter-continental trade increases transport and insurance costs by 2-4 percent as compared to comparable intra-continental trade. This supports the role of a better transport infrastructure to facilitate this trade.

Transport Demand in Africa

Total trade of Africa has increased three-fold to US$ 830.9 billion in 2016 from US$ 235.5 billion in 2001, with 2.2 percent share in global exports and 2.9 percent share in global imports. Total international freight demand in Africa is based on its international trade which has grown at a CAGR of 8.2 percent during 2001 to 2016. The increase in global trade depends on smooth, fast, and less costly mode of transportation. The African gateways have grown substantially both for freight and passengers, supported by growing international trade of the region. This requires African transport network to expand to handle the increased traffic growth.

Current Infrastructure Investment Requirements in Africa

Annual infrastructure requirement estimates for Africa by various institutions vary from US$ 93 billion by the World Bank, US$ 100 billion-US$ 150 billion estimates by JICA, US$ 174 billion by G-20 and US$ 130 billion - US$ 170 billion by the African Development Bank. All the estimates suggest that maximum requirement would be in power and transport sectors.

Infrastructure Financing Trends in Africa

During 2016, US$ 62.5 billion new commitments were made to Africa's infrastructure sector- both at national and regional level, a decline of around 21 percent compared to US$ 78.9 billion committed in 2015. Budget allocations from African national Governments accounted for the bulk of infrastructure financing commitment at US$ 26.3 billion (42.1 percent share) in 2016. External finance commitments witnessed by Africa in 2016 is the lowest since 2010, mainly due to a US$ 14.5 billion reduction in reported Chinese funding and a US$ 4.9 billion fall in private sector investment. The members of Infrastructure Consortium for Africa (ICA) comprising the AfDB, Development Bank of South Africa (DBSA), European Commission (EC), European Investment Bank (EIB), G8 countries, the Republic of South Africa and the World Bank Group accounted for 29.8 percent of the financing in 2016.

Out of the US$ 62.5 billion committed to Africa's infrastructure in 2016, West Africa received US$ 16.3 billion of commitments, followed by East Africa with US$ 13.1 billion and North Africa with US$ 12.9 billion. Southern (excluding the Republic of South Africa) and Central Africa received US$ 6.5 billion and US$ 6.3 billion, respectively, while the Republic of South Africa received US$ 5.9 billion. Intra-regional and pan-African commitments amounted to US$ 1.4 billion in 2016. In 2016, the largest financial commitments in Africa were in the transport sector (share of 39.1 percent), followed by energy sector (31.9 percent), water (16.8 percent), multi-sector (4.5 percent), and ICT (2.6 percent).

Investment commitments to the transport sector fell sharply in 2016 to US$ 24.5 billion, compared with US$ 32.4 billion and US$ 34.4 billion recorded in 2015 and 2014, respectively. In 2015, transport sector

benefitted from strong Chinese support, whereas budget allocations to transport sector from national governments peaked in 2014. African national governments continued to be the prime funders of the transport infrastructure in 2016. Out of the US$ 24.5 billion committed to the sector in 2016, 59.6 percent was provided by national governments, followed by ICA members (20 percent). Chinese funding to the sector fell considerably from 28 percent in 2015 to 4.1 percent in 2016. India's financing of African transport sector recorded a significant increase in 2016, with a commitment of US$ 513 million, which is roughly 2.1 percent of the total commitments to the sector.

Across the regions, West Africa received the highest level of transport commitments in 2016 (26.9 percent of the total), compared with 2015, when East Africa was the top region for transport with US$ 11.8 billion, or more than one-third of commitments.

Public Private Partnership in Infrastructure Financing

A PPP project involves financing from various sources, in some combination of equity and debt, and the ratios of these different contributions depend on negotiations between the lenders and the shareholders. The main forms of financing include equity contributions, debt contributions, bank guarantees/ letters of credit/ performance guarantees, bond/capital markets financing and mezzanine/subordinated contributions.

According to the World Bank, in 2016, Africa recorded 17 PPP infrastructure projects amounting to US$ 4.2 billion, lower than the US$ 8.0 billion in 2015 for 27 projects. The Sub-Saharan Africa received 14 infrastructure deals totaling US$ 3.9 billion. This include nine projects in energy sector, two in transport sector and three in ICT. Uganda was the most active country with four projects, followed by Ghana with three projects, and Senegal with two projects. Similarly, North Africa recorded 3 PPP projects amounting to US$ 246 million in 2016. Egypt got investment commitment towards two projects in energy sector, with Djibouti getting investment for an ICT project in 2016.

Aid for Trade in Promoting Infrastructure in Africa

Africa remains one of the key recipients of Aid for Trade funds. A major share of disbursements under Africa's Aid for Trade have been made towards economic infrastructure and productive capacity. In 2015, global Aid for Trade disbursements stood at US$ 39.8 billion and disbursements to African countries reached a record high of US$ 14.1 billion. Given the large infrastructure needs of the continent and the cost-intensive nature of infrastructure projects, economic infrastructure sector dominates Africa's Aid for Trade Projects. It accounted for 55 percent of total disbursements to Africa, followed by building productive capacities (42 percent) and trade policy and regulations sectors (3 percent). At sub-sectoral level, economic infrastructure funding is almost evenly divided between transport and storage (26 percent of total) and energy (27 percent).

Project Finance for Financing Infrastructure

Project finance is a financing structure that is used by the capital markets to finance large, risky projects or initiatives. Project finance is commonly used to finance long term projects such as infrastructure. Global Project Finance amounted to US$ 230.9 billion from 765 deals in 2016, lower than US$ 277.5 billion from 799 deals recorded in 2015. Africa's project finance totaled US$ 5.8 billion from 23 deals in 2016, lower than US$ 11.3 billion from 25 deals recorded in 2015. Africa recorded a marginal 2.5 percent share in global project finance in value terms.

Other Modes of Financing

African countries attract new financing into infrastructure sector through various modes including PPPs and local and international capital markets. There are various innovative routes to finance the regional infrastructure in Africa, and the continent has already adopted several of these in its efforts towards infrastructural upgradation. Some of the prominent financing mechanisms are: infrastructure bonds, international bonds, loan guarantees, private

equity and investment banks, pension funds, sovereign wealth funds, and financing by regional economic communities. AfDB has suggested other innovative methods of financing in Africa including project puttable bonds, debenture structure, output-based long-term PPP agreements and managed co-lending portfolio program.

AfDB's Role in Transport Sector Financing

Between 1967 and 2017, AfDB has financed over 450 transport projects amounting to more than US$ 30 billion. Morocco and Tunisia were the countries with the most financing for transport, receiving US$ 2.7 billion and US$ 2 billion, respectively. At the sub-regional level, East Africa received the maximum finance, with more than a billion dollars of transport project financing being provided to Kenya, Tanzania and Ethiopia. It was followed by West Africa, with Côte d'Ivoire receiving the maximum financing with the recent urban transport megaprojects. Among the sub-sectors, maximum number of financing went to road projects, with more than 40,000 km of roads having been paved with the Bank's financing. African ports have also received significant financing for creation, expansion or modernization of ports and for shipyard development.

Strategies for Increasing Transport Infrastructure Financing in Africa

Innovative Models of Infrastructure Development: Innovative models of transport network development including Toll-Operate-Transfer (TOT) could be used for construction of roads in Africa. Under this model, the lessee gets to operate and maintain (O&M) roads that are already built and charge tolls from the public for a stipulated tenure. This would provide more funds for constructing new roads and highways, where private sector is reluctant to invest. This model is especially useful to monetise publicly funded, commercially operational national highway projects. Pension funds and Private Equity firms are allowed to lease government owned roads and highways for fixed number of years by making an upfront payment. Another innovative model is setting up an Infrastructure Investment Trust, where road projects awarded under the engineering, procurement, construction (EPC) mode can be placed. This would work like the TOT model, by monetising existing assets and releasing necessary capital to fund new roads.

Co-Financing Transport Projects: Transport infrastructure projects require large scale investment which may not be feasible to be fully funded by African governments. This requires involvement by multilateral institutions, development agencies and international donors. In this regard, co-financing is a well-established form of leveraging resources for reaching developmental outcomes. Special facilities can also be considered by the Government of India (GOI) and AfDB specifically for co-financing the regional infrastructure projects in Africa, where concessional loans can be provided by the GOI. Some National Governments have set up such facilities in collaboration with multilateral financing institutions, for financing projects in Africa.

Implementing PPP in Africa: PPPs can supplement the limited public sector capacities to meet the growing demand for infrastructure development. The GOI has taken various policy initiatives including the Viability Gap Funding (VGF) scheme, take out financing scheme by RBI, and the India Infrastructure Project Development Fund (IIPDF) to support infrastructure sector development in the country. It has also established various institutional mechanisms like the India Infrastructure Finance Company Ltd. (IIFCL) to encourage private sector participation in infrastructure projects. For the successful implementation of projects under PPP, India has a Model Concession Agreement (MCA), which addresses several crucial issues pertaining to a PPP framework like mitigation and unbundling of risks; allocation of risks and returns; symmetry of obligations between the principal parties; precision and predictability of costs and obligations; reduction of transaction costs and termination. These have yielded positive results in several sectors and can be emulated in the African continent for enhancing the role of private sector in infrastructure.

Collaboration among Project Preparation Facilities: Lack of bankable projects is a major constraint for infrastructure in Africa. According to an assessment conducted by the ICA, many of the project preparation facilities in the African continent have insufficient resources, as a result of which the project financed may be very small and spread over a number of projects and activities. On the other hand, regional infrastructure projects would typically entail large cost of project preparation. Exim India has responded to this issue by setting up the Kukuza Project Development Company (KPDC) in partnership with Infrastructure Leasing and Financial Services Ltd (IL&FS), AfDB and State Bank of India to facilitate Indian participation in infrastructure projects of Africa. The KPDC can consider collaborating with other Project Preparation Facilities (PPFs) in the region in key transport projects through the Project Preparation Facilities Network (PPFN).

India's Role in Africa's Infrastructure Sector

According to the ICA, India's commitment to African infrastructure projects more than doubled to US$ 1.2 billion in 2016 from US$ 524 million in 2015. The largest portion of Indian commitments went to transport (US$ 513 million), followed by energy (US$ 422 million) and water (US$ 262 million) projects. The Export-Import Bank of India (Exim India) has been among the principal agents for supporting India's development partnership with the African continent in the infrastructure sector.

Lines of Credits: To enhance bilateral trade and investment relations, Exim India has in place several Lines of Credit (LOCs) extended to a number of institutions/agencies in Africa. LOC is a demand driven, development oriented and non-prescriptive program which supplements the Focus Africa programme of the Government of India. As on February 28, 2018, the total number of operative LOCs to Africa stood at 157, which were extended to 43 countries and amounting to US$ 8.2 billion. Of these, 151 LOCs aggregating to US$ 8.1 billion, to 40 countries are guaranteed by the GOI.

Project Exports: Exim India also extends funded and non-funded facilities for overseas industrial turnkey projects, civil construction contracts, supplies, as well as technical and consultancy service contracts. In Africa, Indian companies have implemented numerous projects, spanning various sectors, with support from Exim India. These projects, in turn, facilitate and support infrastructure development in the African countries, thereby contributing to the overall development process in the region.

BC-NEIA: Exim India's strong emphasis on increasing project exports from India has been enhanced with the introduction of the Buyer's Credit under GOI's National Export Insurance Account (BC-NEIA) Programme. The BC-NEIA is a unique financing mechanism that not only provides a safe mode of non-recourse financing option to Indian exporters, but also serves as an effective mechanism to augment both physical and social infrastructure in host countries, thereby fostering the partner countries' developmental objectives. As on February 28, 2018, Exim India sanctioned an aggregate amount of US$ 1.87 billion under BC-NEIA for 16 projects in Africa valued at US$ 1.98 billion. Out of this, US$ 1.25 billion was sanctioned towards transport sector projects including Tema to Akosombo Railway Line construction project in Ghana; Lusaka City Decongestion Project in Zambia; supply of buses to Côte d'Ivoire, Senegal and Tanzania; and supply of vehicles and spares to Côte d'Ivoire, Tanzania and Zimbabwe.

Finance for Joint Ventures Overseas: Exim India supports Indian companies in their endeavour to globalise their operations, through overseas joint ventures (JVs) and wholly owned subsidiaries (WOS). Such support includes loans and guarantees, equity finance and in select cases direct participation in equity along with Indian promoters to set up such ventures overseas. In the African Region, Exim India has supported several such ventures in countries such as the Republic of South Africa, Kenya, Mauritius, Ghana, Nigeria, Sudan, Egypt, Zambia, Morocco, Uganda and Tanzania, across a range of sectors

like auto and auto components, agriculture and food processing, agro-based products, chemicals, construction, electronics, engineering goods, EPC services, mining and minerals, plastics and rubber products, packaging, pharmaceuticals, software and IT enabled services, and textiles. As on January 31, 2018, Exim India, through its overseas investment finance programme, has supported 48 Indian companies in 12 countries in Africa with an aggregate sanction of ₹ 51.3 billion.

Project Development Company (PDC) in Africa: Addressing the limited institutional capacity in Africa on conceptualisation, management, execution and imparting project development initiatives, Indian institutions such as Exim India, IL&FS, and State Bank of India have joined hands with AfDB, and promoted a Project Development Company (PDC) for infrastructure development in Africa. The PDC is expected to provide specialist project development expertise to take the infrastructure project from concept to commissioning in the African continent. The PDC will provide the entire gamut of project development expertise to various infrastructure projects, such as project identification, pre-feasibility/ feasibility studies, preparation of detailed project reports, environmental and social impact assessment, etc.

Other Areas of Co-operation: Exim India also works very closely with development banks in the region, including AfDB. Exim India has extended its own commercial Lines of Credits to various regional financial institutions and parastatal entities in Africa. Exim India has also been consciously forging a network of alliances and institutional linkages to help further economic co-operation with the Africa region. Towards this end, Exim India has taken up equity in Afreximbank, West African Development Bank (BOAD), and Development Bank of Zambia. These endeavours are supplemented by the various Memoranda of Cooperation/ Memoranda of Understanding, the Bank has in place, with key institutions in the Africa region including: AfDB; Trade and Development Bank; Afreximbank; Nigerian Export-Import Bank; Banque Internationale Arabe de Tunisie, Tunisia; Board of Investment, Mauritius; Industrial Development Bank of Sudan; Industrial Development Corporation of South Africa Limited; Foreign Investment Promotion Agency, Tunisia; Societe Tunisienne de Banque, Tunis, and ECO Bank.

1. Background

Africa, the world's second largest and second most populous continent in the world, with a land area of 30.4 mn sq km, is a market of 1.2 billion people and an estimated GDP of US$ 2 trillion in 2017. According to the African Economic Outlook 2018, real GDP in Africa is estimated to have increased to 3.6 percent in 2017, from 2.2 percent in 2016, reflecting sound macroeconomic policies, and progress in structural reforms. The growth in 2017 can be further attributed to a number of factors including improved global economic conditions, the recovery in commodity prices (mainly oil and metals), sustained domestic demand which were partly met by import substitution, and improvements in agricultural production. Africa is expected to become the youngest and most populous continent in the next few decades.

Africa has huge potential for growth. According to the Programme for Infrastructure Development in Africa (PIDA) estimates, the average annual growth rate for 53 African countries will be 6.2 percent between 2010 and 2040. Thirty-seven of these countries are expected to exhibit an average annual growth rate higher than 5 percent during 2008–2040. The drivers of this growth are expected to be the positive demographic trend leading to sizeable increase in working age population, the level of education and technology absorption. Rapid urbanization and economic diversification beyond resource-based activities are additional factors supporting these higher growth rates.

Although Africa has experienced an economic momentum in the last two decades, internal structural changes can affect the growth at any time. Various factors like wars, natural disasters, or poor government policies play a prominent role in domestic economies. These factors could halt or even reverse the gains in any individual country. But the long term internal and external trends indicate strong economic prospects for Africa. As a result of the strong commitments by many African governments to prudent fiscal, monetary and exchange rate policies in the recent years, notable progress has been achieved in Africa. Improved macroeconomic management, market-based reforms and continued structural progress in many countries further sustained growth. Stimulus to sustained growth emanated from the deepening of reforms – economic and political governance, structural transformation, rebuilding institutional capabilities as well as efficiently managed macroeconomic policies.

The countries in Africa are in various stages of development, having vast market potential. Africa is rich in both hard (minerals) and soft (agriculture) commodities and is a major exporter of unprocessed or lightly processed commodities. Africa also has the advantage of a young and growing population and is projected to have the fastest urbanization rate in the world[1]. Africa also has a huge potential to develop a strong manufacturing sector, which could play a significant role in the economic development of the continent, which include creating employment opportunities, catering to domestic demand, and generating exports surplus, among others. However, Africa is yet to climb the value chain of mineral processing and manufacturing, which would help the region to unlock its full potential of natural resources. One of the major factors that restrict Africa from reaching the global value chain is the huge deficit in infrastructure development.

Growth and Infrastructure in Africa

According to the Office of the Special Advisor on Africa, the United Nations, approximately 60 percent of the continent's population lacks access to modern

[1]Lions on the Move II: Realizing the Potential of Africa's Economies, McKinsey Global Institute (MGI), September 2016

infrastructure, which isolates communities, prevents access to health care, education and jobs, and impedes economic growth. Inadequate infrastructure is a major deterrent for Africa to achieve its full growth potential. Hence, meeting the demand for key infrastructure, both physical and social is a priority area for the countries in the region. Infrastructure needs of a country/region is closely related to its development plans. Hard/Physical infrastructure including transportation, power and information and communication technology (ICT) facilitate growth through its backward and forward linkages. Soft/ Social/Institutional infrastructure including water supply, sanitation, sewage disposal, education and health, which are in the nature of primary services, have a direct impact on the quality of life[2].

Various reports indicate that inadequate transport infrastructure adds around 30-40 percent to the costs of goods traded among African countries. Since Africa is home to 16 landlocked countries, poor and underdeveloped transportation infrastructure limit accessibility to consumers, hamper intra-regional trade, and drive up import and export costs. A better transport and logistics infrastructure provide efficient transport services to other sectors apart from mining and natural resources, resulting in a better standard of living for its citizens by bringing agricultural and manufacturing products to market. Improved transport infrastructure also results in progressive opening of local economies to wider markets. Africa's infrastructure requirements change from region to region and from country to country, and hence an umbrella approach of meeting the gap is not possible.

Transportation and Logistics

Infrastructure development and financing are indispensable for the growth of any country. Both quantity and quality of infrastructure are crucial for accessing markets, to reduce production and transaction costs, and hence to ensure effective supply response. It has been widely recognized that efficient transport and logistics infrastructure is fundamental for the operational success of any country/region involved in trading activities. An efficient transport infrastructure could help in overcoming barriers and harness complementarities across countries, resulting in regional integration. Increased connectedness enables sharing of resources and assets among countries, and also expand markets and opportunities for these countries.

Transportation is a network industry composed of complementary nodes and links that exhibit increasing returns to scale and scope in production or consumption. It plays a pivotal role in rural economic transformation as proximity and access to urban markets is a major determinant of rural development. With the improvement in transport links, rural areas will become economically closer to towns and cities. Also, regions with good transport network have substantial potential to increase production and thus exports.

The importance of transport and logistics infrastructure could be understood at two levels – Macro and Micro level. On a macroeconomic level, access to consumer markets, connecting raw materials to final producers, promoting regional integration and ultimately, improving connectivity to the global economy are the major impacts of a better transport network. On a microeconomic level, transport infrastructure has a direct impact on a country's handling capacity for imports and exports, distribution route development, the frequency of shipments and the cost for freight handling, storage, distribution and related services[3].

As the countries in Africa aspire for higher levels of growth and development, there is a critical need for meeting the increasing demand for transport

[2]Addressing Africa's Infrastructure Challenges, Deloitte, August 2013

[3]Transportation and Logistics in Sub-Saharan Africa: How accessible is the market your business is looking at, actually? James Milne, Sarah O'Carroll and Craig Parker, Senior Consulting Analysts, Frost & Sullivan, Africa, January 2014

infrastructure. It paves way for increased cross-border trade and investment, improved competitiveness and domestic output, and subsequently foster regional integration. Transport and logistics infrastructure is of particular relevance to Africa as the continent is not only home to some of the fastest growing economies in the world, but also has 33 of the 47 Least Developed Countries. With 16 landlocked countries, Africa has the largest number of landlocked countries globally, and land borders account for 84 percent of the total borders in the continent.

Africa also ranks second in terms of average number of neighbouring countries, with Central Asia being the first. The small size, landlocked nature and fragile state of several economies create a case for greater regional integration, aimed at facilitating shared prosperity in a region characterized by heterogeneity and substantial disparity. This is not possible without an efficient and widespread transportation network. This requires large scale investment for creating improved connectivity within and across natural boundaries.

Infrastructure and Trade Linkages

The growing demand for infrastructure poses a great challenge for Africa. The density and quality of infrastructure affects the level of regional integration and the competitiveness of goods and services in the global and regional trade markets. A better intra-regional trade that is more diversified and industrial in nature could create opportunities for value addition and development of regional value chains in the continent. Although Governments, financial institutions and the private sector have played an instrumental role in boosting regional integration, the levels of continental integration have remained relatively low. Intra-regional exports stood at 17.7 percent of the total exports of Africa in 2016, increasing from 11.7 percent in 1996 **(Chart 1.1)**. This is almost insignificant compared to 55.2 percent of intra-regional exports in case of America, 59.4 percent in Asia, and 68.7 percent in Europe. There has been little improvement in the share of intra-Africa exports in total exports of Africa over the past decade. Similarly, intra-Africa imports have also remained nearly constant/low during 1996-2016. It witnessed a marginal increase from 12.2 percent in 1996 to 13.2 percent in 2016.

Chart 1.1: Share of Intra-Africa Trade in Total Trade of Africa

Source: UNCTADStat

According to the World Bank's Doing Business Report 2018, the parameter on Trading across Borders records the time and cost associated with the logical process of exporting and importing goods,[4] border compliances for exports in Sub-Saharan Africa take 60-80 percent more time than the regions of East Asia and Pacific, South Asia and Latin America and Caribbean. Cost of documentary compliance for exports from Sub-Saharan Africa is also almost twice the cost in the Latin America and Caribbean region **(Table 1.1)**. Border management and logistics costs need to be substantially reduced for the countries in the region to bolster value chains.

