



No.

The Research on the Cross-Border Transport Infrastructure: Phase 3

Final Report

March 2009

Japan International Cooperation Agency

PADECO Co., Ltd.

Mitsubishi UFJ Research and Consulting Co., Ltd

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PREFACE

In 2003, the Japan International Cooperation Agency (JICA) conducted the “Research on the Experience and Perspective of ODA on Infrastructure Development in the Developing Countries” in which the role of infrastructure was redefined and issues in infrastructure development for future JICA assistance were identified.

Based on this study’s results, two research studies were then conducted: (i) the “PPP (Public-Private Partnership) Project Study” in 2004 and (ii) the “Research on Program Management: Guide for the Application of P2M to JICA Activities”, from 2003 to 2005, with the aim of reducing the infrastructure gap and taking an integrated approach to infrastructure development. Since addressing cross-border infrastructure gaps was identified as one of the solutions to reducing infrastructure gaps, a Phase 1 research study on cross-border transport infrastructure was conducted from October 2005 to July 2006. It examined the progress of regionalization from a global perspective and summarized the major characteristics of cross-border transport infrastructure. JICA continued with a Phase 2 project, “Research on the Cross-Border Transportation Infrastructure: Targeting the GMS [the Greater Mekong Subregion of Southeast Asia]”, from November 2006 to December 2007, which examined current conditions, identified cross-border transport infrastructure issues, and assessed future directions for JICA assistance in this area.

As Phase 3 of this Cross-Border Transport Infrastructure research series, this study focused on Sub-Saharan Africa, a region where there is a great need to maintain and rehabilitate the cross-border infrastructure connecting ports and 15 landlocked countries. Discussions were held in five research group meetings, with Professor Tsuneaki YOSHIDA of the Department of International Studies, Graduate School of Frontier Sciences, University of Tokyo, as technical advisor. The research group consisted of staff from the Economic Infrastructure Development Department of JICA. This study sets out the analyses undertaken in this study of cross-border transport infrastructure in Sub-Saharan Africa, including a focus on the systems and infrastructure in East Africa. Based on these analyses, future directions for the area are presented.

The Study Team, led by Mr. Yuichiro MOTOMURA of PADECO CO., Ltd. of Japan, conducted field surveys, literature research in Japan, and discussions between the research group and relevant agencies, as well as a public symposium based on the study’s findings. The Team also prepared this report describing the study results.

I hope that this report will contribute to the improvement and enhancement of development assistance in Cross-Border Transport Infrastructure. To all those who cooperated and extended assistance to this study, I would like to express my sincere gratitude.

March 2009

Toshiyuki KUROYANAGI
Director General,
Economic Infrastructure Department
Japan International Cooperation Agency

Executive Summary

1. General Information on the Sub-Saharan Africa Region

Society and Economy

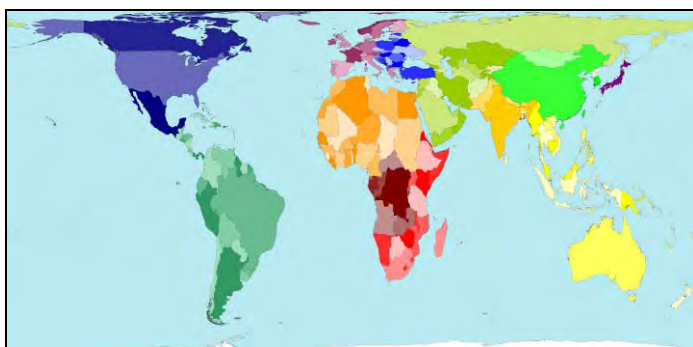


Figure 1.1 World Atlas (by area; 2006)