The Logistics Performance Index (LPI) which ranks countries on six dimensions of trade, including customs performance, infrastructure quality, and timeliness of shipments, also indicate the need for an upgrade in the logistics infrastructure of African countries. Geography of Africa itself presents a vast logistic challenge. In 2016, the African continent ranked the lowest on LPI, as also on the various determinants of LPI-the efficiency of customs and border management clearance, the quality of trade and transport infrastructure, the ease of arranging competitively priced shipments, the competence and quality of logistics services, the ability to track and trace consignments, and the frequency with which shipments reach consignees within scheduled or expected delivery times **(Chart 1.2)**.

Individual countrywise analysis of the index reveals that African countries, except for the Republic of South Africa performed poorly in terms of infrastructure quality and also on all the main aspects of logistics competence. This is mainly due to poor road connectivity within sub-regions coupled with underdevelopment of systems and trade facilitation procedures. According to the United Nations Economic Commission for Africa (UNECA), internal transportation raises the total cost of African exports by one-third compared to below one-tenth for all developing economies. Concurrently, building new roads and increasing the share of paved roads would reduce transport costs, whilst expanding new markets within sub-regions and outside world.

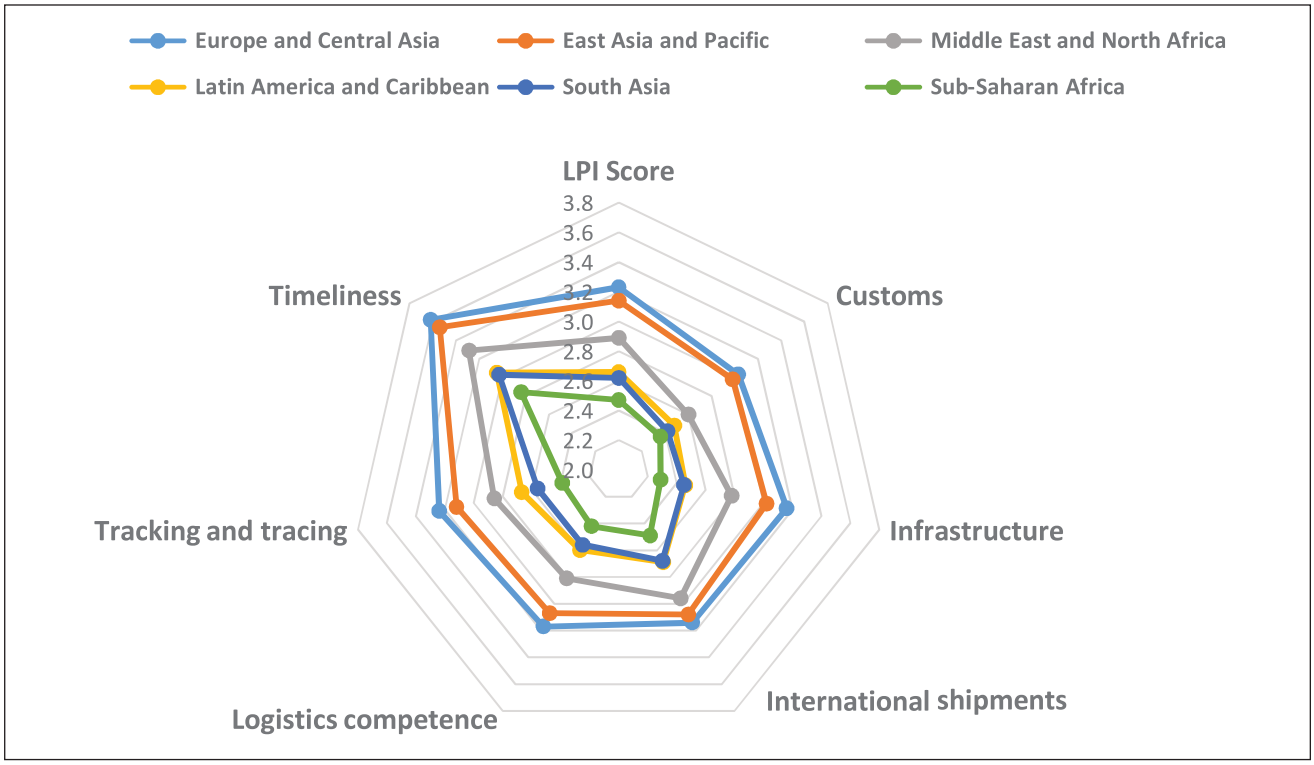
Table 1.1: Regional Comparison of Time and Costs for Trading Across Borders

Region	Border compliance				Documentary compliance			
	Time to export (hours)	Cost to export (US$)	Time to import (hours)	Cost to import (US$)	Time to export (hours)	Cost to export (US$)	Time to import (hours)	Cost to import (US$)
East Asia & Pacific	55.9	387.5	70.5	431.0	68.2	112.1	65.6	111.4
Europe & Central Asia	28.0	191.4	25.9	185.1	27.9	113.8	27.3	94.7
Latin America & Caribbean	62.5	526.5	64.4	684	53.3	110.4	79.9	119.5
Middle East & North Africa	62.6	464.4	112.3	540.7	74.3	243.6	94.5	266.2
OECD high income	12.7	149.9	8.7	111.6	2.4	35.4	3.5	25.6
South Asia	59.4	369.8	113.8	638	77	179.5	104.7	341.6
Sub-Saharan Africa	*100.1*	*592.1*	*136.4*	*686.8*	*87.8*	*215.1*	*103*	*300.1*

Source: Trading Across Borders, World Bank Doing Business 2018

[4]Doing Business measures the time and cost (excluding tariffs) associated with three sets of procedures—documentary compliance, border compliance and domestic transport—within the overall process of exporting or importing a shipment of goods.

Chart 1.2: Regional Comparison of Logistics Performance Index and its Determinants



Source: Logistics Performance Index 2016

Various reports point out that the total transport coverage of Africa in terms of road density and provision for other transport infrastructure is generally low in comparison to other developing regions. This has resulted in increased transaction costs associated with inter and intra movement of goods in the region and hindering the growth. Cost of transporting goods in Sub-Saharan Africa is among the highest in the world. According to PIDA[5], the road access rate in Africa is only 34 percent, compared with 50 percent in other parts of the developing world, while transport costs are 100 percent higher. Similar is the case of air transport and sea ports. The deficiency in infrastructure costs around 2 percent of reduced output each year for Africa. All these factors point out to the fact that transport infrastructure in Africa is not sufficient to meet the growing needs of the region.

The need of the hour for Africa today is to address huge infrastructure deficits that crippled the continent, which include road and rail connectivity, access to power, healthcare and telecom, among others, and to create enabling environment for growth and development. Improved transport technology and transport networks, through its effects on transport costs, access and connectivity have been major factors underpinning economic growth and opening up of markets and economic activity. The infrastructure requirements varies from region to region and from country to country, and hence an umbrella approach of meeting the gap is not possible. The current study tries to analyse the existing situation of the transport and logistics sector in Africa, the challenges to its development and the strategies for enhancing increased transportation network and connectivity in the continent.

[5]Closing the Infrastructure Gap Vital for Africa's Transformation, PIDA

2. Transport Infrastructure in Africa: Current Scenario

Regional integration is very important for a region like Africa, which comprises a number of land-locked and small sized economies. An efficient transport and logistics system could connect these economies and bring them at similar levels by opening up remote areas and improved accessibility to each other's markets. This will link Africa's productive capacity into regional and global value chains by building economies of scale and better utilization of local specialization, resulting in increased competitive capacity in the global market. It could hence accelerate and intensify trade in Africa. Similarly, a poor transport system is similar to the existence of a non-tariff trade barrier in an economy. It has been understood that the current levels of impressive growth witnessed in the region would not trickle down to the citizens in the form of socio-economic developments without efficient road and rail networks.

Road Network in Africa

Roads dominate the transport sector in most African countries, covering 80-90 percent of passenger and freight traffic[6]. Most rural areas of Africa completely depend on roads for connectivity. In spite of this, the density of road network, for both per person and per square kilometer of land area is much lower in Africa compared to other regions. Africa has an average of 204 km of roads per 1,000 square km; of which only one quarter are paved[7]. Thus, the density of national roads in Africa lags far behind the world average of 944 km per 1,000 square km, of which more than half are paved.

The World Bank has estimated that about US$ 200 billion worth of trade in Africa is carried by the region's trunk road network comprising strategic trading corridors linking deep sea-ports to economic hinterlands. These network includes around 10,000 km of roads. Apart from this, between 60,000 and 100,000 km of roads are required to provide intra-continental connectivity by way of an intra-regional trunk network. Hence, it can be said that economic integration of Africa is being held back by dearth in transport infrastructure.

Lack of proper and regular maintenance and upgrades resulted in depletion of the bulk of African road surfaces. Only 0.8 million km out of the total 2.8 million km road network in Sub-Saharan Africa is paved **(Table 2.1)**. Out of the total paved roads, only around 50 percent are in good condition. The road to population ratio in Sub-Saharan Africa is estimated at 27-km per 10,000 people. According to the UNECA, internal transportation raises the total cost of African exports by one-third compared to below one-tenth for all developing economies. Non-physical constraints including road blocks and trucking cartels are other major factors which significantly reduce the efficiency of transport of goods by road.

Regionally, North and Southern Africa comparatively are way ahead in terms of their road network. The road network density in North Africa is estimated at 71.2 km road per 1,000 square km and has a higher prevalence of paved roads. The transport sector is very viable in Southern Africa because of the economic development in the region. Countries other than the Republic of South Africa are also in a much advanced stage than countries in the other regions in terms of transport infrastructure. For instance, Beitbridge border post in the region handle as many as 500 trucks per day, and Martin's Drift border post

[6]Tracking Africa's Progress in Figures, AfDB, 2014
[7]Africa's Transport Infrastructure: Mainstreaming Maintenance and Management, World Bank, 2011

Table 2.1: Road Network in Sub-Saharan Africa

Region	Existing Network (km)	% Share	Paved Roads (km)	Paved Roads (% of total)	Paved Roads in Good Condition (%)	Road Network Density Per Population (km/1,000 persons)	Road Network Density Per Land Area (km/1000km^2)
Central Africa	344,083	12.1	79,139	23.0	58.7	2.1	36.5
Eastern Africa	850,710	30.0	250,959	29.5	49.0	1.2	127.9
Southern Africa	998,334	35.3	353,410	35.4	47.8	5.5	99.8
Western Africa	638,982	22.6	116,934	18.3	43.2	2.3	83.7
Sub-Saharan Africa (Total)	**2,832,109**	**100.0**	**800,442**	**28.3**	**48.6**	**2.7**	**—**

— Not applicable
Source: Urbanization and Industrialization for Africa's Transformation, UNECA, 2017 & Exim Bank Calculations

handles almost 250 trucks per day. West Africa has the lowest road density and road quality compared to other regions.

Rail Network in Africa

Most of the railway lines in Africa were constructed by mining companies during the colonial times in order to connect mines and other natural resources to ports. Most of the rail lines are low-speed, small-scale, undercapitalized networks carrying low axle loads. The state of rail transport in Africa varies from region to region. Except for the Republic of South Africa and few countries in North Africa, rail network in Africa lag behind those in most other regions in the world. Economic, technological and institutional conditions in the region have further aggravated the situation, resulting in outdated rail infrastructure. Passenger services account for around 20 percent of rail traffic. The costs of maintaining rail tracks and signalling systems would require spending in billions of dollars. This require subsidies, without which passengers would not able to afford to pay for operating costs alone.

Most railways in Sub-Saharan Africa are small, with the busier ones carrying no more than a million traffic units annually, a volume comparable to a moderately busy branch line on other railways. By comparison, the South African operator, Spoornet, carries a similar volume every three days. In some cases, the light traffic is due to lack of demand, in others, it is caused by shortages of rolling stock, particularly locomotives. Although grand master plans for integrated rail systems have been proposed, none have been fully implemented and, for most part, the African rail system remains fragmented.

Inefficiencies and an inadequate railroad network contribute to high costs of doing business in the continent. Outdated infrastructure and limited maintenance have undermined the effectiveness of railways across Africa. The result has been a significant reduction in useable track. North Africa, particularly Egypt, boasts the oldest railway network in Africa, but it has had only a few upgrades since its inception. In West Africa, as evidenced by Senegal, the rail network is not upto the mark, because of administrative difficulties, locomotive breakdown, and lack of investment and maintenance. In Southern Africa, the Chinese built Tanzania–Zambia railway has suffered from underinvestment for the past 30 years. With such hindrances, it is hardly surprising that intra-regional exports account for a mere 17.7 percent of Africa's global exports in 2016.

The only significant networks are those centered in the Republic of South Africa and stretching north to Malawi, DR Congo, and Tanzania, the North African

network in the Maghreb, and the East African network linking Kenya, Uganda and Tanzania. A few cross border railways link landlocked countries to ports, and others provide inland railheads from which goods can be on-forwarded by road.

Differences in rail gauges (which specify the spacing between the tracks in a railway) undermine the regional integration of rail networks. Most of railways used either the "Cape gauge" (1.067 meters) or the meter gauge. The main network in Southern and Central Africa uses the Cape gauge, which is also used in some Anglophone countries farther north. The meter gauge is used in most of Francophone Africa and much of East Africa. The North African network is mostly standard gauge, as are a number of isolated mineral lines. When rail improvements are undertaken, the need for a uniform rail gauge among countries cannot be overemphasized. This complication highlights the need for a regional approach and addressing it effectively will enable trains to cross boundary rail transport.

The total network size for Africa as a whole is 82,000 km, and 84 percent of which are operational, with the remainder closed due to war damages, natural disasters, or general neglect and lack of funds. Almost all the networks are single track, except for sections of the Spoornet network in the Republic of South Africa. Significant portions of the Southern and North Africa networks are electrified, as well as the mining region of DR Congo and a short section of the Zimbabwe network. The rail network density for most of the African Countries range between 30-50 kms per million population. A few countries including Gabon, Botswana and the Republic of South Africa have network densities of more than 400 kms per million population.

According to the African Development Bank (AfDB), there are only six African countries with better railroad infrastructure than the global average. Three of them (Morocco, Tunisia and Egypt) are in North Africa, while the remaining three (Namibia, the Republic of South Africa and Swaziland) are from Southern Africa. It may be well assumed that underinvestment and poor maintenance has left the continent's rail infrastucture in a poor state with limited utilization.

Traffic densities in Sub-Saharan railways are generally low. Southern Africa dominates rail freight, handling more than 80 percent of the freight traffic on the non-mineral lines. Southern Africa and Egypt dominate the passenger business, with more than 85 percent of passenger-km. Sub-Saharan African railways are generally lightly loaded by world standards, and most networks struggle to generate enough funds to maintain and renew their infrastructure as required.

African railways are used mainly for freight transportation and, to a lesser extent, for passenger transport. Financial analysis suggests that railways that carry less than 1 million net tonnes of freight annually do not generate sufficient revenue to finance the capital costs of infrastructure. Leaving aside the Republic of South Africa and the North African railway networks, there are very few African countries that have the requisite volume of freight traffic. These include Cameroon, Gabon, Kenya, Namibia and Tanzania.

Maritime Infrastructure in Africa

There is a strong interdependence between maritime infrastructure and foreign trade in Africa. Maritime transport is estimated to handle about 90 percent of Africa's international trade; this is comparable to global standards. Currently, around 80 percent of world trade and two-thirds of energy supplies are carried by sea. With the increase in the volume of global seaborne trade, maritime infrastructure development has attracted renewed focus in recent years. With a total coastline of 30,725 km, Africa has around 90 major ports and a number of other ports providing services for fishing and tourism[8]. Africa is also endowed with a number of rivers and lakes that have great potential of being used as inexpensive, energy-efficient and environment-friendly inland waterways. Twenty-nine African countries have navigable water bodies, but only a few have been developed for transport services.

[8]UNECA

Exhibit 2.1: Africa Rail Network

Source: AfDB

Space constraint is a big issue for the renovation of most African ports as many of the surrounding areas of these ports have been developed into big cities. Many of these ports have not kept up with the substantial increases in traffic, especially containerized cargo. This has resulted in congestion in container terminals and increased ship waiting times. A number of megaports have been developed for handling the increased volumes of trade, but some are being built far from the existing connecting transport infrastructure resulting in increased time to transport products to ports.

According to 2050 Africa's Integrated Maritime Strategy, African owned ships account for about 1.2 percent of world shipping by number and about 0.9 percent by gross tonnage. African ports currently handle only 7.2 percent of worldwide seaborne cargo traffic and 4 percent of the global container traffic. A few African countries operate large shipping registries. Globally, Liberia is the second largest ship registry behind Panama, with 219.4 million dead weight tonnage and around 4170 vessels in 2017, representing 12 percent of the world's ocean going fleet. This does not reflect local ownership, as none of the ships registered in Liberia have domestic owners.

African ports face challenges like underdeveloped infrastructure and inefficient operations, including long cargo clearance times, underdeveloped basic port and hinterland infrastructure, usage of outdated equipment and low levels of automation, and

container and cargo theft, resulting in significant revenue losses. The World Bank quality of port infrastructure index which range between 1 and 7 (1=extremely underdeveloped to 7=well developed and efficient by international standards) place Sub-Saharan Africa at 3.34 in 2017, falling from 3.8 in 2010. This reflects the requirement for an upgradation and maintenance of the existing port infrastructure in Africa.

With large number of big ships calling at African ports and the rapid development of oil handling, there has been immense pressure on many African coastal waters. To improve the process of handling in ports, there is a need to upgrade both the soft processing and the hardware to support it.

UNCTAD's Liner Shipping Connectivity Index (LSCI) aims at capturing a country's level of integration into global liner shipping networks. Countries' access to world markets depends largely on their transport connectivity, especially as regards regular shipping services for the import and export of manufactured goods. LSCI for a country is generated from five components: the number of ships; the total container-carrying capacity of those ships; the maximum vessel size; the number of services; and the number of companies that deploy container ships on services from and to a country's ports. Only few economies including Morocco, Egypt, the Republic of South Africa, Togo, Mauritius and Djibouti are at the higher end of LSCI, indicating low integration level of most African economies into global liner shipping networks **(Annexure 1)**.

Aviation Infrastructure in Africa

The performance of the African air transport industry lags behind those in the rest of the world. According to AfDB, the contribution of air transport could exceed seven times the contribution of road transportation in an economy's growth. Growth in this sector supports economic growth both directly and indirectly due to its spillover effects through job creation and promoting various services sectors, including tourism. Increased intra-African air connectivity is essential for African economies to fully seize its potential arising from its human and natural resources.

Though Africa has over 4,000 airports and airfields, a significant number of them do not meet International Civil Aviation Organization (ICAO) standards and recommended practices. Also only a quarter of these airports have paved runways. Intra-African air transport growth has been subdued to a large extent due to underdeveloped infrastructure and partly due to the lack of a proper liberalisation policy among African nations. The Yamoussoukro Decision of 1999 was signed by 44 African countries for fully liberalizing intra-African air transport services in terms of access, capacity, frequency and tariffs. A study on liberalization of airways by 12 African economies conducted by the International Air Transport Association (IATA) has estimated that liberalization would result in higher fare savings, greater connectivity, reduced time, greater convenience, increased passengers, generation of additional 155,000 jobs in aviation and tourism sectors, an incremental US$ 430 million in two-way trade, and contribution of US$ 1.3 billion to annual GDP of these countries. In January 2018, 23 African countries signed an agreement to form the Single African Air Transport Market to remove non-physical barriers to air routes, and to ultimately create a single aviation area across the continent.

The challenges faced by African air transport industry include poor airport infrastructures, lack of physical and human resources, limited connectivity, and lack of transit facilities. IATA reports that though the share of Africa in global aviation industry remains relatively small compared to other regions, it supports 6.8 million jobs and contributes US$ 72.5 billion to the African economy. The Republic of South Africa and Egypt have the best air services and lowest airfares per passenger-km in Africa. Other countries are less competitive in terms of air services and airfares, although air services for Addis Ababa and Nairobi are higher than average for the region. Lack of direct airline connection to most countries in Africa has hampered investor interest to some extent

and hence aviation should be treated as a priority sector to boost the economic development of these countries.

Africa being home to 16 percent of global population, and the large mass of the continent offers great potential for growth in region's aviation industry. Africa is expected to have a 5.1 percent growth rate in air traffic growth by 2032, which is higher than the growth in other regions (Europe 3.8 percent, North America 3 percent, and the expected global average of 4.7 percent). In order to realize this growth, infrastructure coupled with the development of skills needed to service the continent's aviation transformation is required.

Ethiopian Airlines has greatly contributed in making the Addis Ababa Bole Airport a major aviation hub and a gateway to Africa. Kenyan Airlines through the Jomo Kenyatta International Airport in Nairobi provides access not only to the east African region, but also to the central and western part of Africa. South African Airways covers most of the southern African region from its Johannesburg base at OR Tambo International Airport[9]. In the northern region, Casablanca, Algiers and Tunis airports act as the major gateways for Europe to access both the Maghreb region and the western African region. Cairo is the major gateway for the Middle East countries to access the major African cities in the northern, eastern and western regions. Thus, air transport is a critical link that not only connects Africa to the world, but also support intra-regional connectivity among the countries in the region.

Ethiopia, Egypt, and the Republic of South Africa are among the countries having major national carriers, whereas countries like Senegal, Djibouti, Mali, Burkina Faso and Togo have mainly small regional and domestic carriers. Rwanda and Tanzania are increasingly investing to build their national carriers. Nigeria is also on the verge of establishing a national carrier. Currently, the passenger traffic in Africa is mainly from 10 African countries, covering around 600 million people. It is estimated that a 1 percent traffic increase from the rest of Africa, would result in an increase of about six to seven million passengers every year.

[9]Aviation as a catalyst for growth in Africa, 2017, Richard Li, NTU-SBF Centre for African Studies

3. Potential for Development of Transport Sector in Africa

Transport and logistics contribute to Africa's growth by ensuring connectivity, market integration and making the region more accessible and competitive. The ability to move goods and passengers safely, efficiently, timely and cost effectively is an important aspect of international trade of any region. Africa's transport sector has a vast potential for development, particularly in terms of increased paved roads, development of airports and seaports. Transport costs are one of the main factors explaining the location of economic activities. Bridging the gap in transportation sector is essential for enhancing Africa's competitiveness, national distribution and economic development. These could also facilitate the creation of export-based manufacturing and service industries, including tourism, distribution (wholesale and retail), and various business process outsourcing services.

Basic and affordable transport infrastructure, such as road and rail are required to provide effective access to social services, such as emergency health care. It also facilitates labour movement and maximise the benefits from close interactions between rural and urban areas. Better transport may also reduce the cost of agricultural inputs, raise producer prices, facilitate the marketing of produce, and increase access to markets for the local private sector by lowering transport costs. Moreover, it increases the size of markets, improves efficiency in production and distribution, supports economies of scale, and raises total factor productivity. Finally, it will foster private sector development and attract larger foreign investment flows.