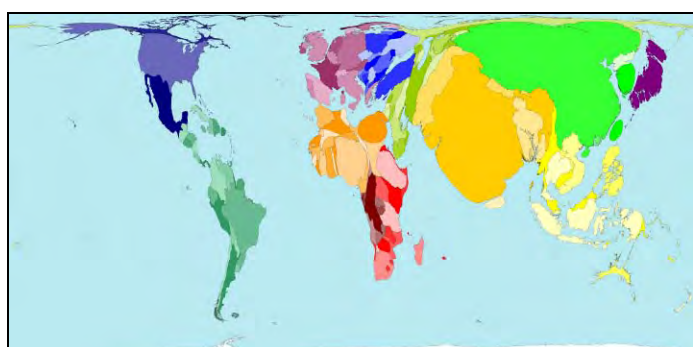


Figure 1.2 Relative Proportion of Population (2002)

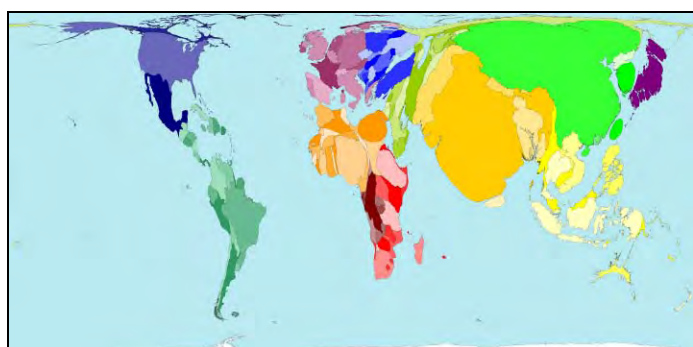


Figure 1.3 Relative Proportion of Truck Ownership

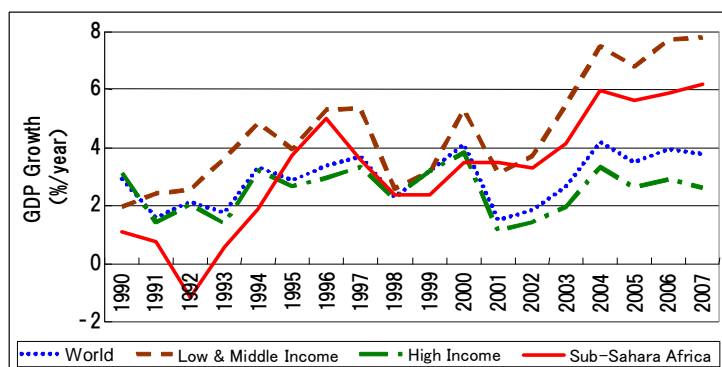
Source: Figure 1.1–1.3 © Copyright 2006 SASI Group (University of Sheffield) and Mark Newman (University of Michigan)

Sub-Saharan Africa is a collective name for the 48 countries in Africa excluding the five countries of North Africa. While Sub-Saharan Africa accounts for 18% of world’s area (24.3 million km²) and 12% of the world’s population (799.8 million), its GDP is less than 2% (US\$840 billion, 2007) of the world’s total, and one-third is accounted for by South Africa. Sub-Saharan Africa’s per capita GDP in 2007 was US\$1,053, but if South Africa is excluded, the region’s GDP is only US\$752. About 400 million people—half of the region’s total population—live in poverty and subsist on US\$1.25 or less a day; 34 of the 48 poorest countries in the world are in Sub-Saharan Africa.

Infrastructure development in the region has been laggard and does not meet the transportation demand. For example, truck ownership ratios in Sub-Saharan Africa are very low as shown in Figure 1.3.

On a more positive note, since 2000 Sub-Saharan Africa has been achieving relatively stable economic growth. Since 2004 it has sustained annual growth rates as high as 6%, which translates into 3–4% per capita. This rapid economic growth is considered to be largely attributable to the surge in global prices of natural resources, which has also led to natural resource development in inland African nations. However, the sharp decrease in mineral resource prices caused by a reduction in speculative investing and decreasing demand for natural resources following the recent financial crisis is likely to dampen short-term economic growth in the region.