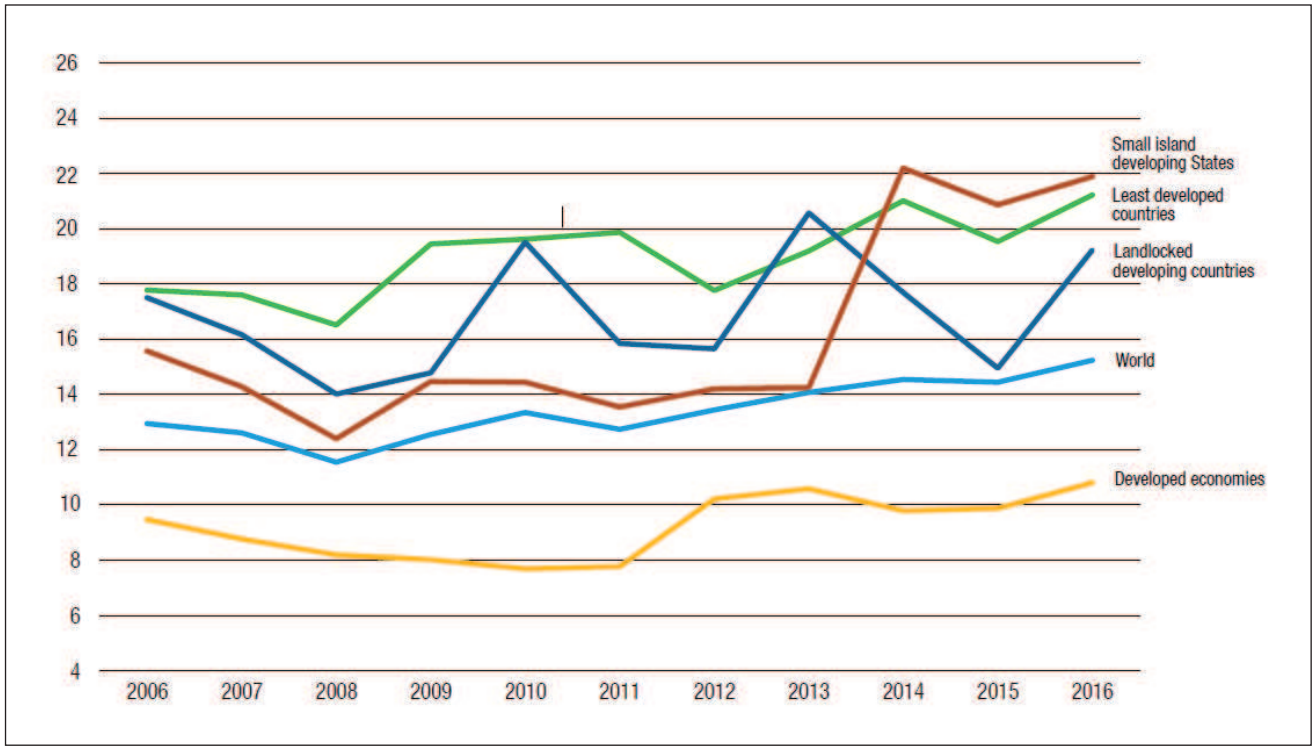
The efforts to improve transport sector in Africa have resulted in improved accessibility and connectivity. Nevertheless, the price of transport services in Africa is still one of the highest, with poor quality services and lack of modern transport logistics. Hence, the solution to these problems include not only bridging the infrastructure gap in the sector, but also addressing policy issues and effective utilization of existing resources.

PIDA has identified that road and rail networks in most of the countries in Africa have lower density compared to other regions and there exists a number of missing links in the trans-Africa transport connections. The low traffic volumes in the region limits economic development. International freight corridors and air transport systems are the gateways to Africa and act as crucial links between countries within the continent. Their performance determines the efficiency of international supply chains that use them and determine the cost of goods in Africa.

Transport and Insurance Cost in Africa

According to UNCTAD, low-income economies, landlocked developing countries and small island developing states face relatively higher transport costs than other economic groupings. Average transport costs represent around 21 percent of the value of imports for LDCs, 19 percent for landlocked developing countries and almost 22 percent for small island developing states, against the world average of 15 percent in 2016 **(Chart 3.1)**. Since most African countries fall under the low income/land locked category, high transport and insurance costs could be identified as one of the important factors in their marginalization from global and regional transport and trading networks. According to OECD, there is a strong case for promoting intra-continental trade vis-à-vis inter-continental trade from cost perspective. Inter-continental trade increases transport and insurance costs by 2-4 percent as compared to comparable intra-continental trade. This supports the

Chart 3.1: Transport and Insurance Costs of International Trade (% Share of Value of Imports)



Source: Review of Maritime Transport 2017, UNCTAD

role of a better transport infrastructure to facilitate this trade.

A report by UNECA estimated that on an average, transport costs in African landlocked countries represent 77 percent of the value of their exports. Similarly, various studies report that poor road infrastructure account for 40 percent of the transport costs in coastal countries, compared with 60 percent in landlocked countries. High transport costs lead to a decline in competitiveness and increased trading costs. Inadequate transport infrastructure is a major cause of intra-regional economic disparities in Sub-Saharan Africa as inland nations face longer transport times and higher transport costs, resulting in lower GDP growth rates. Revenue losses from inefficient border procedures in case of landlocked developing countries could exceed 5 percent of their GDP[10].

African Regional Transport Infrastructure Network (ARTIN)

PIDA focus on the African Regional Transport Infrastructure Network (ARTIN), consisting of 40 principal international freight corridors (including road, rail, river modes and major sea ports), the Trans-African Highway network (TAH), major international airports, and the high-level air traffic control systems. Africa has 40 key transport corridors (38 existing corridors and 2 work in progress corridors, the Mtwara and the Lamu corridors) created by various Regional Economic Communities to link landlocked countries in the region to ports and to connect the capitals of coastal countries. It covers about 63,000 km out of the total road network in Africa and carry 90 percent of trade for landlocked countries and 40 percent of international trade by African countries. Sixteen corridors also have railway

[10]Trade Costs: What Have We Learned? A Synthesis Report, 2013, Evdokia Moïse and Florian Le Bris, OECD

lines of about 20,000 km and some corridors, such as the Central corridor and the Beira/Shire/Zambezi corridor include lake or river transport. All these corridors terminate at ports and/or link ports. About 23,000 km of road along these corridors are also part of the TAH. The TAH concept was conceived in the mid-1970s, consisting of 10 routes and covering over 58,000 km to link the African capital cities and cross Africa from North to South and East to West. ARTIN also includes 19 ports acting as the entryways to the corridors.

The ARTIN air transport system includes the largest airport in each country and handles 90 percent of the air passengers in Africa and the high level air control system. The ARTIN links the large African centres of production (large cities, mining centres, and large agriculture production projects) and the most important African consumption centres with the rest of the world via modern and efficient regional transport infrastructure networks and gateways (ports and airports). The New Partnership for Africa's Development (NEPAD) estimates that trade volumes in Sub-Saharan Africa will more than triple from 102.6 million tonnes in 2009 to 384.0 million tonnes in 2030, if the trade corridors are completed. In addition, the development of rail corridors will have a substantial impact on intra-regional trade, with trade between African countries is expected to increase from 34.9 million tonnes in 2009 to 120.4 million tonnes in 2030.

Current Situation of ARTIN Network

The current condition of ARTIN Network is in a laggard state. It has been found that a quarter of the ARTIN roads are in poor condition, with one tenth unpaved. Over half of the railways are in poor condition. Though most ports are in good condition, they have little spare capacity in container terminals. Inland water transportation including lake and river transport offers good potential in the region, but has been neglected. Also a third of airports are in poor condition and the regional air navigation systems are obsolete.

Underutilized / suppressed demand amounts to 11 percent of trade for the region (26 percent for landlocked countries) and 13 percent in terms of air passenger transport. It has been identified that inefficiencies along the corridors cost US$ 172 billion for African economies, of which 60 percent is due to high annual costs of transport and 40 percent due to the cost of suppressed demand.

NEPAD has also launched a transport and logistics initiative called MoveAfrica to address the transformation of trans-boundary transport and logistics sector in Africa. MoveAfrica seeks to reduce transport costs and increase logistics efficiency for Fast Moving Consumer Goods (FMCG) operators and manufacturers operating in Africa.

Transport Demand in Africa

Total trade of Africa has increased three-fold to US$ 830.9 billion in 2016 from US$ 235.5 billion in 2001, with 2.2 percent share in global exports and 2.9 percent share in global imports **(Table 3.1)**. Total international freight demand in the region is based on international trade of Africa, which has grown at a CAGR of 8.2 percent during 2001 to 2016. The increase in global trade depends on smooth, fast, and less costly mode of transportation. The African gateways have grown substantially both for freight and passengers, supported by growing international trade of the region. This requires African transport network to expand to handle the increased traffic growth.

Table 3.1: Africa's Global Trade (US$ billion)

	2001	2006	2011	2016
Exports	114.7	286.5	622.2	351.9
Imports	120.9	270.4	568.2	479.0
Total Trade	235.5	556.9	1190.4	830.9
Trade Balance	-6.2	16.2	53.9	-127.1

Source: ITC Trade Map (accessed on February 28, 2018)

The ICA has estimated that to import a 20-foot container in Sub-Saharan Africa, average cost would be US$ 2,793, requiring an average time of 38 days. Whereas, to import a 20-foot container in Singapore

average cost would be US$ 440 with an average time of 4 days. For the 16 landlocked countries in Africa, the cost of trading is 50 times higher and the volumes of trade are 60 percent lower than in African coastal countries. This further substantiates the requirement for a better transport infrastructure in the region.

Road Network

The World Bank has stressed on the fact that Africa's development is highly dependent on an adequate and reliable road system. Good-quality road connections can greatly expand access to jobs, markets, schools and hospitals. Especially for rural communities, a road is often an essential lifeline linking isolated villages to economic opportunities and services.

The low density and poor condition of the existing road infrastructure act as a serious constraint to the growth of the region. At present, only one-third of rural population live within two kilometers of an all-season road in Africa, which is the lowest accessibility in case of developing countries. Insufficient funds for maintenance of existing roads further accelerate the deterioration of road network in the region, leaving many roads in poor condition. The World Bank has identified that coverage of routine and periodic maintenance needs in most African countries average at 65 percent and 54 percent, respectively. Further, there are major discontinuities in the existing intra-regional road networks.

Road transport is the principal mode of motorised transport in the region, accounting for over four-fifths of freight and passenger traffic in Sub-Saharan Africa, reflecting low availability of railway lines within the region (except for the Republic of South Africa). Currently, around 27 countries in Sub-Saharan Africa have road funds to support funding of new roads and maintenance of existing roads and around 20 road agencies for the sustainable management of road network. Increased financing in this sector could support the activities of road funds and road agencies, along with setting up of funds in rest of the countries. It has been estimated that transport prices are expected to fall by 30 percent from their current levels through trade facilitation measures that reduce transit time and costs to a minimum.

Currently, the road sector draws the greatest share of transport sector funding in most African countries. But the current situation of the road network implies the fact that the funding levels are insufficient to meet the greater needs of the region.

Regional Infrastructure Corridors in Africa: With the emphasis on regional integration, African governments have started thinking beyond development within border lines. This has placed the focus on regional economic corridors, interlinking highways and ports in the region and hence providing comprehensive connectivity between international, national and rural networks. For example, East Africa is fast developing the trans-national road networks. The key transportation corridors in the East Africa totals to around 2,900 km connecting all five countries in the East African Community[11].

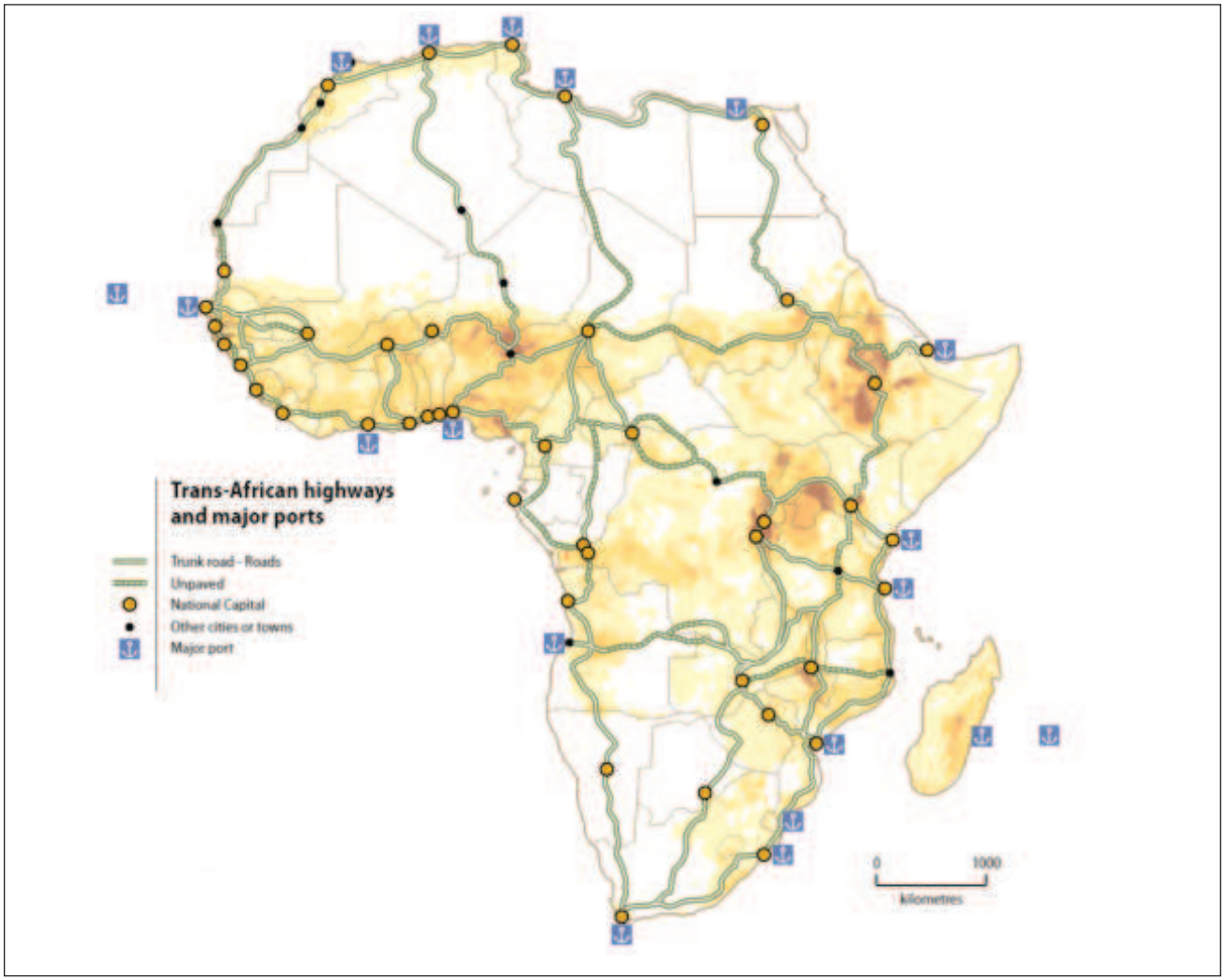
The corridor approach is considered as the best way to reduce the time and cost of shipping freight on a regional as well as an international level. This would also reduce the costs associated with cross-border trade as well as reduce the time required for moving goods across borders. In Liberia, for instance, with the rehabilitation of major road corridors connecting urban to rural areas have resulted in significant reduction in travel time, increased vehicular movement along those routes, increased access to markets, educational institutions, hospitals and other social services which are critical for economic growth and development of the country.

Though Africa accounts for only 2 percent of the world's vehicle population, the road crash fatality rate estimated at 24.1 per 100,000 of population, is the highest globally[12]. These can be attributed to road congestion, pavement conditions and deterioration

[11]AfDB

[12]Africa Transport Policy Performance Review, SSATP Africa Transport Policy Program, 2015

Exhibit 3.1: Regional Infrastructure Corridors



Source: AfDB

in level of services, implying the need for increased funding for upgradation of this sector.

According to UNECA[13], African firms lose around 13 percent of their sales, 11 percent more than in East Asia and 7–8 percent more than in other regions, due to inefficiencies in infrastructure, credit markets and the regulatory environment. This varies across firms and countries within the region. High transport costs and delays and uncertainties drive African firms to stock huge volume of goods, incurring an additional cost. Traffic congestion and delays also cause additional costs in truck transportation. Hence, expanding road capacity of the region would provide urgent solutions. In the long term, innovative measures such as truck-only lanes should be considered to be set up in the region. Several African governments' emphasize on using non-motorized modes and transit, including bus rapid transit (BRT) in the coming days. This will provide the benefits of rail (speed, low wait times, reliability and comfort), but at the cost of a bus system. The system is less costly than rail as it can share existing infrastructure (roads), and does not require a new set of right-of-way, or a rail system. But for efficient functioning, this will require bus-only lanes and priority at signals.

[13]Urbanization and Industrialization for Africa's Transformation, UNECA, 2017

Railway Network

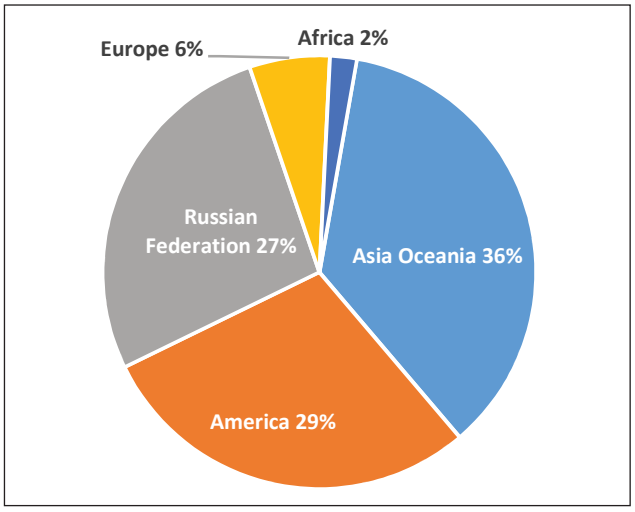
Rail transport, characterized by energy efficiency, reduced greenhouse gas emissions and lower cost per tonne kilometer is critical in supporting economic development of a region. Railways could play a major role in the conveyance of freight over long distances. Use of rail transport for trade purpose is competitive over mid to long distances. It is the most feasible when freight involves large volumes. While comparing with other means of transportation, railways are very useful in mass transit systems with large reductions in enormous logistical costs and carbon emissions in the process.

According to AfDB, the current condition of railway infrastructure and rolling stock in Africa is at a sub-optimal level and hence this has affected the contribution of rails in Africa's economic development. Decades of underinvestment in passenger and freight rails, has resulted in a loss of capacity of railway sector. According to the World Bank, only the Republic of South Africa and few North African countries have a fairly good railway system in the region. Railways have the potential to transform the continent, but currently play an insignificant role in Africa with rail density of 2.5 km/1000 square km. The rail network in Africa is characterized by limited interconnection with very little electrified outside the Republic of South Africa. African countries prioritise road infrastructure investments over rail transport investment due to the enormous capital investment requirement for rail infrastructure and rolling stock.

It has been identified that share of rail transport in most of the countries in Africa is below 20 percent of the total volume of freight transport. Two major factors responsible for the negligible contribution by railways include lack of investment in rail infrastructure and absence of a supporting institutional framework. In order for Africa to realise its full potential by utilizing its abundant natural resources and wealth, there is a greater need for the development of rail transport in the region. Transforming rail infrastructure will have a direct impact on the region's key industries.

According to the International Union of Railways, trains in Africa carried about 133 billion tonne-kilometres of freight in 2016, decreasing from 136.5 billion in 2015. Out of that, 85 percent was in the Republic of South Africa, which has a modern network. Africa's share in total global tonne-kilometres of freight was just 2 percent in 2016 **(Chart 3.2)**. African rails carried 654 million passengers, with passenger kilometers of 23.0 billion in 2016. Except for the Republic of South Africa and few other countries, railways carry a minimal amount of freight volumes due to absence of maintenance and deterioration of networks. Meanwhile, a number of new rail regional projects are constructed or are under consideration including Kenya-Uganda, Djibouti-Ethiopia, and Benin-Niger rail projects.

Chart 3.2: Regionwise Share in Rail Freight Tonne-Kilometers, 2016



Source: Railway Statistics 2016, International Union of Railways

Most of the railways in Sub-Saharan Africa have undergone some form of restructuring by introducing private sector operations. In rest of the countries that have not undergone similar reforms, railway operations have had a steady decline, or ceased to operate. Even after reforms, there is not much evidence that rail sector reforms have succeeded in diverting freight traffic from road to rail. Although, total freight tonne-km have increased in few cases owing to the profitable nature of long haul traffic for private operators, in many cases total freight tonnage has declined. Similar is the case with passenger

traffic which has declined in most cases with private operators focusing on freight business which are more profitable.

AfDB has identified various drivers that could create further opportunities for railway development in Africa. Growing urbanisation and industrialization in the region will pose new transportation challenges which are better suited to be handled by railways. Africa, being home to a variety of natural resources, could use railways to transport large volumes of goods such as bulk minerals and commodities. The geographical nature of the continent with large number of landlocked countries and small sized economies require development of high-capacity and efficient transport corridors. Environmental and safety issues support rail as the favorable transport network. Also, the reduction in high external costs including pollution, congestion and accidents associated with the increased use and ownership of private vehicles further supports requirement for a regional rail network. Converting truckloads to rail intermodal to compete on time, service, and cost, and increase capacity by adding parallel tracks along certain mainlines are some of the ways through which African economies can improve freight transport through rail mode.

Maritime Transport

According to UNCTAD, seaborne trade accounts for over 80 percent of world merchandise trade by volume and more than 70 percent of its value. World seaborne[14] trade volumes expanded by 2.6 percent in 2016 to 10.3 billion tonnes, about half of which was attributed to tanker trade. UNCTAD projects that world seaborne trade volumes will be expanding at a CAGR of 3.2 percent between 2017 and 2022. During the same period, trade in the major commodities and containerized trade is forecast to grow by 5.6 percent and 5 percent, respectively. Total seaborne trade (exports) volume of Africa fell to 745.3 million tonnes in 2016 from 755.1 million tonnes in 2015 **(Table 3.2)**. Africa loaded 745.3 million tonne goods (7.2 percent of total goods loaded globally) and unloaded 506.2 million tonne goods (4.9 percent of total goods unloaded globally). UNCTAD has forecasted an increase in world

Table 3.2: Seaborne Trade in Africa (million tonnes)

	Goods Loaded				Goods Unloaded			
	Total goods	Crude oil	Petroleum product and gas	Dry cargo	Total goods	Crude oil	Petroleum product and gas	Dry cargo
2006	721.9	353.8	86.0	282.2	349.8	41.3	39.4	269.1
2007	732.0	362.5	81.8	287.6	380.0	45.7	44.5	289.8
2008	766.7	379.2	83.3	304.2	376.6	45.0	43.5	288.1
2009	708.0	354.0	83.0	271.0	386.8	44.6	39.7	302.5
2010	754.0	351.1	92.0	310.9	416.9	42.7	40.5	333.7
2011	723.7	338.0	68.5	317.2	378.2	37.8	46.3	294.1
2012	757.8	364.2	70.2	323.4	393.6	32.8	51.0	309.8
2013	815.3	327.5	82.4	405.3	432.2	36.6	65.3	330.3
2014	757.4	299.3	74.3	383.7	469.6	37.2	71.0	361.5
2015	755.1	293.7	58.6	402.8	485.6	39.4	72.1	374.2
2016	745.3	290.1	50.2	405.0	506.2	40.1	78.7	387.4

Note: Goods loaded represent outbound goods/exports; Goods unloaded represent inbound good / imports
Source: UNCTADStat

[14]Total seaborne trade equated to total tonnes loaded

seaborne trade volumes between 2017 and 2022, across all segments, with containerized trade and major dry bulk commodities trade recording the fastest growth.

Since around 90 percent of Africa's trade is conducted by sea, Africa has large number of ports. Due to limited availability of good locations for deep water ports, only a few international ports handle large cargo volumes, resulting in long waiting times at the ports. Durban in the Republic of South Africa and Damietta/Port Said in Egypt are the only ports to have annual capacities of around 4-5 million twenty-foot equivalent units (TEUs)/year which are equivalent to ports in other developing countries . At present, only six of Africa's ports, Durban, Damietta/Port Said, Port Elizabeth, Cape Town, Port Louis, and Tangiers, could accommodate Post and Super Panamax vessels. Many ports in Africa operate at below capacity due to low berth/docking facilities, weak terminal freight and handling management, and inadequate maintenance and dredging capacity. Because of these problems, port services in Africa are expensive, with long delays in shipments resulting in physical and financial losses.

Inadequate infrastructure in sea ports in Africa constraints the region's competitiveness as majority of the world's trade is facilitated by sea ports linked to road and rail infrastructure. With the expected increase in seaborne trade in the region, there is an increasing need for innovation and development in the maritime infrastructure of Africa.

According to the World Bank container port traffic data, which measures the total number of containers handled by a port, expressed in TEUs, Africa had a container port traffic of 27.9 million TEUs, which is 4 percent of the total global container port traffic in 2016 **(Table 3.3)**. The major African ports in terms of container traffic in 2016 include Tanger Med, Morocco; Durban, the Republic of South Africa; Lagos, Nigeria; and Alexandria and Port Said, Egypt. Countrywise container port traffic data is given in **Annexure 2**.

Container port turnaround time in Africa stood at 2.54 days in 2011, as against a global average of 1.4 days. Container port turnaround time in case of other regions in 2011 stood at 1.45 days in Asia, 1.32 days in developing America, 1.24 days in Oceania, 1.12 days in North America, and 1.08 days in Europe. Similarly, cargo dwell times in Sub-Saharan Africa are unusually long at an estimated average of 20 days (not including Durban and Mombasa ports) compared with performances in other regions such as Asia and Europe, where cargo dwell times in large ports are usually under one week. There has been improvements in Mombasa and Durban Ports in

Table 3.3: Regionwise Container Port Traffic (million TEU)

	2010	2011	2012	2013	2014	2015	2016
Africa	23.6	24.4	25.3	27.2	28.0	28.1	27.9
LAC	33.5	37.1	39.3	40.5	40.7	40.4	40.3
Asia	339.6	365.5	383.1	402.1	428.4	436.4	443.8
Europe	89.8	96.6	99.5	102.4	112.2	112.7	118.8
North America	54.2	55.1	57.4	58.1	56.7	59.2	59.8
Oceania	8.8	8.3	9.4	9.6	10.6	10.9	10.8
World	**549.5**	**587.0**	**613.9**	**640.0**	**676.7**	**687.7**	**701.4**

Note: TEU: Volume of a standard 20 foot long intermodal container used for loading, unloading, repositioning and transshipment
Source: World Development Indicators 2018, World Bank

[15]Africa's Infrastructure De¬ficit: Closing the Gap, 2017, JICA and Africa Emerging Markets Forum

recent years with reduction in port turnaround time, cargo dwell times and delay after release.

Various studies stress the importance of enhancing port efficiency and reducing port dwell time to reduce maritime transport costs, increase exports and enhancing trade competitiveness of a region. In Sub-Saharan Africa, around 50 percent of transport time from ports to major cities in landlocked countries is spent in ports.

Air Transport

Air transport is a vital link for international trade and plays a critical role in facilitating tourism. Lower transport costs and improving connectivity have boosted trade flows by globalizing supply chains and associated investment. The air transport industry in Africa is dominated by European or other foreign carriers, leading to routings through Europe resulting in increased time and cost. According to PIDA reports, 70 percent of airports in Africa have good or fair conditions and are efficient. Although air transport in Africa is growing strongly, it is expensive with patchy connections. The African high-level air traffic control system is yet to be fully upgraded, resulting in inefficient use of aircraft and higher costs of air transport. Airport landing charges are high owing to the absence of support from concessions enjoyed in many parts of the world.

African countries have launched a number of programmes to improve the air transport sector of the region. In January 2018, 23 African countries launched the first phase of the Single African Air Transport Market (SAATM) under the initiative of African Union and based on the agreements of the Yamoussoukro Decision[16] of 1999. This is expected to spur more opportunities to promote trade, improve intra-Africa connectivity, and cross border investments in the production and service industries, including tourism resulting in the creation of additional jobs.

Passenger Transport[17]: Air passenger transport demand has been growing steadily in Africa. In 2015 African airlines carried 79.5 million passengers, representing 2.2 percent of the total air passenger transport, up by 1.8 percent from 2014. Of these 48.2 million passengers were carried on international routes, while 31.2 million were carried on domestic routes in 2015. The top five passenger countries in Africa in 2015 were the Republic of South Africa, Egypt, Morocco, Nigeria and Algeria. Many African airlines recorded low load factors due the imbalance of capacity and demand, limited commercial cooperation and uncoordinated intra-African networks with other African operators and this resulted in average load factors for African airlines being the lowest globally **(Table 3.4)**. Average passenger load factors (PLF) for African carriers scheduled passenger traffic in 2015 was 68.2 percent, same as that recorded in 2014. PLF for African carriers in domestic routes was 73.8 percent while inter-continental routes recorded 67.4 percent.

According to Airports Council International (ACI) Africa airport data, African airports carried 179.8 million passengers in 2015. International passengers constituted 63 percent of the total passengers carried in African airports in 2015. The biggest air transport markets in Africa are the Republic of South Africa, Egypt, Morocco and Ethiopia. In terms of total passenger numbers, OR Tambo International Airport in the Republic of South Africa is the busiest airport in Africa, followed by Cairo International Airport in Egypt, Cape Town International Airport in the Republic of South Africa, Aéroport Mohammed V in Morocco and Addis Ababa Bole International Airport in Ethiopia.

[16]Yamoussoukro Decision of 1999 provides for the full liberalisation of intra-African air transport services in terms of market access, the free exercise of first, second, third, fourth and fifth freedom traffic rights for scheduled and freight air services by eligible airlines and removes restriction on ownership

[17]African Airlines Association

Table 3.4: Regionwise Passenger and Weight Load Factor

	2014		2015	
	Passenger LF	Weight LF	Passenger LF	Weight LF
Africa	**68.2%**	**55.4%**	**68.2%**	**56.7%**
Asia Pacific	77.4%	69.3%	78.8%	70.5%
Europe	81.3%	71.3%	82.3%	72.5%
Latin America	79.3%	65.4%	79.6%	67.8%
Middle East	78.3%	64.5%	76.2%	63.4%
North America	83.6%	64.5%	83.9%	63.4%
Industry Average	79.9%	68.1%	80.4%	67.9%

Source: African Airlines Association

Passenger Traffic Forecast: According to Boeing Market Outlook, air traffic for Africa's carriers is expected to grow at 5.9 percent annually over the next 20 years, which is above world average and is driven by overall economic growth and increasing numbers of travelers from, to and within the region. Air travel within Africa has been resilient over the last decade and represents about 20 percent of total African service. Inter-regional travel service (from or to other regions in the world) constitute 80 percent of Africa's air travel, with an average capacity growth rate of 4.6 percent per year over the last decade. In 2016, intra-Africa Revenue passenger kilometres (RPK)[18] stood at 62.9 billion, and is expected to increase by a CAGR of 6.2 percent to 222.9 RPK billion by 2036 **(Table 3.5)**.

Table 3.5: Passenger Traffic Forecast, RPK billions

	2016	2036	Av. Forecast Growth (2016-2036)
Africa-Africa	**62.9**	**222.9**	**6.2%**
Europe-Africa	153.8	383.0	4.4%
Middle East -Africa	62.5	270.7	7.2%
North America - Africa	13.4	42.0	5.6%
Latin America-Africa	3.1	12.6	6.9%
Asia Pacific-Africa	22.2	80.7	6.3%

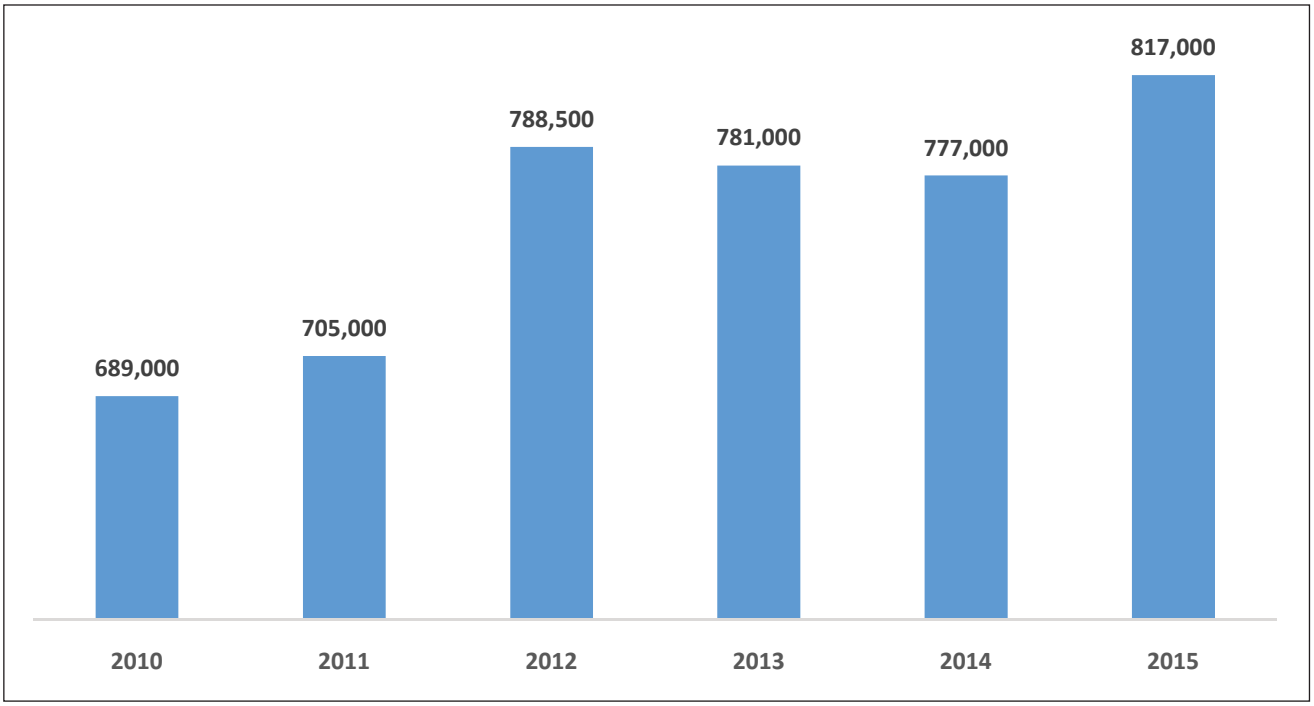
Source: Boeing Market Outlook

Freight Transport: Air freight carried by African airlines increased to 817,000 tonnes in 2015 from 777,000 tonnes in 2014 **(Chart 3.3)**. African airlines represented 1.6 percent of total global freight carried in 2015 compared to 1.5 percent of total global freight carried in 2014. In terms of freight tonne kilometres (FTKs), performance by African airlines dropped by 1.4 percent year on year in 2015. The underdeveloped cargo component of African airlines' operations has led to dominance of the inter-continental sector by non-African airlines and competition by other forms of transport such as rail or road. Nearly 90 percent of the scheduled freight by African carriers was carried on international routes, while the rest on domestic routes in 2015. Ethiopian Airlines carried the largest portion of freight at 257,718 tonnes followed by South African Airways at 150,311 tonnes, EgyptAir at 122,162 tonnes, Kenya Airways at 61,923 tonnes and Air Mauritius at 30,755 tonnes. Enhancing trade can contribute significantly to the growth of air cargo within the continent.

In 2015, freight traffic at African airports increased by 4.1 percent to 2 million tonnes compared to 1.9 million tonnes in 2014. Cairo International Airport in Egypt was the major cargo airport accounting for 318,425 tonnes in 2015. The other cargo hubs among the top 5 in the continent include OR Tambo International Airport (311,576 tonnes), Jomo Kenyatta International Airport (243,873 tonnes),

[18]RPK is a key indicator of airline economic growth and a measure of the volume of passengers carried by an airline

Chart 3.3: African Airlines Year-on-Year Freight Carried (tonnes)



Source: AFRAA Annual Reports

Addis Ababa Bole International Airport (203,620 tonnes) and Murtala Muhammed International Airport (169,878 tonnes). Intra-Africa air freight is expected to grow in the coming years supported by increase in regional trade and cross investments. IATA's 5-year forecast indicates that international air freight tonnes are expected to increase by 3.9 percent, which is true in case of Africa also, showing increased prospects for air transport sector in the region.

4. Financing Infrastructure in Africa

Africa has significant deficiency in various infrastructure sectors such as energy, information and communication technology (ICT), transport and water resources, which require interventions at national, regional and international levels. A number of organizations have documented the need for improving connectivity in the region and have set up various programmes to identify and alleviate these issues. PIDA, sponsored by AfDB has made significant contribution in this area by identifying priority projects requiring immediate attention in the region. It is a continental initiative aimed at tackling the infrastructure deficits in Africa by 2040.

Current Infrastructure Investment Requirements in Africa

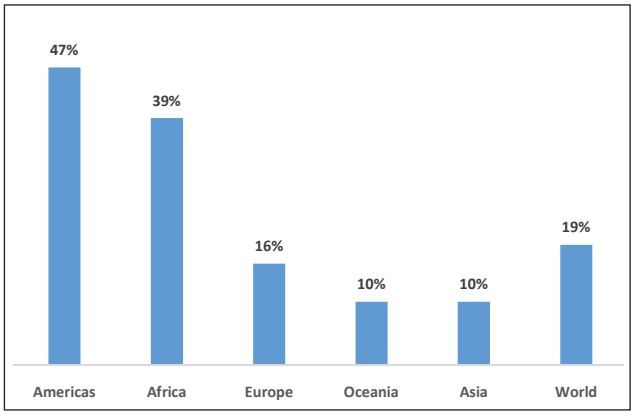
World Bank Estimates: According to the World Bank-sponsored Africa Infrastructure Country Diagnostic Study conducted in 2009, an annual investment of US$ 93 billion is required for addressing the infrastructure deficits for Sub-Saharan Africa. This includes cost of new investments as well as operation and maintenance of existing infrastructure, with US$ 40.9 billion (44 percent) requirement for energy, US$ 21.4 billion (23 percent) for water and sanitation, US$ 18.6 billion (20 percent) for transport, US$ 9.3 billion (10 percent) for ICT and US$ 2.8 billion (3 percent) for irrigation sectors, annually.

JICA Estimates: A background paper titled 'Imagining Africa 40 Years from Now' commissioned by JICA and presented in 2017 at the Africa Emerging Markets Forum suggests an annual infrastructure investment requirement of around US$ 100 billion - US$ 150 billion (at 2015 dollar rates). JICA has estimated that Africa currently assigns just 3.5 percent of its GDP to infrastructure sector.

G-20 Estimates: The G-20 Global Infrastructure Outlook, 2017 has revised the total infrastructure investment requirment for Africa to US$ 4.3 trillion by 2040 or US$ 174 billion per year. If African economies were able to raise their performance to match that of their best performing peers, a total investment need of US$ 6 trillion up to 2040, or US$ 240 billion per year would be required. The report has estimated that currently around 38 percent of infrastructure investments in Africa have been directed towards the electricity sector, with 20 percent going to water. Meanwhile, the transport sector in Africa has accounted for just around 27 percent of total investments, of which rail sector received just 3 percent.

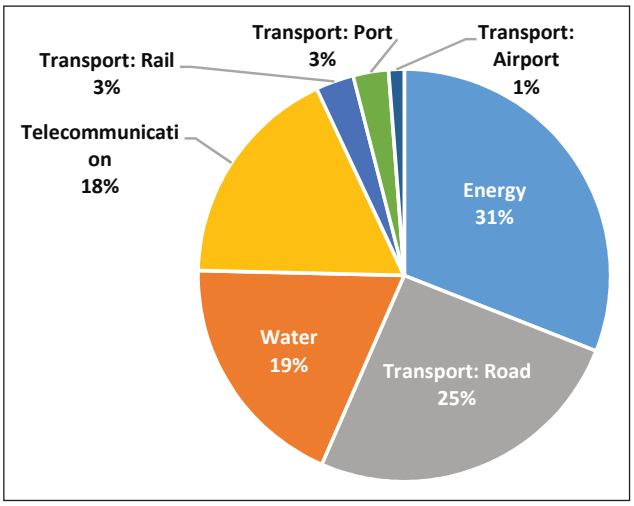
The report has estimated a 39 percent infrastructure investment gap, i.e., extent to which estimated investment need is greater than investment expected under current trends for Africa by 2040 **(Chart 4.1)**. Among the sectors, investment requirement for energy and road sectors account for more than half of the total infrastructure requirements in Africa **(Chart 4.2)**.

Chart 4.1: Regionwise Infrastructure Investment Gap, 2016-2040



Source: G-20 Global Infrastructure Outlook

Chart 4.2: Sectorwise Investment Needs in Africa's Infrastructure by 2040



Source: G-20 Global Infrastructure Outlook

AfDB Preliminary Estimates: According to the new AfDB estimates for Africa's infrastructure needs, an annual cost of US$ 130 billion-US$ 170 billion is required by 2025 to bridge the infrastructure financing gap in Africa. Sectorwise estimates are given in **Table 4.1**.

In case of a region like Africa, which is characterised by large number of land locked and small sized economies sharing large number of borders, the cost and benefits for selecting and implementing an infrastructure project might not just apply to a single country. Regional infrastructure will benefit all countries through economies of scale. But some will bear a higher cost than others, and regional financing differences reflect the scale of investment required in certain countries and region. Hence regional infrastructure projects involves lot of challenges and requires multi-faceted considerations covering financing, sectoral reforms, institution building, improvement in investment climate, addressing issues pertaining to operation and management, establishment of favourable Public-Private Partnerships (PPPs), along with due consideration for environmental impacts. It is time to look beyond aid for infrastructure financing and governments and other support institutions should opt for economically feasible alternative financing solutions.

PROGRAMME FOR INFRASTRUCTURE DEVELOPMENT IN AFRICA (PIDA)

The PIDA initiative, led by the African Union Commission, NEPAD Secretariat, and AfDB is a major initiative to bridge the infrastructure gap in the African continent and facilitate interlinked resurgence. The PIDA initiative promotes regional economic integration by building mutually beneficial infrastructure for strengthening the ability of countries to trade and establish regional value chains for increased competitiveness. PIDA develops infrastructure investment program (short, medium

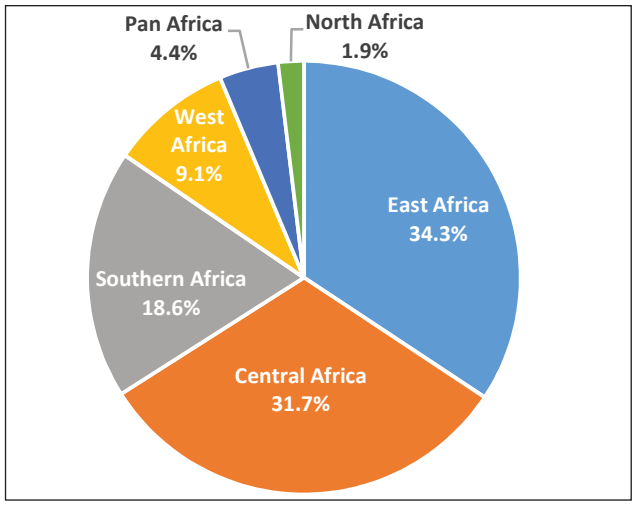
Table 4.1: AfDB Preliminary Estimates on Investment Needs (US$ billion)

Infrastructure Subsector	Target by 2025	Annual Cost
Power	100 percent urban electrification; 95 percent rural electrification	35–50
Water supply and sanitation	100 percent access in urban area; 100 percent access in rural area	56–66
Information and Communication Technology	Mobile universal coverage; 50 percent of population within 25 km of a fiber backbone; Fiber to home/premises; Internet penetration rate (10 percent)	4–7
Road and other Transport sectors (air, rail and port)	80 percent preservation; 20 percent development	35–47
Total		**130-170**

Source: African Economic Outlook, 2018

and long term) built around key priorities, including implementation strategy and priority action plan. The Priority Action Plan (PAP) of PIDA encompasses 51 programmes of regional importance in the transportation, water, energy and ICT sectors. Africa's continental infrastructure investment needs for PIDA projects are estimated at US$ 360 billion up to 2040. In the short term, PIDA's PAP for 2012–20 is expected to cost US$ 68 billion. East Africa and Central Africa together account for around 66 percent of the total capital cost required for implementing PIDA's PAP **(Chart 4.3)**.