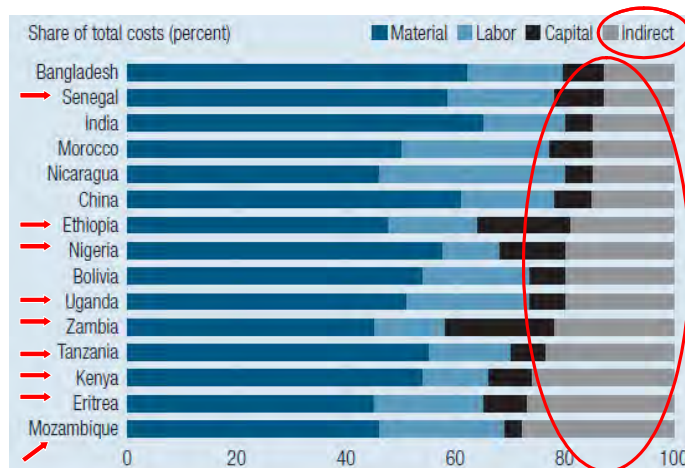
The World Bank has identified sound economic policy, a competitive exchange rate, improvements in governance and management, and declining conflict as major factors contributing to strong economic growth. It points out that in order to sustain rapid economic growth the region should further improve its investment environment, infrastructure, technology, and organizational capacity.



Source: Study Team (Prepared from World Bank Data)

Figure 1.4 World GDP Growth Rate

Trade and Industries



Source: World Bank, African Development Indicators 2007

Figure 1.5 Cost Composition of Private Companies in Sub-Saharan Africa and Other Parts of the World

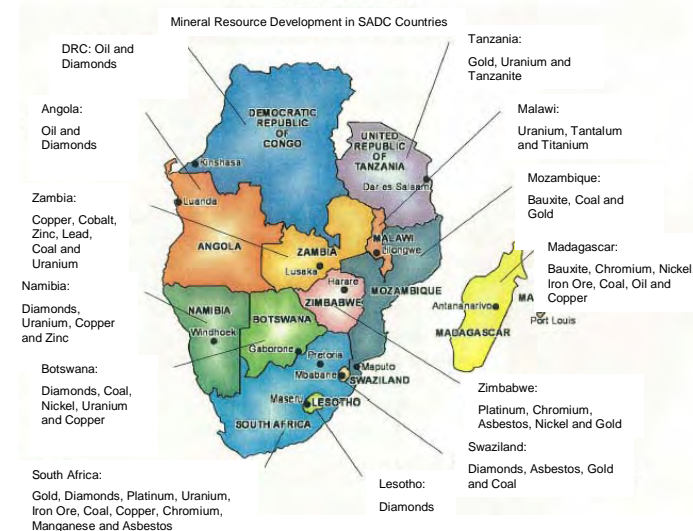
A total of 20% of Sub-Saharan Africa’s GDP is accounted for by agriculture, forestry, and fisheries, while mining accounts for 35% and the service sector for 45%; these percentages have not changed much over the past 40 years. Regarding trade structure, many countries in the region export primary commodities and oil/mineral resources, and import industrial goods. Their largest trading partners are typically their former colonial powers, but trade value with Asia has been increasing in recent years.

The major constraints on the region’s industrial development are: (1) high overhead costs (e.g., cost for transportation, energy, security: Figure 1.5); (2) low agricultural productivity; and (3) high labor costs. The main factor inhibiting industrial development and economic growth in the region has been high transport costs. For example, the agricultural sector, which employs 60–70% of the region’s working population, suffers from very low productivity due to high prices for imported fertilizer as a result of high transport costs. For example, average cereal production per hectare in Africa is 1.3 tons whereas in Asia it is 3.7 tons (2005).

Wage levels in urban areas are high due to high food prices and postcolonial policies that favor urban residents, and this has significantly impeded industrial promotion. As a result, capital-intensive industries (e.g., mining) rather than labor-intensive industries are playing a central role in the secondary sector.