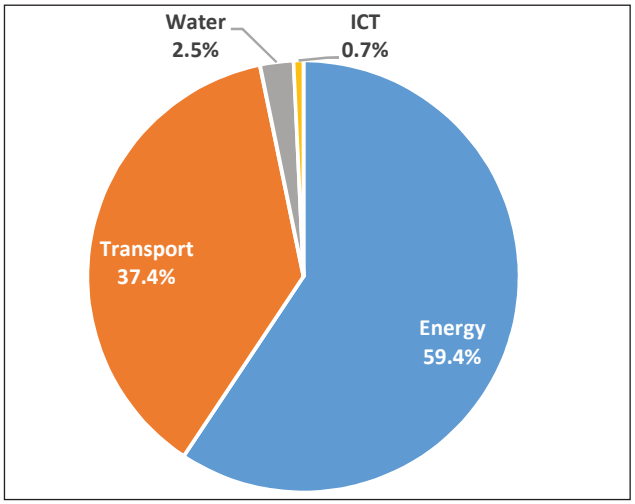
Chart 4.3: Regionwise Share in Total Capital Cost of PIDA's PAP Through 2020



Source: PIDA

According to the PIDA, energy and transport sector account for around 97 percent of the total cost of financing regional infrastructure in the African continent **(Chart 4.4)**. Energy sector would require US$ 40.3 billion, followed by transport sector (US$ 25.4 billion) for implementing PAP. It estimated that by 2040 transport volumes in the continent will increase 6–8 times, with a particularly strong increase of up to 14 times for some landlocked countries. Port throughput, reflecting the amount of cargo a port handles overtime, will rise from 265 million tonnes in 2009, to more than 2 billion tonnes in 2040. It also estimated that infrastructure services in Africa cost twice as much on average as those in other developing regions with exceptionally high tariffs. East Asian firms save around 70 percent in transportation costs relative to their African counterparts, while Latin American and South Asian firms save approximately 50 percent. Hence, closing the infrastructure deficit is vital for economic prosperity, and sustainable development and regional integration is the only way out for a continent like Africa.

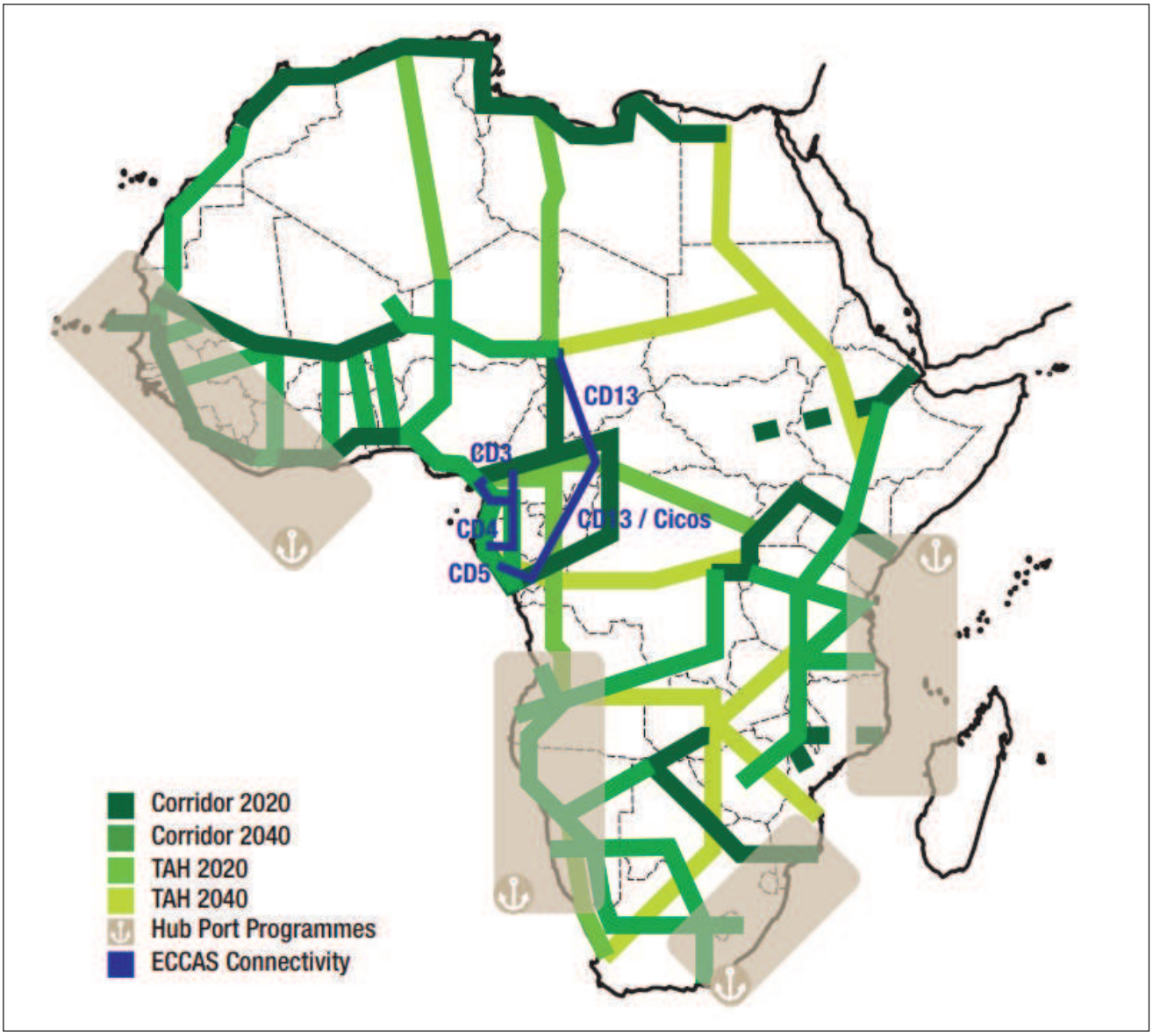
Chart 4.4: Sectorwise Share in Total Capital Cost of PIDA's PAP Through 2020



Source: PIDA

The transport infrastructure plan of PIDA **(Exhibit 4.1)** has a wide array of projects including corridors, road modernisation programs, port hub and railways programs, and air transport related programs, which aim at linking the major production and consumption centres, providing connectivity among major cities, and opening the land-locked countries to improve regional and continental trade. PIDA's PAP also comprise the TAH network which has various sub-groups of road links and feeders classified according to the sub-regions they serve. Five ECCAS corridors are also included in the PIDA programme. With the implementation of projects, transport efficiency gains will be around US$ 172 billion in the ARTIN, with potential for larger savings with the opening of trade corridors.

Exhibit 4.1: Transport Infrastructure Map of PIDA's Priority Action Plan



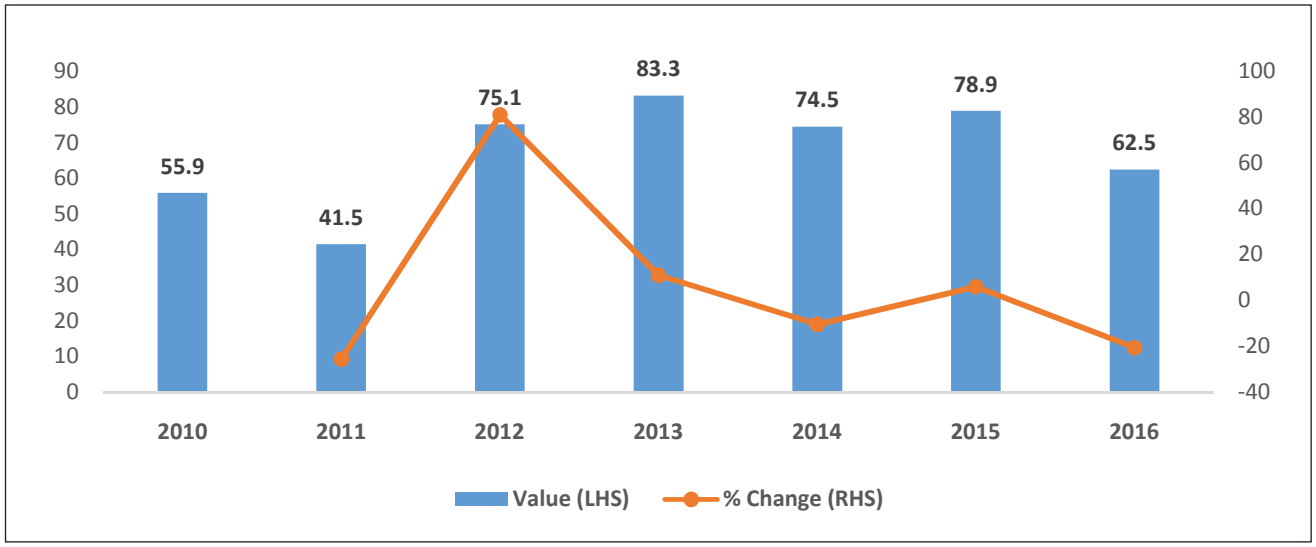
Source: PIDA

Infrastructure Financing Trends in Africa

During 2016, US$ 62.5 billion new commitments were made to Africa's infrastructure sector, both at national and regional level, a decline of around 21 percent compared to US$ 78.9 billion committed in 2015 **(Chart 4.5)**. Budget allocations from African national Governments accounted for the bulk of infrastructure financing commitment at US$ 26.3 billion (42.1 percent share of total commitment) in 2016 **(Chart 4.6)**. External finance commitments witnessed by Africa in 2016 is the lowest since 2012, mainly due to a US$ 14.5 billion reduction in reported Chinese funding and a US$ 4.9 billion fall in private sector investment. The members of Infrastructure Consortium for Africa (ICA) comprising AfDB, Development Bank of South Africa (DBSA), European Commission (EC), European Investment Bank (EIB), G8 countries[19], the Republic of South Africa and the World Bank Group accounted for 29.8 percent of the financing in 2016.

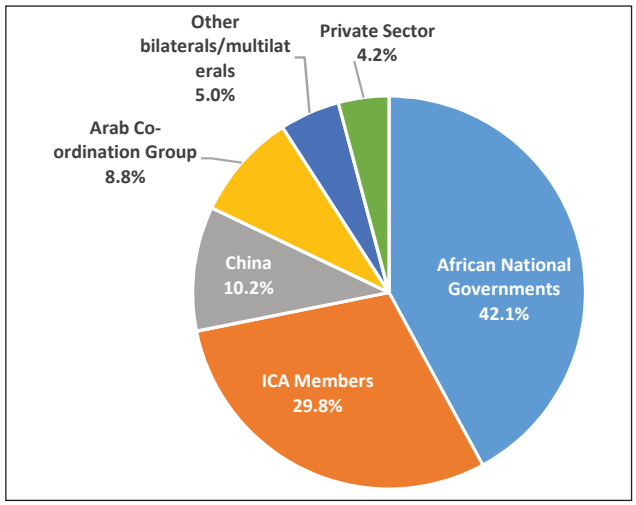
[19]Canada, France, Germany, Italy, Japan, Russia, the UK and the US

Chart 4.5: Infrastructure Financing in Africa (US$ billion)



Source: The Infrastructure Consortium for Africa

Chart 4.6: Total Infrastructure Financing by Source, 2016



Source: The Infrastructure Consortium for Africa

Government Financing

National Governments are traditionally among the most active participants in infrastructure financing. They can provide debt financing through state-owned banks and could also take equity stakes in projects and provide upfront capital grants. African National Governments committed a total of US$ 26.3 billion for infrastructure projects in 46 countries in 2016, compared with US$ 24 billion based on 44 countries in 2015. Maximum budgetary allocation for infrastructure projects were by the Republic of South Africa (US$ 3.6 billion), followed by Egypt (US$ 3.0 billion), Nigeria (US$ 2.7 billion) and Angola (US$ 2.6 billion) **(Table 4.2)**.

Governments, across the world and more so in Africa, are facing increasing budget pressures, making the involvement of multilateral development banks and private sector important for financing infrastructure projects. However, public sector is expected to remain an important source of infrastructure financing in the context, especially in segments where private sector participation is likely to be limited. Limited budgetary resources have to be allocated for national as well as regional projects, with costs and benefits in case of latter more obscure than the former. Therefore, African economies need to undertake a thorough assessment of allocation of fiscal resources whilst simultaneously improving their resource mobilisation capacities.

Multilateral Development Banks (MDBs) and bilateral institutions are an important source of infrastructure financing, and also play a major role in mobilization of private sources of financing in countries where

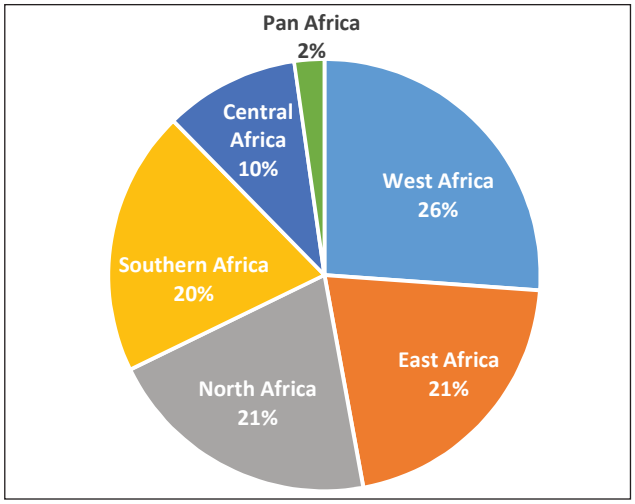
Table 4.2: African National Budget Allocations for Infrastructure in 2016 (US$ million)

North Africa	
Algeria	883.4
Egypt	3,010.5
Mauritania	118.7
Morocco	1,128.9
Tunisia	442.3
Southern Africa	
Angola	2,562.0
Botswana	240.7
Comoros	0.2
Lesotho	60.5
Madagascar	93.9
Malawi	342.4
Mauritius	111.1
Mozambique	29.6
Namibia	240.6
South Africa	3,552.5
Swaziland	136.2
Zambia	655.6
Zimbabwe	248.4
East Africa	
Ethiopia	1,338.7
Kenya	2,030.7
Seychelles	23.5
Somalia	2.2
South Sudan	2.4
Tanzania	1,605.4
Uganda	567.7
Central Africa	
Burundi	4.1
Cameroon	1,145.5
Congo	2.3
DRC	532.4
Gabon	55.7
Rwanda	241.0
São Tomé and Príncipe	10.6
West Africa	
Benin	75.2
Burkina Faso	179.3
Cape Verde	52.7
Côte d'Ivoire	64.5
Gambia	36.0
Ghana	177.1
Guinea	358.3
Liberia	0.7
Mali	199.3
Niger	2.5
Nigeria	2,749.2
Senegal	575.4
Sierra Leone	67.1
Togo	297.5

Source: The Infrastructure Consortium for Africa

private lenders may not otherwise be comfortable taking risk. The members of the ICA accounted for 51.4 percent of the total bilateral and multilateral financing for infrastructure (regional and national) in Africa during 2016. During the year, China alone accounted for 17.7 percent of the total bilateral and multilateral commitments for infrastructure.

Chart 4.7: Regionwise Allocation of Infrastructure Financing, 2016



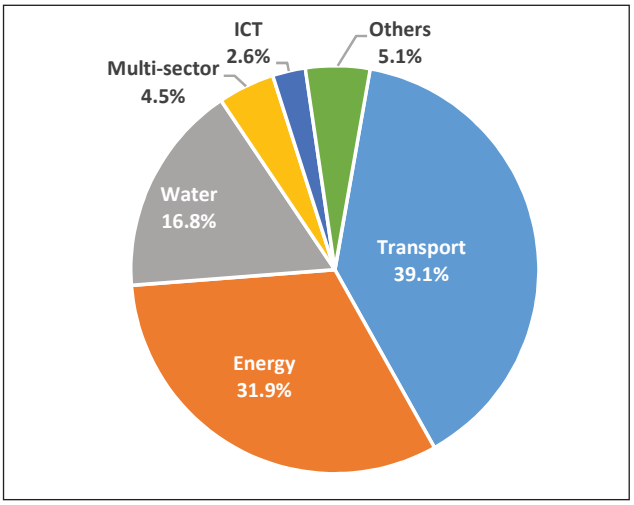
Source: The Infrastructure Consortium for Africa

Out of the US$ 62.5 billion committed to Africa's infrastructure in 2016, West Africa received US$ 16.3 billion of commitments (26 percent), followed by East Africa with US$ 13.1 billion (21 percent) and North Africa with US$ 12.9 billion (21 percent) **(Chart 4.7)**. Southern (excluding the Republic of South Africa) and Central Africa received US$ 6.5 billion and US$ 6.3 billion, respectively, while the Republic of South Africa received US$ 5.9 billion. Intra-regional and pan-African commitments amounted to US$ 1.4 billion in 2016. The Republic of South Africa witnessed a drastic decline in 2016 from US$ 11.7 billion in 2015, mainly due to relatively less Chinese spending.

Sectorwise Trends in Infrastructure Financing

In 2016, the largest financial commitments in Africa were in the transport sector (share of 39.1 percent), followed by energy sector (31.9 percent), water (16.8 percent), multi-sector (4.5 percent), and ICT (2.6 percent) **(Chart 4.8)**. Some of the PIDA projects which were financed during the year are Bokhol Solar PV Plant, the Ten Merina PV plant in Senegal, Tema Port Expansion in Ghana, Kathu Solar CSP in the Republic of South Africa, and wastewater treatment system development project in Tanzania, among others.

Chart 4.8: Sectorwise Share in Total Infrastructure Financing, 2016



Source: The Infrastructure Consortium for Africa

Investment commitments to the transport sector fell sharply in 2016 to US$ 24.5 billion, compared with US$ 32.4 billion and US$ 34.4 billion recorded in 2015 and 2014, respectively. In 2015, transport sector benefitted from strong Chinese support, whereas budget allocations to transport sector from national governments peaked in 2014. African national Governments continued to be the prime funders of the transport infrastructure in 2016. Out of the US$ 24.5 billion committed to the sector in 2016, 59.6 percent was provided by national governments, followed by ICA members (20 percent). Chinese funding to the sector fell considerably from 28 percent in 2015 to 4.1 percent in 2016. Indian financing for African transport sector recorded a significant increase in 2016, with a commitment of US$ 513 million in 2016, which is roughly 2.1 percent of the total commitment to the sector.

Across the regions, West Africa received the highest level of transport commitments in 2016 (26.9 percent of the total), compared to 2015, when East Africa was the top region for transport attracting US$ 11.8 billion, or more than one-third of commitments.

Public Private Partnership in Infrastructure Financing

In most cases, government budgetary resources are not sufficient to meet the infrastructure funding requirements of the country/region. Public-private partnerships (PPPs) are a mechanism for governments to procure and implement public infrastructure and/or services using the resources of private sector without incurring any borrowings for project implementation, while also bringing in the expertise and efficiencies associated with the private sector. The implicit Government support in these projects provides lower risk perception. In transport sector, PPPs can be an effective way to build and implement new infrastructure or to renovate, operate, maintain or manage existing transport infrastructure facilities.

Today PPPs have emerged as an important mode of financing infrastructure projects in several developing countries. PPP financing may come from the public sector, private sources and/or multilateral development finance institutions banks and DFIs. Public source financing includes governments

providing part of a project's upfront capital costs through grants or viability gap funding (government subsidies); state-owned enterprises (SOE) investing equity; and state-owned banks extending loans. Private source financing includes equity (including equity financed by corporate debt) through the project's developer or project finance debt through private lenders, which can be either commercial banks or institutional financiers. Development Finance Institutions (DFIs) also provide various forms of support particularly for low-to-middle income countries.

A PPP project involves financing from various sources, in some combination of equity and debt, and the ratios of these different contributions depend on negotiations between the lenders and the shareholders. The main forms of financing include equity contributions, debt contributions, bank guarantees/ letters of credit/ performance guarantees, bond/capital markets financing and mezzanine/subordinated contributions.

According to the World Bank,[20] in 2015, Sub-Saharan Africa witnessed US$ 6.2 billion worth investments in PPP projects, higher than investments in South Asia and MENA region **(Table 4.3)**. In 2015, 64 percent of the total investments in PPP projects in Sub-Saharan Africa came from private sector, 22 percent by DFIs and 13 percent through public funding. International lenders including DFIs and commercial banks provided 52 percent of the total debt requirements in the region.

In 2016, Africa recorded 17 PPP infrastructure projects amounting US$ 4.2 billion, lower than the US$ 8.0 billion in 2015 for 27 projects. The Sub-Saharan Africa received 14 infrastructure deals totaling US$ 3.9 billion **(Table 4.4)**. These include nine projects in the energy sector, two in the transport sector and three in ICT. Uganda was the most active country with four projects, followed by Ghana with three projects, and Senegal with two projects. This is much lower compared to 24 projects reported in 2015. Similarly, North Africa recorded 3 PPP projects amounting to US$ 246 million in 2016. Egypt got investment commitment towards two projects in energy sector, with Djibouti getting investment for an ICT project in 2016.

Table 4.3: Investment in PPP Projects and Financial Sources, 2015

Region	Information Availability (%)	Total Investment (US$ billion)	Percent of Total Investment by Sources of Financing							
			Government Subsidy	Public Equity	Public Debt	Private Equity	Commercial Debt	Institutional Debt	Multilateral Debt	Bilateral Debt
East Asia and Pacific	29%	10.1	0%	4%	9%	21%	62%	0%	4%	0%
East and Central Asia	93%	10.9	0%	1%	28%	24%	35%	6%	6%	2%
Latin America and Caribbean	46%	17.3	21%	1%	17%	24%	22%	0%	9%	5%
Middle East and North Africa	100%	2.5	0%	6%	0%	22%	7%	0%	20%	45%
South Asia	95%	5.4	2%	0%	28%	28%	21%	0%	11%	10%
Sub-Saharan Africa	91%	6.2	0%	3%	10%	26%	38%	1%	8%	13%

Source: World Bank

[20]Sources of Financing for Public-Private Partnership Investments in 2015, World Bank

Table 4.4: Countrywise PPP Projects in Africa, 2016

Country	Project name	Primary sector	Private Investment (%)	Total Investment (US$ million)
Gabon	Transgabonais Railway Rehabilitation	Transport	71	349.6
Ghana	Amandi Energy Power plant	Energy	100	552.0
Ghana	Karadeniz Powership Aysegul Sultan	Energy	100	200 .0
Ghana	Tema Port Expansion	Transport	70	1500.0
Kenya	DARE submarine broadband cable	ICT	-	140.0
Senegal	Bokhol Solar PV Plant	Energy	100	29.3
Senegal	Ten Merina PV plant	Energy	100	46.3
Somalia	DARE submarine broadband cable	ICT	-	140.0
South Africa	Kathu CSP Power Plant	Energy	100	779.4
Tanzania	DARE submarine broadband cable	ICT	-	140.0
Uganda	Lubilia Kawembe Hydropower Project	Energy	100	15.7
Uganda	Nyagak III Hydro Power	Energy	-	14.5
Uganda	Soroti Solar Power Plant	Energy	100	14.3
Uganda	Tororo Solar PV plant	Energy	100	19.5
Djibouti	DARE submarine broadband cable	ICT	-	140.0
Egypt	Benban Solar PV Plant	Energy	100	100.0
Egypt	Red Sea Solarize	Energy	100	6.0

- Not applicable
Source: Private Participation in Infrastructure Database, World Bank (accessed on February 27, 2018)

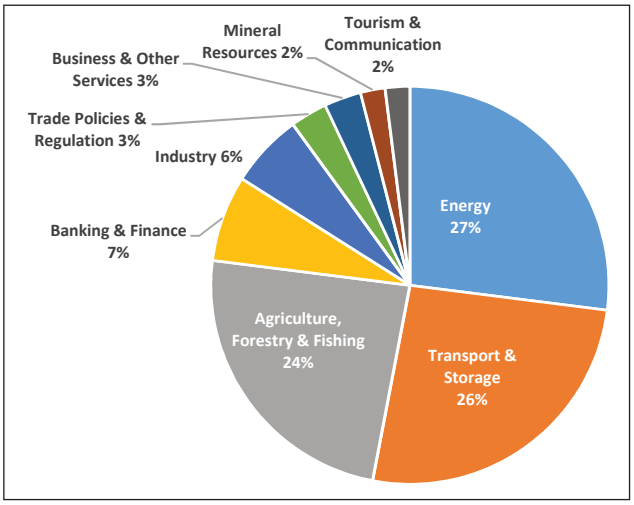
Aid for Trade in Promoting Infrastructure in Africa

Aid for Trade is an important contributor to many areas of Africa's trade policy, particularly in areas of trade facilitation and economic infrastructure. Africa remains one of the key recipients of Aid for Trade funds. A major share of disbursements under Africa's Aid for Trade have been made towards economic infrastructure and productive capacity. In 2015, global Aid for Trade disbursements stood at US$ 39.8 billion and disbursements to African countries reached a record high of US$ 14.1 billion. Aid for Trade disbursements to Africa represent 35 percent of the global disbursements in 2015. Aid for Trade flows to Africa are mostly in the form of ODA loans, which represented 48.3 percent in 2015, followed by grants (47.8 percent), and equity investment (3.8 percent). Most of Africa's Aid for Trade is channeled through the World Bank. In 2015, the World Bank Aid for Trade was US$ 2.9 billion and represented 20.7 percent, followed by the European Union institutions (13.8 percent), Germany (9.9 percent), AfDB (8.7 percent), Japan (8.1 percent) and the US (7 percent).

Given the large infrastructure needs of the continent and the cost-intensive nature of infrastructure projects, economic infrastructure sector dominates

Africa's Aid for Trade Projects. It accounted for 55 percent of total disbursements to Africa, followed by building productive capacities (42 percent) and trade policy and regulations sectors (3 percent). At the sub-sectoral level, economic infrastructure funding is almost evenly divided between transport and storage (26 percent of total) and energy (27 percent) **(Chart 4.9)**. Communications account for about 1 percent of the total Aid for Trade. Over 71 percent of the funds towards transport go into road transport, 10 percent for rail transport, with water and air transport receiving around 5 percent each.

Chart 4.9: Sectorwise Share in Aid for Trade Disbursement in Africa, 2015



Source: UNECA and World Bank

Project Finance for Financing Infrastructure

Project finance is a financing structure that is used by the capital markets to finance large, risky projects or initiatives. Project finance is commonly used to finance long term projects such as infrastructure. It is characterized by a system of support and risk mitigation mechanisms that address certain key risks that otherwise could not be financed on a stand-alone basis. Project finance enables sponsors who do not have a large balance sheet to undertake large and ambitious projects, where project debt is repaid from future cash flow generated by the project once operational. Project finance[21] is structured to include early-stage equity from deal "sponsors," usually a developer backed by a private equity firm or corporate investor, that is then supplemented by mezzanine (mid-term debt) and long-term debt provided by commercial banks, DFIs, ECAs, or public-sector funding. Project finance normally requires a mix of investors and debt providers to diversify away the risk to any one particular partner.

Global Project Finance amounted to US$ 230.9 billion from 765 deals in 2016, lower than US$ 277.5 billion from 799 deals recorded in 2015 **(Table 4.5)**. Majority of the deals were in power sector (48 percent), followed by oil, gas and petro chemicals (25 percent), and transportation sector (17 percent) **(Chart 4.10)**. Africa's project finance totaled US$ 5.8 billion from 23 deals in 2016, lower than US$ 11.3 billion from 25 deals recorded in 2015. Africa recorded a marginal 2.5 percent share in global project finance in value terms in 2016 **(Chart 4.11)**.

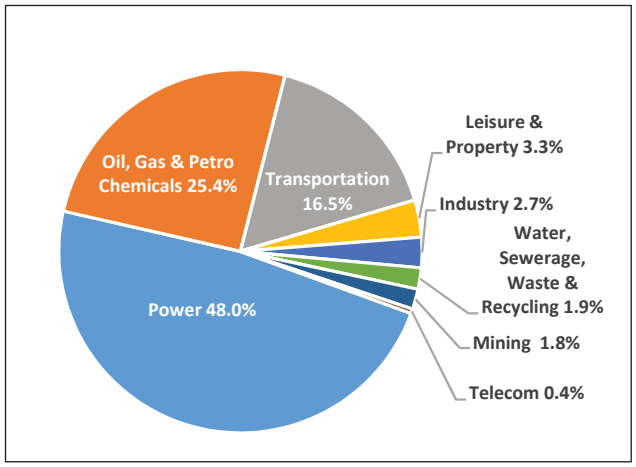
Table 4.5: Global Project Finance, 2016

	2016		2015	
	US$ million	No. of Deals	US$ million	No. of Deals
Global	**230,930.9**	**765**	**277,475.9**	**799**
Americas	55,901.8	214	91,819.4	260
Africa	5,759.6	23	11,276.4	25
Europe	86,882.8	335	76,679.0	288
Asia-Pacific and Japan	51,716.6	164	76,237.9	198
Middle East and Central Asia	30,670.1	29	21,463.2	28

Source: Global Project Finance Review, 2016, Thomson Reuters

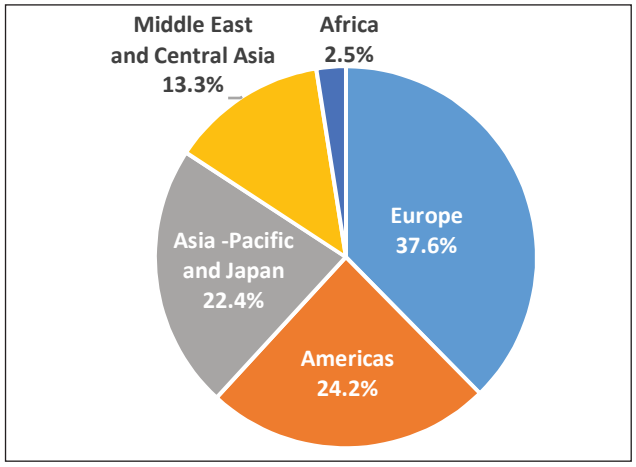
[21]Innovative Financing Models for Energy Infrastructure in Africa, Milken Institute, 2015

Chart 4.10: Sectorwise Share in Global Project Finance, 2016



Source: Global Project Finance Review, 2016, Thomson Reuters

Chart 4.11: Regionwise Share in Global Project Finance, 2016



Source: Global Project Finance Review, 2016, Thomson Reuters

Other Modes of Financing

African countries attract new financing into infrastructure sector through various modes including PPPs and local and international capital markets. The fiscal constraint of Governments and limited opportunities for borrowing is a major bottleneck for financing of regional infrastructure in the African continent. There are various innovative routes to finance the regional infrastructure in Africa, and the continent has already adopted several of these in its efforts towards infrastructural upgradation. Some of the prominent financing mechanisms are:

Infrastructure Bonds: These are bonds issued by the private sector for financing projects in infrastructure related industries. These bonds are typically issued in local currencies to minimise potential currency mismatches. Development of local bond markets is a prerequisite for issuing on-shore bonds. Legal framework, bureaucratic efficiency and enforceability of contracts are key parameters which impact the rating of these bonds, and thereby the cost of financing. Countries can also issue infrastructure bonds in off-shore markets to tap the international capital markets.

There have been instances of usage of infrastructure bonds for financing in African countries. They have been used for financing roads in the Republic of South Africa, as also in Kenya for financing road, energy, and water and irrigation projects. COMESA, EAC and SADC have been discussing the possibility of regional infrastructure bonds, but progress in this regard has been limited.

International Bond Markets: With the highly successful Ghana bond issue in 2007, Africa's entry into the eurobond market has increased substantially. This is supported by low international interest rates, low public debt and rapid domestic growth in African economies. The eurobond market could be used as a source for African infrastructure funding. Other countries successfully entered in Eurobond market in the recent years include Zambia, Nigeria, Rwanda, Ghana, Mozambique and Gabon, among others.

Loan Guarantees: Guarantees from Government help ensure that in case of project failures, investors are protected. This has been used by some countries in the African continent for assuring private investments. For example, the Republic of South African government had issued subordinated debt to underwrite the risk associated with financing one of the roads between Johannesburg and Maputo, which was part of the Maputo Development Corridor. This provided the much needed comfort to equity investors for investment in the road project.

Private Equity and Investment Banks: Private equity investments help provide financing for the initial phase of infrastructure projects and capital markets finance the later phase. Infrastructure assets in later stages of a project can be used as collateral, and capital markets are therefore more comfortable accepting the project risk during this phase. According to the African Private Equity and Venture Capital Association, between 2012 and 2017, 953 deals valued at US$ 24.4 billion were reported in Africa covering a number of infrastructure projects.

Pension Funds: Pension funds are potentially a highly valuable untapped source for infrastructure funding. Pension savings enjoy high liquidity, but the funds are risk-averse. Even though returns can be high, these funds make only a small share of Africa's infrastructure investment. South Africa Government Employees Pension Fund (GEPF) is the largest pension fund in Africa at US$ 133.4 billion as of end- 2013[22]. The size of Africa's pension funds is estimated to rise to over US$ 1 trillion by 2030.

Sovereign Wealth Funds: Sovereign Wealth Funds (SWFs) have large resources which allow them to invest in large scale infrastructure projects. They are suited for infrastructure investment on account of their ability to withstand illiquidity. From the perspective of SWFs also, infrastructure investments are advantageous as they provide long term stable yields. It is therefore unsurprising that infrastructure projects are increasingly becoming an important avenue for SWFs. According to Preqin Research, the share of investment by SWFs in infrastructure has significantly increased in recent years—from 57 percent in 2014 to 63 percent in 2017. According to the African Economic Outlook (AEO), African SWFs represent a small but growing share (20-plus funds) amounting to around US$ 1.6 billion.

Financing by Regional Economic Communities (RECs): Several RECs have also adopted new and innovative modes of financing infrastructure. For example, ECOWAS has a 0.25 percent community levy which is deposited into a general fund. Such steady revenue streams can help countries in meeting a part of the infrastructure financing requirements, and reduce their dependence on overseas development assistance.

Other innovative methods of financing that could create new platforms for institutional investors interested in financing infrastructure include[23]:

Project Puttable Bonds: These bonds will be used to mobilize pension and life insurance funds as well as sovereign funds for PPPs in developing economies. They would finance long-term investment funds from the beginning to the closing of a project, avoiding refinancing risks. To facilitate long-term finance, an MDB could provide a put option after the construction and ramp-up period and receive a guarantee premium. The MDB would then take the construction and early operational risk to facilitate financing, complemented by commercial loans, if appropriate. To make the structure bankable, the bonds should be of investment grade. The MDB would hold such a bond and support the project to meet performance obligations, and could then consider selling the bond to pension funds again. Only projects that are sound, economically viable, and aligned with the MDB's country assistance strategy would be considered.

Debenture Structure: These are for providing short-term, flexible loans for governments by MDBs to buy debentures or convertible bonds to finance the initial phases of an infrastructure project. The debentures would be issued by a privately owned special-purpose vehicle (SPV) that builds and operates the infrastructure facility and finances the initial phase of the project. Once construction is done, along with reduction in some of the initial risks involved, the government would sell the debentures in the market to investors and use the proceeds to repay the MDB.

[22]Leveraging African Pension Funds For Financing Infrastructure Development, 2017
[23]African Economic Outlook 2018

The government could benefit from any upside in the projects, if bonds are convertible.

It minimizes overall financing costs (and government subsidies) as it uses government interim finance at the time it is most expensive for the private sector. It maximizes private involvement since all financing would come from the private sector in the end (maximizing incentives for efficiency in operations). It supports capital market development in the host country. It also minimizes the use of MDB capital, since the loan to finance debentures would be relatively short term.

Output-based Long-term PPP Agreements: This is a financing strategy for public funds to support the delivery of basic service where policy concerns would justify public funding to complement or replace user fees. Typically payment is made only once a pre-agreed output has been reached. Here the grantor enters a PPP agreement with the developer and the developer commits to performance targets specified in the PPP agreement and receives financing for capital spending from commercial capital markets. Tariff revenues provide developers a source of cash flow, which are used to cover operational & management expenditure, debt repayment, and capex financing, and the balance would be retained as profit. Tariff revenues are supplemented by a subsidy fund payable on an output basis.

Managed Co-lending Portfolio Program: This is a new infrastructure initiative aiming to accelerate International Finance Corporation's (IFC) debt mobilization from institutional investors to support infrastructure sector in emerging markets. This will address capacity constraints of institutional investors by leveraging IFC's ability to originate, structure, and manage a portfolio of bankable infrastructure projects, offer institutional investors a portfolio that has sufficient scale and diversification through cost-effective portfolio syndication, and provide credit enhancement through an IFC first-loss tranche to create an investment grade risk–return profile, clearing a key capital constraint. The fund's structure is based on a partnership with private fund managers for IFC to support new private infrastructure debt vehicles. Each vehicle will invest in infrastructure loans originated by IFC and syndicated through the program's platform, ensuring that each vehicle meets the commercial and regulatory requirements of large institutional investors.

AfDB's Role in Transport Sector Financing

Between 1967 and 2017, AfDB has financed over 450 transport projects amounting to more than US$ 30 billion. Morocco and Tunisia were the countries with the most financing for transport, receiving US$ 2.7 billion and US$ 2 billion, respectively. At the sub-regional level, East Africa received the maximum finance, with more than a billion dollars of transport project financing being provided to Kenya, Tanzania and Ethiopia. It was followed by West Africa, with Côte d'Ivoire receiving the maximum financing with the recent urban transport megaproject.

Among the sub-sectors, maximum number of financing went to road projects, with more than 40,000 kms of roads having been paved with the Bank's financing. African ports have also received significant financing for creation, expansion or modernization of ports and for shipyard development. Among the rail transport projects, bank financed rail projects in Tunisia and Zambia, transnet in the Republic of South Africa and a multinational Mozambique-Malawi project. In the air transport sector, the Bank has supported investment in some 30 airports across the continent. In addition to financing terminal construction, AfDB has been involved in air security improvement over the past ten years through the establishment of training programs and provision of equipment through regional economic communities.

Some of the recent projects approved in 2017 include Multinational Uganda –Tanzania (Masaka- Mutukula-Kyaka- Bugene- Kasulo- Kumunazi) Roads Project, Namibia Transport Infrastructure Improvement Project, Jomo Kenyatta International Airport Airfield Expansion Project, and Train Express Regional Project, among others.

Even though significant efforts have been made to upgrade Africa's infrastructure sector, immense needs are still existing as evidenced by the current situation of infrastructure in the region. Infrastructure is a key challenge before African policy makers, which has huge growth and development potential for the region if improved. The maximum burden of the same is still financed by domestic governments through tax revenue or private investments and domestic capital markets. DFIs and Banks in Africa are also increasingly playing a major role by utilizing a variety of mechanisms, including loan guarantees, insurance, and subordinated equity, to mitigate risk and offer assurances to investors. It has been identified by policy makers that in many cases access to finance is not the major constraint in financing infrastructure gaps, but the capacity of policy makers to identify, implement and monitor the infrastructure projects. Improved participation by private sector as also PPP are another major area requiring attention. Better performance by existing participants with an improved regulatory environment is a must for African economies to overcome this demand-supply gap. Thus, investment in infrastructure is a major solution, but it should go hand in hand with proper implementation. This requires alternative financing mechanisms, especially through new investment platforms, and regulatory and operational alterations should improve overall market efficiency.

5. Strategies for Increasing Transport Infrastructure Financing in Africa

India's transport network is among the largest and densest in the world. In order to support its rapidly growing economy, the Government of India has implemented a number of mechanisms in terms of new funds, institutions and agreements for upgrading its transport network. These mechanisms could be useful for transport infrastructure upgradation in Africa's case, as both regions has similar features like a growing population, increasing economic growth, and huge land area, among others.

Innovative Models of Infrastructure Development

Innovative models of transport network development including Toll-Operate-Transfer (TOT) could be used for construction of roads in Africa. Under this model, the lessee gets to operate and maintain (O&M) roads that are already built and charge tolls from the public for a stipulated tenure. This would provide more funds for constructing new roads and highways, where private sector is reluctant to invest. This model is especially useful to monetise publicly funded, commercially operational national highway projects.

Pension funds and Private Equity firms are allowed to lease government owned roads and highways for fixed number of years by making an upfront payment. The lessee, in turn, gets the right to collect toll, operate, manage and maintain the road and highway stretch. The road authority would provide a risk cover to the lessee against circumstances such as a rapid fall in toll collection and structural or engineering fault on the highways. India has recently used the TOT model under its asset recycling of public funded infrastructure method.

Another innovative model is setting up an Infrastructure Investment Trust, where road projects awarded under the engineering, procurement, construction (EPC) mode can be placed. This would work like the TOT model, by monetising existing assets and releasing necessary capital to fund new roads. Countries like Malaysia, Singapore and Hong Kong have successfully used such Infrastructure Investment Trust. India also recently listed a few Infrastructure Investment Trusts.

Co-Financing Transport Projects

Transport infrastructure projects require large scale investment which may not be possible to be fully funded by African governments. This requires involvement by multilateral institutions, development agencies and international donors. In this regard, co-financing is a well-established form of leveraging resources for reaching developmental outcomes.

For promoting co-financing of infrastructure projects, a number of initiatives have already been taken by financial institutions in India and Africa. In the past, Export-Import Bank of India (Exim India) and the AfDB Group had signed an agreement for co-financing projects in Africa, which envisaged joint financing of projects (priority being given to projects of small and medium enterprises) in regional member countries of the AfDB Group. Such financing arrangements should be encouraged especially in case of transport infrastructure projects.

Special facilities can also be considered by the Government of India (GOI) and AfDB specifically for co-financing regional infrastructure projects in Africa, where concessional loans can be provided by the GOI. Some National Governments have set up such facilities in collaboration with multilateral financing institutions, for financing projects in Africa. For example, through the Accelerated Co-financing Facility for Africa, the Japan International Cooperation Agency provides co-financing support for AfDB's sovereign projects. Further, AfDB and the People's

Bank of China have established a US$ 2 billion co-financing fund—the Africa Growing Together Fund, to finance eligible sovereign and non-sovereign guaranteed development projects in Africa.

Implementing PPP in Africa

PPPs can supplement the limited public sector capacities to meet the growing demand for infrastructure development. The GOI has taken various policy initiatives including the Viability Gap Funding (VGF) scheme, take out financing scheme by RBI, and the India Infrastructure Project Development Fund (IIPDF) to support infrastructure sector development in the country. It has also established various institutional mechanisms like the India Infrastructure Finance Company Ltd. (IIFCL) to encourage private sector participation in infrastructure projects. These have yielded positive results in several sectors and can be emulated in the African continent for enhancing the role of private sector in infrastructure.

For the successful implementation of projects under PPP, India has a Model Concession Agreement (MCA), which addresses several crucial issues pertaining to a PPP framework like mitigation and unbundling of risks; allocation of risks and returns; symmetry of obligations between the principal parties; precision and predictability of costs and obligations; and reduction of transaction costs and termination. It also allocates risk to parties best suited to manage them[24]. This makes investment climate more attractive. India has used the MCA agreement successfully in many transport sector projects for highway and port sectors. African governments could emulate these practices to enhance viability of transport projects.

Collaboration among Project Preparation Facilities

Lack of bankable projects is a major constraint for infrastructure in Africa. According to an assessment conducted by the ICA, many of the project preparation facilities in the African continent have insufficient resources, as a result of which the project financed may be very small and spread over a number of projects and activities. On the other hand, regional infrastructure projects would typically entail large cost of project preparation. Exim India has responded to this issue by setting up the Kukuza Project Development Company (KPDC) in partnership with Infrastructure Leasing and Financial Services Ltd (IL&FS), AfDB and State Bank of India to facilitate Indian participation in infrastructure projects of Africa. The KPDC can consider collaborating with other Project Preparation Facilities (PPFs) in the region in key transport projects through the Project Preparation Facilities Network (PPFN). The PPFN is a network of funding facilities dedicated to sustainable infrastructure in Africa. It should be leveraged by the KPDC and other PPFs for forging mutually beneficial partnerships for preparation of transport infrastructure projects.

Conclusion

African economies have started using a number of innovative methods to overcome insufficiencies in transport infrastructure. Africa has started using drones for delivery services where road infrastructure is unavailable. For example, Zipline, a San Francisco start-up, has launched a for-profit drone delivery service for transporting crucial medical supplies to remote regions in Rwanda. The emergence of ride-sharing and traffic-monitoring start-ups could make travel and traffic flows more efficient and optimized in Africa by reducing congestion and time wasted on roads. These kind of solutions provide temporary relief to transport infrastructure issues, and exist in very few parts of the continent. Construction of new roads, rails and ports and upgradation of existing networks (road, rails, airports and ports) are necessary for providing long term support for the development of the region. For this Africa could use innovative financing techniques and follow success stories of countries like India, China and Japan, among others.

[24]Planning Commission, Government of India

6. India's Role in Africa's Infrastructure Sector

As a traditional development partner, India is ideally placed to understand and appreciate the needs of the Africa in various developmental areas. A development partnership between Africa and India can foster real, palpable change in the continent. Cooperation will be essential in infrastructure development, capacity building, and knowledge and skill transformation for enhanced productivity and competitiveness. This could create a new paradigm for South-South Cooperation.

According to the ICA, India's commitment to African infrastructure projects more than doubled to US$ 1.2 billion in 2016 from US$ 524 million in 2015. The largest portion of Indian commitments went to transport (US$ 513 million) followed by energy (US$ 422 million) and water (US$ 262 million) projects. The Export-Import Bank of India (Exim India) has been among the principal agents for supporting India's development partnership with the African continent in the infrastructure sector.

Export-Import Bank of India in Africa

Exim India commenced operations in 1982. The Bank was set up under an Act of Parliament (Export-Import Bank of India Act 1981), for providing financial assistance to exporters and importers, and for functioning as the principal financial institution for coordinating the working of institutions engaged in financing export and import of goods and services with a view to promoting the country's international trade. In its endeavour to promote India's international trade, Exim India's vision has evolved from financing, facilitating and promoting trade and investment, to a conscious and systematic effort at creating export capabilities. Exim India today seeks to develop commercially viable business relationships with externally oriented companies.

Africa has always been a focus region for Exim India, and thus a critical component of its strategy to promote and support two-way trade and investment. As a partner institution to promote economic development in Africa, the commitment towards building relationships with the African Region is reflected in the various activities and programmes, which Exim India has set in place.

Exim India has representative offices in three countries in Africa viz., Abidjan in Côte d'Ivoire, Addis Ababa in Ethiopia, and Johannesburg in the Republic of South Africa. These three offices play key roles in facilitating economic cooperation with the African Region, and are closely associated with several of Exim India's initiatives. The representative offices interface with multilateral institutions such as AfDB, Afreximbank, regional financial institutions such as Trade and Development Bank (formerly known as PTA Bank), and West African Development Bank (BOAD), and developmental financial institutions such as Industrial Development Corporation of South Africa Ltd. (IDC), as well as Indian missions in the region with the aim of increasing bilateral commercial engagements between the two regions.

Exim India's exposure in the transport sector to the African region include financing of railway and road rehabilitation projects, securing rail equipments, purchase of vehicles including buses and trucks, purchase of Offshore Patrol Vessels, as well as development of transport systems. Projects financed by Exim India have helped in improving transport network in several countries in Africa.

Lines of Credit

To enhance bilateral trade and investment relations, Exim India has in place several lines of credit (LOCs), which are extended to a number of institutions/ agencies in Africa. These LOCs supplement the 'Focus Africa' programme of the Government of India (GOI) and are extended especially to priority sectors, identified by GOI for mutual cooperation and benefit.

These LOCs enable buyers in the overseas country to finance developmental projects equipment and other goods and services on deferred payment terms. Besides these operating LOC extended at the behest of GOI, Exim India extends its own commercial LOCs to various financial institutions and other entities in Africa, such as, Trade and Development Bank (covering 17 countries in the Eastern and Southern African region), BOAD (covering 8 countries in the West African region), Indo-Zambia Bank, Nigerian Exim Bank, Ecowas Bank of Investment & Development and Afreximbank. Most of these LOCs have facilitated in strengthening the infrastructure sector of Africa either directly or indirectly. As on February 28, 2018, the total number of operative LOCs to Africa stood at 157, which were extended to 43 countries and amounting to US$ 8.2 billion. Of these, 151 LOCs aggregating to US$ 8.1 billion, to 40 countries are guaranteed by the GOI **(Annexure 3).**

Some of the transport sector projects executed / or being executed under LOCs in Africa include railway rehabilitation Project in Angola; railway equipment project in Benin; procurement of buses for internal transport in Central African Republic; project for renewal of urban transport system in Abidjan, Côte d'Ivoire; acquisition of 228 buses and acquisition of equipments for MIBA in DR Congo; Ethio-Djibouti Rail Line Project in Ethiopia; procurement of Tata flat trucks/buses in Ghana; procurement of Offshore Patrol Vessel from M/s Garden Reach Shipbuilders & Engineers Ltd. and purchase of specialised equipment and vehicles in Mauritius; rehabilitation of Road between Tica, Buzi and Nova Sofala in Mozambique; Acquisition of buses and trucks in Niger; development of Transport System in Republic of Congo; supply of buses and spares by Tata International (Tata Motors) in Senegal; and financing the purchase of vehicles in Tanzania, among others.

Project Exports

Exim India has been providing a steady stream of support to project activities in engineering, procurement, and construction (civil, mechanical electrical or instrumental). This includes the provision of specific equipment related to supplies, construction and building materials, consultancy, technical know-how, technology transfer, design, and engineering (basic or detailed). Exim India also supports existing or new projects, plants or processes that require additional assistance in processes such as international competitive bidding, including multilaterally funded projects in India.

Buyer's Credit under National Export Insurance Account (NEIA)

In order to provide further impetus to project exports from India on medium- or long-term basis, especially in the infrastructure sector, in April 2011, Buyer's Credit under National Export Insurance Account (BC-NEIA) was introduced. Under this programme, Exim India facilitates project exports from India by way of extending credit facility to overseas sovereign governments and government owned entities for import of goods and services from India on deferred credit terms. Indian exporters can obtain payment of eligible value from Exim India, without recourse to them, against negotiation of shipping documents. NEIA is a Trust, set up by Ministry of Commerce and administered by ECGC. As on February 28, 2018, Exim India sanctioned an aggregate amount of US$ 1.87 billion under BC-NEIA for 16 projects in Africa valued at US$ 1.98 billion. Out of this, US$ 1.25 billion was sanctioned towards transport sector projects including Tema to Akosombo Railway Line construction project in Ghana; Lusaka City Decongestion Project in Zambia; supply of buses to Côte d'Ivoire, Senegal and Tanzania; and supply of vehicles and spares to Côte d'Ivoire, Tanzania and Zimbabwe.

Finance for Joint Ventures Overseas

Further, Exim India supports Indian companies in their endeavour to globalise their operations, through overseas joint ventures (JVs) and wholly owned subsidiaries (WOS). Such support includes loans and guarantees, equity finance and in select cases direct participation in equity along with Indian promoters to

set up such ventures overseas. In the African Region, Exim India has supported several such ventures in countries such as the Republic of South Africa, Kenya, Mauritius, Ghana, Nigeria, Sudan, Egypt, Zambia, Morocco, Uganda and Tanzania, across a range of sectors like auto and auto components, agriculture and food processing, agro-based products, chemicals, construction, electronics, engineering goods, EPC services, mining and minerals, plastics and rubber products, packaging, pharmaceuticals, software and IT enabled services, and textiles. These ventures serve to promote value addition, as also contribute to capacity building and capacity creation in host countries. As on January 31, 2018, Exim India, through its overseas investment finance programme, has supported 48 Indian companies in 12 countries in Africa with an aggregate sanction of ₹ 51.3 billion.

Association with African Development Bank (AfDB)

India is a member of the AfDB Group. Many Indian companies participate in projects funded by the AfDB Group. Exim India works very closely with AfDB and has an active programme which offers a range of information, advisory and support services to Indian companies to enable more effective participation in projects funded by multilateral funding agencies, including AfDB. Exim India also assists Indian companies by providing advance alerts on upcoming project opportunities. With support from Exim India, Indian project exporters have secured a number of overseas contracts in Africa in sectors such as power, telecommunications, transport, water supply and sanitation. Exim India and AfDB have also signed an agreement for co-financing projects in Africa. The agreement envisages joint financing of projects (priority being given to support projects of small and medium enterprises) in regional member countries of AfDB. Exim India also organizes Business Opportunities seminars in projects funded by AfDB across various centres in India.

Africa – India Partnership Day

Exim India, together with Federation of Indian Chambers of Commerce and Industry (FICCI), organizes the Africa – India Partnership Day, on the sidelines of AfDB's Annual Meeting, with an objective of sharing India's developmental experiences with Africa, particularly in PPP model of financing infrastructure development. Exim India, along with FICCI, has so far hosted five such events; first being on May 30, 2013 in Morocco; followed by Rwanda on May 22, 2014; Côte d'Ivoire on May 27, 2015; Zambia on May 24, 2016 and India (Ahmedabad) on May 24, 2017. The Africa- India Partnership Day has become a regular feature of the AfDB Annual Meeting, and showcases the immense scope for expanding the mutually enriching partnership between Africa-India.

Project Development Company (PDC) in Africa

Africa is a region of opportunities, as the continent is receiving plenty of investments in the infrastructure space. The PPP structure is slowly getting popularised by the national governments, increasing the interest of the private sector in infrastructure development. However, institutional capacity in several African nations is in a nascent stage.

Addressing the limited institutional capacity in Africa on conceptualisation, management, execution and imparting project development initiatives, Indian institutions such as Exim India, IL&FS, and State Bank of India have joined hands with AfDB, and promoted a Project Development Company (PDC) for infrastructure development in Africa.

The PDC, named Kukuza Project Development Company, has been incorporated in Mauritius in July 2015. 'Kukuza' in Swahili means 'a cause to growth'. Reflecting the name, the PDC is expected to provide specialist project development expertise to take the infrastructure project from concept to

commissioning in the African Continent. The PDC will provide the entire gamut of project development expertise to various infrastructure projects, such as project identification, pre-feasibility/ feasibility studies, preparation of detailed project reports, environmental and social impact assessment, etc.

The PDC shall utilise the domain expertise of each partner during the project development process to establish a bankable and sustainable implementation format based on an in-depth understanding of the concerns of all stake holders - public authority, users community, developers/ investors and lenders.

Exim India's Country Mission

With a view to enhancing India's bilateral trade and investment relations and in order to support Indian entrepreneurs in their globalisation endeavours, Exim India had mounted a country mission to select countries in Africa in the year 2014. The Mission endeavoured to provide a framework for enhancing India's engagement in select countries in Africa by way of identifying key areas for commercial engagement while also assisting these countries in achieving their developmental objectives. This initiative was backed by Exim India's longstanding strategic and commercial relations with various institutions, bodies and organisations in Africa through its various capacity building programmes in various sectors in these countries.

The Mission to Africa covered countries including Mozambique, Rwanda and Tanzania. The Mission team closely coordinated with Indian Missions, and held various rounds of interactions with Government officials of partner countries, multilateral institutions, business community, exporters, banks, Indian business diaspora, and other stakeholders, with a view to identifying business, trade and investment opportunities for Indian entrepreneurs.

Exim India's engagements in SITA Project

On March 09, 2014, Department for International Development (DFID) mandated the International Trade Centre (ITC), United Kingdom, to design and implement a project, called 'Supporting India's Trade Preferences for Africa' now called 'Supporting Indian Trade and Investment for Africa' (SITA). SITA is a six-year (2014-2020) project that aims at promoting exports from five East African countries – Ethiopia, Kenya, Rwanda, Tanzania and Uganda – to India through investment and skills transfer from the Indian side. Exim India has entered into an MOU with ITC in Geneva on March 26, 2014, through which the Bank has been associated with ITC's SITA initiative. The Project was in its inception Phase during March 2014 to March 2015, where a roadmap for SITA, including the focus sectors, was defined. The implementation phase of SITA (March 2015-March 2020) was officially launched in New Delhi, India, during March 19-20, 2015.

Member of Association of African Development Finance Institutions (AADFI)

Exim India is a member of Association of African Development Finance Institutions (AADFI), a forum of institutions/ banks with the objective of creating co-ordination and economic solidarity among the development finance institutions in the African continent. The membership of AADFI helps to provide a platform for building linkages with other institutions in Africa, which are members of AADFI.

Further, Exim India's equity in Agricultural Finance Corporation, which offers consultancy support in development of agro-technology; and promoter membership in 'Small Farmers' Agri-Business Consortium (SFAC)', an investment institution whose objectives include promoting small and medium agri-business ventures, places Exim India in a vantage position to share its expertise and support development related activities in Africa.

Global Network of Exim Banks and Development Finance Institutions (G-NEXID)

Exim India has entered into a Memorandum of Understanding (MOU) with four Exim Banks and Development Financial Institutions (DFIs) to form the Global Network of Exim Banks and Development

Financial Institutions (G-NEXID). The five signatories are Export-Import Bank of India, Export-Import Bank of Malaysia, African Export-Import Bank, Andean Development Corporation and Export-Import Bank of Slovakia. G-NEXID was formally launched at its inaugural meeting at UNCTAD, Geneva, on March 13, 2006. Annual Meetings are held to deliberate upon measures to foster long-term relationship, share experience and strengthen financial cooperation to promote trade and investment relations among developing countries. G-NEXID has been granted 'observer' status by UNCTAD.

G-NEXID members in the African Region include: African Export-Import Bank, Cairo; Banque Nationale d' Investissement, Côte d'Ivoire; Banque Pour Le Financement De Petites Et Moyennes Enterprises, Tunis; Central African States Development Bank, Brazza Ville; Development Bank of Mali, Bamako; Development Bank of Namibia, Windhoek; Development Bank of Zambia, Lusaka; Development Bank of Southern Africa, Midrand; East African Development Bank, Kampala; Economic Community of Western African States, Lome; Industrial Development Bank of Kenya, Nairobi; Industrial Development Corporation South Africa, Sandton; Nigerian Export-Import Bank, Nigeria; and TDB Bank (PTA Bank), Nairobi.

Inter-Bank Cooperation Mechanism among BRICS members

BRICS comprising Brazil, Russia, India, China and South Africa, is an association of five major emerging national economies. In order to develop and strengthen economic ties and investment cooperation among BRICS countries, in 2010, state financial institutions for development and export support of the BRICS nations entered into a MOU, laying the foundation of BRICS Inter-Bank Cooperation Mechanism. Exim India is the nominated member development bank under the BRICS Inter-Bank Cooperation Mechanism, along with other nominated member development banks from member nations of BRICS namely Banco Nacional de Desenvolvimento Economico e Social (BNDES), Brazil; State Corporation Bank for Development and Foreign Economic Affairs – Vnesheconombank, Russia; China Development Bank Corporation, and Development Bank of Southern Africa. The Inter-Bank Cooperation among BRICS countries is expected to facilitate trade and help raise the economic profile of member countries at regional and global levels. Inter-bank cooperation is a first step toward closer cooperation within BRICS, and the member countries will jointly finance projects in high technology, innovation and energy saving.

Exim India signed two multilateral financial cooperation agreements with member development banks of BRICS (Brazil, Russia, India, China, and the Republic of South Africa) nations during the fifth BRICS Summit held in March 2013 at Durban, the Republic of South Africa. The two Agreements signed are 'BRICS Multilateral Infrastructure Co-financing for Africa' and 'BRICS Multilateral Cooperation and Cofinancing Agreement for Sustainable Development in Africa'.

GPCL as a Consultant

Global Procurement Consultants Ltd. (GPCL) has been promoted by Exim India in association with leading public sector and private sector consultancy organizations. GPCL's shareholding pattern creates a synergetic fusion of expertise, thereby providing a unique platform for sharing of collective Indian experience in a partnership mode with developing countries and emerging economies, in the professional management of projects, with particular reference to procurement services. GPCL synthesizes India's consultancy expertise in project management and procurement across varied sectors of the economy including finance, infrastructure, energy, transportation, environment, information and communication technology, industry, agriculture, mining, water resources, health and education. GPCL provides technical assistance in enhancing quality, transparency, efficiency and effectiveness of procurement and implementation services to help

attain desired institutional and corporate objectives. GPCL supports, enhances and extends scope of project supervision, monitoring and evaluation as also strengthening of institutional capacity for effective programme/ project implementation. In doing so, GPCL leverages upon its demonstrated strengths derived from its core staff, panel of specialists, and resources of its shareholders to assist funding and project executing agencies.

GPCL has a demonstrated track record spanning all stages of the procurement cycle covering procurement advisory services, procurement management, procurement review, performance review, provision of support services, valuations, financial advisory services, overall procurement audit and governance, as also associated services related to training and capacity building. GPCL has undertaken a number of assignments, in India and in numerous countries abroad, directly for multilateral funding agencies or in projects funded by them. GPCL also has the distinction of being selected in some instances by the World Bank on a sole source basis, both in India and abroad.

GPCL has extensive experience supporting projects in Africa, and assignments undertaken include:

- Procurement Audit of contracts in World Bank funded projects in Eritrea, Ghana, Malawi, Nigeria and Uganda covering Ports Rehabilitation, Roads, Health, Education, Agriculture, Infrastructure, Power, Privatization and Emergency rehabilitation.
- Comprehensive re-appraisal of Water Supply Projects in Nigeria funded by the AfDB.
- Country Procurement Assessment Review (CPAR) in the Kingdom of Swaziland for the AfDB in order to examine the existing public procurement framework, benchmark them with good procurement practices, and provide recommendations to revamp the system for better governance.
- Procurement Monitoring Agent for a World Bank funded health project in Kenya calling for review of the procurement of goods, services and minor works including an audit of the procurement processes of the institutions and procurement units supported by the project.

Partner in Institutional Building in Africa

As a partner institution in promoting economic development in Africa, Exim India shares its experience in the setting up of institutional infrastructure for enhancing international trade. In this regard, the Bank has taken active participation in the institutional building process in a number of countries in Africa. Besides being associated in the setting up of the Afreximbank, Exim India undertook an assignment to design, develop, and implement a programme on Film Financing for Nigerian Export-Import Bank (NEXIM Bank) for expanding its exposure in financing films (under Film Financing Programme). Exim India has also been involved in the design and implementation of Export Finance Programmes for Industrial Development Corporation, South Africa; Consultancy Assignment for the Government of Mauritius on 'Projecting Mauritius as an investment hub for Indian Firms'; establishment of Export Credit Guarantee Company in Zimbabwe; and preparing a blue print for setting up of Export-Import Bank of Zimbabwe.

In 2015, under the International Trade Centre (ITC), Geneva's, project, 'Supporting Indian Trade and Investment for Africa (SITA)', Exim India completed an assignment for 'Institution Capacity Building for Export Credit and Insurance' to enhance trade competitiveness in Rwanda. The objective of the assignment was to establish a rationale and suggest a broad framework for establishing an Export Credit Insurance Corporation in Rwanda.

Institutional Linkages

Exim India has been consciously forging a network of alliances and institutional linkages to help further economic co-operation with the African Region. Towards this end, Exim India has taken up equity in Afreximbank, West African Development Bank

(BOAD), and Development Bank of Zambia. These endeavours are supplemented by the various Memoranda of Cooperation (MOCs) / Memoranda of Understanding (MOUs), the Bank has in place, with key institutions in the African Region including: AfDB; Trade and Development Bank (formerly Eastern and Southern African Trade and Development Bank - PTA Bank); Afreximbank; Banque De Financement Des Petites Et Moyennes Entreprises (BFPME), Tunisia; Banque Internationale Arabe de Tunisie, Tunisia; Board of Investment, Mauritius; ECO Bank (Pan African Bank); Foreign Investment Promotion Agency, Tunisia; Industrial Development Bank of Sudan; Industrial Development Corporation of South Africa Limited (IDC); Nigerian Export-Import Bank (NEXIM); National Bank of Egypt; and Societe Tunisienne de Banque, Tunisia.

Knowledge Building and Technology Transfer

In the area of knowledge building and technology transfer, Exim India's research studies have focused on potential areas for boosting India's trade and investment relations with Africa, the Economic Community of West African States (ECOWAS), Southern African Customs Union (SACU), Southern African Development Community (SADC), Common Market for Eastern and Southern Africa (COMESA), East Africa, Select West African and Southern African Countries, Least Developed Countries (LDCs), as also the member countries of Maghreb region. In order to support AfDB's High 5 agenda, Exim India released five studies namely, Integrate Africa: A Multidimensional Perspective; Feed Africa: Achieving Progress Through Partnership; Water, Sanitation and Healthcare in Africa: Enhancing Facility, Enabling Growth; Power Sector in Africa: Prospect and Potential; and Manufacturing in Africa: A Roadmap for Sustainable Growth.

In a Nutshell

In sum, Exim India, with its comprehensive range of financing, advisory and support services, seeks to create an enabling environment for enhancing two-way flow of trade, investment and technology between India and the African region. While promoting infrastructure development and facilitating private sector development in host countries, the various efforts of Exim India, ensconced in its range of activities, also contribute towards institutional building in Africa.

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Annexure 1:

Liner Shipping Connectivity Index (LSCI), annual, 2010-2017

	2010	2011	2012	2013	2014	2015	2016	2017
Algeria	31.5	31.1	7.8	6.9	6.9	5.9	10.9	7.3
Angola	10.7	11.3	14.0	13.8	19.3	19.6	26.8	24.6
Benin	11.5	12.7	15.0	14.3	17.2	17.7	15.6	18.4
Cabo Verde	3.7	4.2	4.5	4.1	4.1	4.1	4.6	16.4
Cameroon	11.3	11.4	13.4	10.9	12.7	11.0	14.9	14.2
Comoros	5.7	7.1	5.2	5.2	6.8	6.8	5.5	5.3
Congo	10.5	10.8	12.6	15.8	19.1	19.6	26.5	25.2
Côte d'Ivoire	17.5	17.4	16.5	17.6	21.9	19.9	19.7	17.8
DR Congo	5.2	3.7	4.1	4.0	4.1	4.3	4.6	5.2
Djibouti	19.6	21.0	16.6	20.3	20.2	20.8	32.7	31.1
Egypt	47.6	51.2	57.4	57.5	61.8	61.5	58.7	54.6
Equatorial Guinea	4.4	3.7	4.5	4.0	8.4	9.2	3.5	9.8
Eritrea	0.0	4.0	4.2	4.0	4.0	3.5	4.2	4.1
Gabon	8.6	8.0	9.2	9.0	8.6	8.5	8.7	16.7
Gambia	5.4	5.2	7.8	5.9	5.6	8.2	6.1	7.3
Ghana	17.3	18.0	17.9	19.4	21.7	21.9	18.7	16.3
Guinea	6.3	6.2	7.4	8.1	5.8	9.0	8.4	10.3
Guinea-Bissau	3.5	4.1	4.3	4.0	4.0	4.0	5.4	7.5
Kenya	13.1	12.0	11.8	11.4	11.9	11.3	12.3	14.9
Liberia	6.0	6.2	8.1	5.9	6.0	8.5	9.2	8.0
Libya	5.4	6.6	7.5	7.3	6.8	5.9	6.1	14.6
Madagascar	7.4	7.7	11.8	11.9	11.4	11.4	16.4	10.2
Mauritania	5.6	5.6	8.2	6.5	6.0	8.6	8.4	9.4
Mauritius	16.7	15.4	23.9	24.7	20.0	29.9	32.0	32.0
Morocco	49.4	55.1	55.1	55.5	64.3	68.3	59.9	67.0
Mozambique	8.2	10.1	9.8	10.2	9.0	10.9	11.9	9.3
Namibia	14.5	12.0	15.2	15.5	18.9	18.5	22.8	15.4
Nigeria	18.3	19.9	21.8	21.4	22.9	21.4	21.3	20.0
Sao Tome and Principe	3.3	2.1	2.3	6.9	6.1	6.0	6.3	6.1
Senegal	13.0	12.3	13.6	11.1	12.9	12.2	16.3	22.7
Seychelles	5.2	6.5	6.5	8.1	8.1	8.0	8.5	9.4
Sierra Leone	5.8	5.4	7.4	5.2	5.6	8.3	7.9	8.3
Somalia	4.2	4.2	4.3	4.2	5.5	5.4	8.1	11.6
South Africa	32.5	35.7	36.8	43.0	37.9	41.4	35.5	37.4
Sudan	10.1	9.3	12.8	8.4	13.1	14.6	19.5	21.1
Togo	14.2	14.1	14.1	14.8	19.1	20.4	28.7	33.9
Tunisia	6.5	6.3	6.4	5.6	7.5	5.7	6.6	6.6
Tanzania	10.6	11.5	11.1	11.1	11.8	10.6	12.0	12.3

Note: LSCI indicates a country's integration level into global liner shipping networks, calculated with 2004 as base year.
Source: UNCTADStat

Annexure 2:

Container Port Traffic (TEU: 20 foot equivalent units)

	2010	2011	2012	2013	2014	2015	2016
Algeria	1180048	1291228	1380316	1494877	1248300	1243300	1243300
Angola	611050	764031	700000	912898	900000	580000	446000
Benin	316744	334798	348190	388341	314000	346000	333000
Cameroon	285070	301319	313371	339269	333555	379000	370000
Congo	356285	442802	505000	550000	619692	571000	550000
Côte d'Ivoire	639265	664488	880104	772296	803317	697160	705000
DR Congo	59132	66199	62665	67965	73265	45000	59132
Djibouti	424888	742871	793117	794731	736000	910000	987000
Egypt	6828719	5518301	5904449	5886159	6344363	6731464	6776300
Equatorial Guinea	9500	9750	9625	9687	10000	9843	9922
Gabon	153657	162415	168912	190150	145326	145731	145529
Gambia	58521	71932	65226	68759	70000	65000	60000
Ghana	642519	813494	884984	894362	756578	816852	925964
Guinea	96765	140007	147466	147255	150000	168000	160000
Kenya	695500	770804	903463	894000	1012000	1076118	1091000
Liberia	53400	71140	85589	88782	91975	98000	90000
Libya	70000	-	-	434608	456773	445690	451232
Madagascar	141093	146224	131580	137800	181108	159454	170281
Mauritania	65705	69450	74658	80557	91000	85779	88389
Mauritius	332662	350624	417467	385326	403000	467000	511000
Morocco	2968149	3033096	2790906	3424011	3916000	3806000	3810000
Mozambique	248819	334300	271231	311500	345200	351900	348550
Namibia	247743	220178	301962	334400	359600	386600	373100
Nigeria	1232171	1559276	1809904	1696000	1893409	1558679	1335470
Senegal	349231	369137	383903	428171	384376	486092	496800
Sierra Leone	50000	75000	82500	86250	88125	90000	89063
South Africa	3829234	4382724	4308940	4693914	4591390	4597907	4355320
Sudan	439100	464128	441469	538354	538000	565811	551906
Togo	339853	352695	288481	311470	247852	252715	238173
Tunisia	423817	372289	328490	320000	311163	303198	489600
Tanzania	409517	476733	547364	553900	612600	683600	648100
Africa	**23558158**	**24371433**	**25331332**	**27235792**	**28027967**	**28122893**	**27909132**

Source: UNCTADStat and World Bank

Annexure 3:

Exim India's LOCs in Africa (As on February 28, 2018)

- **GOI Supported LOCs**

Sr. No.	Country	Borrower	Amount of Credit (US$ mn)	Products/Projects covered
1	Angola	Government of Angola	40.00	Railway rehabilitation
2	Angola	Government of Angola	30.00	Industrial park
3	Angola	Government of Angola	15.00	Setting up a textile project (Cotton Ginning & Spinning)
4	Benin	Government of Benin	15.00	Railway equipment (US$ 10.25 mn), agricultural equipment (US$ 4.25 mn) and cyber city (US$ 0.50 mn)
5	Benin	Government of Benin	15.00	Tractor assembly plant and farm equipment manufacturing unit
6	Benin	Government of Benin	42.61	Up-gradation of Water Supply Schemes in 69 villages in Benin
7	Burkina Faso	Government of Burkina Faso	30.00	Agricultural projects including acquisition of tractors, harvesters, agricultural processing equipment
8	Burkina Faso	Government of Burkina Faso	25.00	Rural electrification
9	Burkina Faso	Government of Burkina Faso	22.50	Low cost housing and economical buildings project in Burkina Faso
10	Burundi	Government of Burundi	80.00	Kabu Hydro Electric Project
11	Burundi	Government of Burundi	4.22	Farm Mechanization
12	Burundi	Government of Burundi	0.17	Preparation of Detailed Project report for an Integrated Food Processing Complex in Burundi
13	Cameroon	Government of Cameroon	37.65	Maize Farm Plantation Projects (US$ 18.77 mn), and Rice Farm Plantation Projects (US$ 18.88 mn)
14	Cameroon	Government of Cameroon	42.00	Cassava Plantation Project
15	Chad	Government of Chad	50.00	setting up of cotton yarn plant, Steel billet plant and rolling mill, plant for assembly of agricultural equipment and bicycle plant
16	Chad	Government of Chad	15.90	For financing Extension of spinning mill [addition of weaving and processing capacities] [US$ 15.90 mn]

Sr. No.	Country	Borrower	Amount of Credit (US$ mn)	Products/Projects covered
17	Central African Republic	Government of Central African Republic	29.50	Setting up a modern dry process cement plant and procurement of buses for internal transport
18	Central African Republic	Government of Central African Republic	39.69	Two hydro-electric project
19	Central African Republic	Government of Central African Republic	20.00	Development of Mining Project
20	Comoros	Government of Comoros	41.60	For installation of an 18 MW power project in Moroni, the capital city of Comoros
21	Côte d'Ivoire	Government of Côte d'Ivoire	26.80	Project for renewal of urban transport system in Abidjan and for agricultural projects in the field of vegetable oil extraction, fruits and vegetable chips production, production of cocoa, coffee etc
22	Côte d'Ivoire	Government of Côte d'Ivoire	25.50	(I) Mahatma Gandhi IT and Biotechnology Park, (ii) Fisheries Processing Plant and (Iii) Coconut fibre processing plant
23	Côte d'Ivoire	Government of Côte d'Ivoire	30.00	Electricity interconnection project between Côte d'Ivoire and Mali
24	Côte d'Ivoire	Government of Côte d'Ivoire	30.00	Rice Production Programme
25	Côte d'Ivoire	Government of Côte d'Ivoire	24.00	Electricity Interconnection Project between Côte d'Ivore and Mali
26	Côte d'Ivoire	Government of Côte d'Ivoire	71.40	Upgradation of Military Hospitals
27	Djibouti	Central Bank of Djibouti, Djibouti	10.00	General Purpose.Three contracts – one for supply of diesel generating sets and pumps, second for setting up a mini cement plant and a third contract for civil works - have been approved
28	Djibouti	Government of Djibouti	10.00	Cement Plant Project
29	Djibouti	Government of Djibouti	14.00	Completing Cement Plant Project in Djibouti
30	Djibouti	Government of Djibouti	15.13	Ali Sabieh Cement Project, Djibouti
31	DR Congo	Government of DR Congo	33.50	setting up a cement factory in DR Congo, acquisition of 228 buses and acquisition of equipments for MIBA
32	DR Congo	Government of DR Congo	25.00	Installation of hand pumps and submersible pumps

Sr. No.	Country	Borrower	Amount of Credit (US$ mn)	Products/Projects covered
33	DR Congo	Government of DR Congo	42.00	Execution of Kakobola Hydroelectric Power Project
34	DR Congo	Government of DR Congo	168.00	Ketende Hydro-electric Project
35	DR Congo	Government of DR Congo	82.00	Katende Hydro-electric Project
36	DR Congo	Government of DR Congo	34.50	Development of Power Distribution Project in Bandundu Province
37	DR Congo	Government of DR Congo	109.94	Transmission and distibution project in Kasai province
38	Eritrea	Government of Eritrea	20.00	Multipurpose agricultural projects and educational projects
39	West Africa	Ecowas Bank for Investment and Development	250.00	Public Sector Projects
40	West Africa	Ecowas Bank for Investment and Development	100.00	Public Sector Projects
41	West Africa	Ecowas Bank for Investment and Development	150.00	Public Sector Projects
42	Ethiopia	Government of Ethiopia	65.00	Energy transmission and distribution project
43	Ethiopia	Government of Ethiopia	122.00	Sugar Industry
44	Ethiopia	Government of Ethiopia	166.23	Development of sugar industry
45	Ethiopia	Government of Ethiopia	213.31	Development of sugar industry
46	Ethiopia	Government of Ethiopia	91.00	Development of sugar industry
47	Ethiopia	Government of Ethiopia	47.00	Development of sugar industry
48	Ethiopia	Government of Ethiopia	300.00	Ethio-Djibouti Rail Line Project
49	Gambia	Government of Gambia	5.83	Tractor assembly plant project
50	Gambia	Government of Gambia	10.00	Construction of National Assembly Building Complex
51	Gambia	Government of Gambia	16.65	Completion of National Building Assembly Complex
52	Gambia	Government of Gambia	22.50	Electrification expansion project
53	Gambia	Government of Gambia	22.50	Replacement of Asbestos water pipes with UPVC pipes project

Sr. No.	Country	Borrower	Amount of Credit (US$ mn)	Products/Projects covered
54	Ghana	Government of Ghana	27.00	Rural electrification, agriculture, communication and transportation projects.
55	Ghana	Government of Ghana	60.00	Rural electrification project, construction of Office and Seat of President
56	Ghana	Government of Ghana	25.00	Track materials, tools and equipment, Procurement of 60 high capacity mineral wagons and spares, Procurement of 30 nos covered wagons, Spares of low capacity mineral wagons, Tata flat trucks/buses and Foundry materials, Communication and Technology (ICT) and Good Governance project, and Agro Processing Plant
57	Ghana	Government of Ghana	21.72	(I) Improved fish harvesting and fish processing project and (ii) waste management equipment and management support project
58	Ghana	Government of Ghana	35.00	Sugar Plant
59	Ghana	Government of Ghana	24.54	Sugarcane development and irrigation project
60	Guinea	Government of the Republic of Guinea	35.00	Strengthening of Health System
61	Guinea Bissau	Government of Guinea Bissau	25.00	Electricity project mango juice and tomato paste processing unit and purchase of tractors and water pumps for development of the agricultural sector
62	Kenya	Government of Kenya	61.60	Power Transmission Lines
63	Kenya	IDB Capital Limited, Kenya	15.00	Development of various small and medium enterprises
64	Kenya	Government of Kenya	29.95	Upgrade of Rift Valley Textiles Factory (RIVATEX East Africa Ltd)
65	Kenya	Government of Kenya	100.00	Agriculture Mechanization project
66	Lesotho	Government of Lesotho	5.00	General purpose: Contracts approved include export of pump sets, consultancy services and irrigation equipment
67	Lesotho	Government of Lesotho	4.70	Vocational training centre for empowerment of youth and women
68	Madagascar	Government of Madagascar	25.00	Project for rice productivity (US$ 10 mn) and project for fertilizer production (US$ 15 mn)
69	Madagascar	Government of Madagascar	2.50	Completion of unfinished fertilizer plant project

Sr. No.	Country	Borrower	Amount of Credit (US$ mn)	Products/Projects covered
70	Mauritania	Government of Mauritania	21.80	Potable water project (USD 6.8 mn) and agricultural development project (USD 15 mn)
71	Mauritius	Government of Mauritius	48.50	Offshore Patrol Vessel from M/s Garden Reach Shipbuilders & Engineers Ltd.
72	Mauritius	Government of Mauritius	46.00	Purchase of specialised equipment and vehicles
73	Mauritius	Government of Mauritius	18.00	To finance the acquisition of Waterjet Fast Attack Craft
74	Mauritius	Government of Mauritius	52.30	Project Trident
75	Mauritius	Government of Mauritius	500.00	Equity Participation for financing various Infrastructure Projects
76	Malawi	Government of Malawi	30.00	Supply of irrigation, storage, tobacco threshing plant and one village- one project in Malawi
77	Malawi	Government of Malawi	50.00	Cotton processing facilities (US$ 20 mn), Green Belt Initiative (US$ 15 mn), One Village One Product (OVOP) (US$ 15 mn)
78	Malawi	Government of Malawi	76.50	Procurement of design, supply, installation and commissioning of fuel storage facilities, irrigation network, commissioning of sugar processing facility in Salima district
79	Malawi	Government of Malawi	23.50	Construction of a new water supply system from Likhubula river in Mulanje to Blantyre
80	Mali	Government of Mali	27.00	Rural electrification and setting up of agro machinery and tractor assembly plant in Mali.
81	Mali	Government of Mali	30.00	Electricity transmission and distribution project from Côte d'Ivoire to Mali
82	Mali	Government of Mali	45.00	Electricity transmission and distribution project from Côte d'Ivoire to Mali
83	Mali	Government of Mali	36.00	Completion of Mali-Ivory Coast Interconnection Link for integrating the national power grids of the two countries
84	Mali	Government of Mali	15.00	Agriculture and food processing projects
85	Mali	Government of Mali	100.00	Power Transmission Project Connecting Bamako and Sikasso via Bougouni
86	Mozambique	Government of Mozambique	20.00	General purpose - Contracts approved include supply of water drilling machinery, equipments, accessories, components and spares, support vehicles, water and fuel tankers and electrical equipments

Sr. No.	Country	Borrower	Amount of Credit (US$ mn)	Products/Projects covered
87	Mozambique	Government of Mozambique	20.00	Gaza Electrification Project
88	Mozambique	Government of Mozambique	20.00	Transfer of water drilling technology and equipment
89	Mozambique	Government of Mozambique	25.00	To finance IT Park Project which will comprise construction of building and (a) incubator facility, (b) research and learning center and (c) technology park and administrative facility.
90	Mozambique	Government of Mozambique	30.00	Rural Electrification Projects in the provinces of Gaza, Zambezia and Nampula in Mozambique
91	Mozambique	Government of Mozambique	25.00	Rural Electrification of Cabo Delgado, Manica and Niassa Provinces
92	Mozambique	Government of Mozambique	20.00	Enhancing productivity of rice, wheat, maize cultivation
93	Mozambique	Government of Mozambique	13.00	Solar Photo Voltaic Module Manufacturing Plant
94	Mozambique	Government of Mozambique	250.00	improving the quality of power supply in Mozambique
95	Mozambique	Government of Mozambique	19.72	Rural drinking water project extension
96	Mozambique	Government of Mozambique	149.72	Rehabilitation of Road between Tica, Buzi and Nova Sofala in Mozambique
97	Mozambique	Government of Mozambique	47.00	Construction of 1200 houses in Mozambique
98	Niger	Government of Niger	17.00	Acquisition of buses,trucks, tractors,motor pumps and flourmills
99	Niger	Government of Niger	20.00	Rehabilitation of six-power stations, Purchase of three power transformers and Rehabilitation as well as erection of power lines between various places in Niger
100	Niger	Government of Niger	34.54	Electrification of 30 villages using solarphotovoltaic system and Setting up of Solar Photovoltaic System
101	Niger	Government of Niger	25.00	Potable Water for Semi-Urban and Rural Communities
102	Nigeria	Government of Nigeria	100.00	Various projects in Nigeria
103	R. Congo	Government of the Republic of Congo	70.00	Rural Electrification
104	R. Congo	Government of the Republic of Congo	89.90	Development of Transport System
105	R. Congo	Government of the Republic of Congo	55.00	Setting up a Greenfield 600 tpd rotary kiln Cement Plant Project

Sr. No.	Country	Borrower	Amount of Credit (US$ mn)	Products/Projects covered
106	Rwanda	Government of Rwanda	20.00	Power projects
107	Rwanda	Government of Rwanda	60.00	Power projects
108	Rwanda	Government of Rwanda	120.05	[i] Export Targeted Modern Irrigated Agricultural Project (USD 60.22 million); and [ii] Extension of Export Targeted Modern Irrigated Agricultural Project (USD 59.83 million)
109	Rwanda	Government of Rwanda	81.00	Establishment of 10 Vocational Training Centres and 4 business incubation centres in Rwanda
110	Sierra Leone	Government of Sierra Leone	15.00	Procurement of tractors and connected implements, harvesters, rice threshers, rice mills, maize shellers and pesticide soarat equipment
111	Sierra Leone	Government of Sierra Leone	30.00	Rehabilitation of existing facilities and addition of new infrastructure to supply potable water
112	Sierra Leone	Government of Sierra Leone	78.00	Transmission Line and Substation in Sierra Leone
113	Senegal & Mali	Government of Senegal & Mali (combined)	27.70	Acquisition of railway coaches and locomotives from India. Mali (US$ 20.62 mn) and Senegal (US$ 7.08 mn)
114	Senegal	Government of Senegal	17.87	Supply of buses and spares by Tata International (Tata Motors) from India to Senegal
115	Senegal	Government of Senegal	27.00	Irrigation project
116	Senegal	Government of Senegal	11.00	Women poverty alleviation programme and acquisition of vehicles from India
117	Senegal	Government of Senegal	10.00	IT Training projects
118	Senegal	Government of Senegal	25.00	Rural electrification project and Fishing Industry Development Project
119	Senegal	Government of Senegal	5.00	Supply of Medical equipments, furniture and other accessories to 4 hospitals
120	Senegal	Government of Senegal	27.50	Rural electrification
121	Senegal	Government of Senegal	19.00	Fisheries Development Project
122	Senegal	Government of Senegal	41.96	Setting up a Modern Abattoir, Meat Processing, Cold Storage, Rendering and Tannery Plant and Market Place in Senegal

Sr. No.	Country	Borrower	Amount of Credit (US$ mn)	Products/Projects covered
123	Senegal	Government of Senegal	62.95	Rice Self Sufficiency programme in Senegal
124	Senegal	Government of Senegal	26.00	Acquisition of buses
125	Seychelles	Government of Seychelles	8.00	General Purpose - Contracts covered include export of rice, potatoes and buses
126	Seychelles	Government of Seychelles	10.00	Import of goods and services from India for specific projects funded by Development Bank of Seychelles (DBS)
127	Sudan	Government of Sudan	50.00	General purpose: Contracts approved include export of electrification equipment, photovoltaic cells, diesel coaches, rehabilitation of locomotives, textile machinery, copper rods etc.
128	Sudan	Government of Sudan	350.00	Project for setting up 4 x 125 MW Kosti Combined Cycle Power Plant in Sudan to be executed by Bharat Heavy Electricals Ltd. (BHEL)
129	Sudan	Government of Sudan	41.90	SINGA-GEDARIF transmission and Sub-Station Project
130	Sudan	Government of Sudan	48.00	(i) supply of agricultural inputs for the Sudanese Agricultural Bank, (ii) technical and laboratory equipment to Higher Educational Institutions, (iii) scientific equipments for Ministry of Science and Technology, (iv) solar electrification and (v) meeting requirement of Sudan Railways
131	Sudan	Government of Sudan	52.00	Singa-Gadarif Transmission line extension to Galabat, micro-industrial projects and development of livestock production and services
132	Sudan	Government of Sudan	25.00	Eldeum Sugar Project at White Nile state
133	Sudan	Government of Sudan	125.00	Mashkour Sugar Project (IInd tranche of US$ 150 mn)
134	Sudan	Government of Sudan	45.17	Capitalization of Interest under operative LOCs for change in terms of the existing LOCs
135	Sudan	Government of Sudan	19.61	Capitalization of Interest under operative LOCs for change in terms of the existing LOCs
136	Swaziland	Government of Swaziland	20.00	IT Park
137	Swaziland	Government of Swaziland	37.90	Agricultural Development and Mechanization of Agriculture in Swaziland

Sr. No.	Country	Borrower	Amount of Credit (US$ mn)	Products/Projects covered
138	Tanzania	Government of Tanzania	40.00	Export of tractors, pumps and equipments from India to Tanzania.
139	Tanzania	Government of Tanzania	36.56	Financing the purchase of 723 vehicles
140	Tanzania	Government of Tanzania	178.13	Water supply schemes to Dar-es-Salam
141	Tanzania	Government of Tanzania	268.35	Extension of Lake Victoria Pipeline to Tabora, Igunga and Nzega
142	Tanzania	Government of Tanzania	92.18	Rehabilitation and improvement of water supply system in Zanzibar
143	Togo	Government of Togo	15.00	Rural Electrification Project in Togo
144	Togo	Government of Togo	13.10	Farming and cultivation of Rice, Maize and Sorghum in Togo
145	Togo	Government of Togo	30.00	Rural Electrification Project to cover 150 localities
146	Togo	Government of Togo	52.00	Setting up of 161 KV Power Transmission Line
147	Zambia	Government of Zambia	50.00	Pre-fabricated Health Posts in Zambia
148	Zambia	Government of Zambia	29.03	Itezhi-Tezhi Hydro power project
149	Zambia	Government of Zambia	18.00	Pre-fabricated health posts
150	Zimbabwe	Government of Zimbabwe	28.60	Up-gradation of Deka Pumping Station and River Water Intake System in Zimbabwe
151	Zimbabwe	Government of Zimbabwe	87.00	Renovation/Up- gradation of Bulawayo Thermal Power Plant
	Africa Total		**8,092.68**	

- **Institutional LOCs**

Sr. No.	Borrower	Amount of Credit (US$ mn)	Products/Projects covered
1	AfreximBank	30.00	General Purpose
2	Banque Ouest Africaine De Developpement (West African Development Bank)	10.00	General Purpose
3	Trade and Development Bank (formerly PTA Bank)	25.00	General purpose
4	Nigerian Exim Bank	20.00	General purpose
5	Indo-Zambia Bank	5.00	General purpose
6	Ecowas Bank of Investment & Development	30.00	Financing private sector projects
	Total	**120.00**	

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