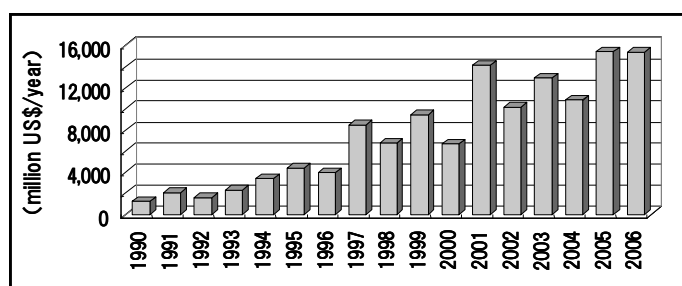
As mentioned, high overhead costs, low agricultural productivity, and high labor costs have inhibited the region’s economic development, but with the stabilization of political and economic conditions in recent years, oil- and mineral-related foreign direct investment (FDI) mainly from the European Union (EU) and China has been increasing (Figure 1.7). Sharp rises in the prices of natural resources such as oil and minerals has prompted the resource majors and juniors to rapidly step up their investment in natural resource development in inland countries (Figure 1.6). This trend also has had a significant ripple effect in stimulating domestic consumption and expanding non-natural resource investment opportunities.

Until recently, the spike in the global price of crude oil, coal, nonferrous metals, and rare metals had strongly driven an influx of FDI into inland African nations where natural resource investments had lagged before due to its prohibitive drilling/mining costs. Capital flight and declining demand caused by the global financial crisis last year has depressed global prices for natural resources. However, as the steady demand from the emerging economies picks up, commodity prices are likely to return to a long-term upward trajectory.



Source: Conference for Ambassadors in Middle East Region, 2009

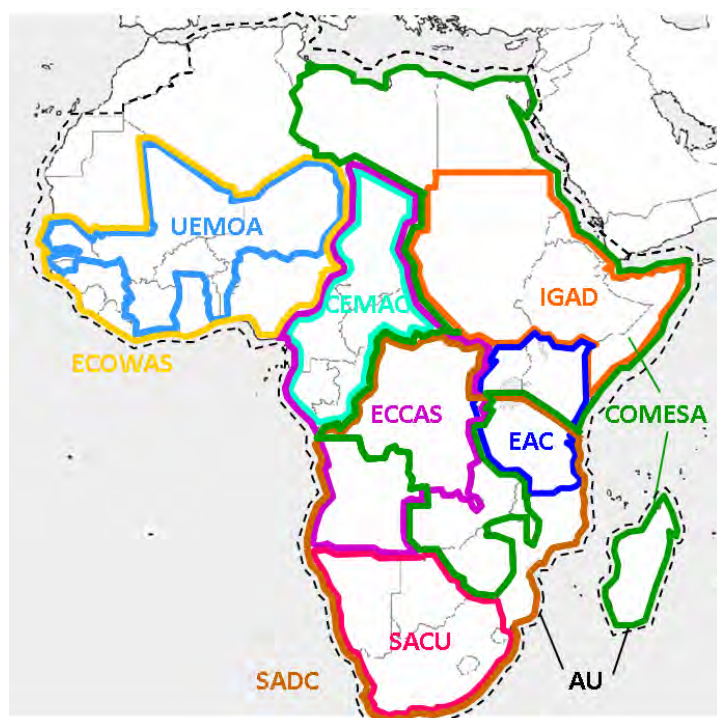
Figure 1.6 SADC Countries’ Mineral Resource Deposits



Source: World Bank

Figure 1.7 FDI in Sub-Saharan Africa

Regional Integration/Regional Economic Community



Source: Study Team (prepared from a variety of references)

Figure 1.8 Regional Economic Communities (RECs) in Africa

In Africa, where national borders were established artificially by colonial policies according to which a number of small countries in terms of both economic scale and population were formed, interregional cooperation and integration has been a longstanding issue. As a result, numerous regional economic communities (RECs) have been established in the region. Major RECs are shown in Figure 1.8. Their aim is to integrate the economies of neighboring nations and promote the establishment of custom unions, introduction of a common currency, cross-border trading, and the creation of common markets. Some RECs also conduct research studies on transport corridors, e.g., assessing coordination of maintenance activities in different countries, and promoting the conclusion of various agreements to facilitate intraregional movements of people and goods.

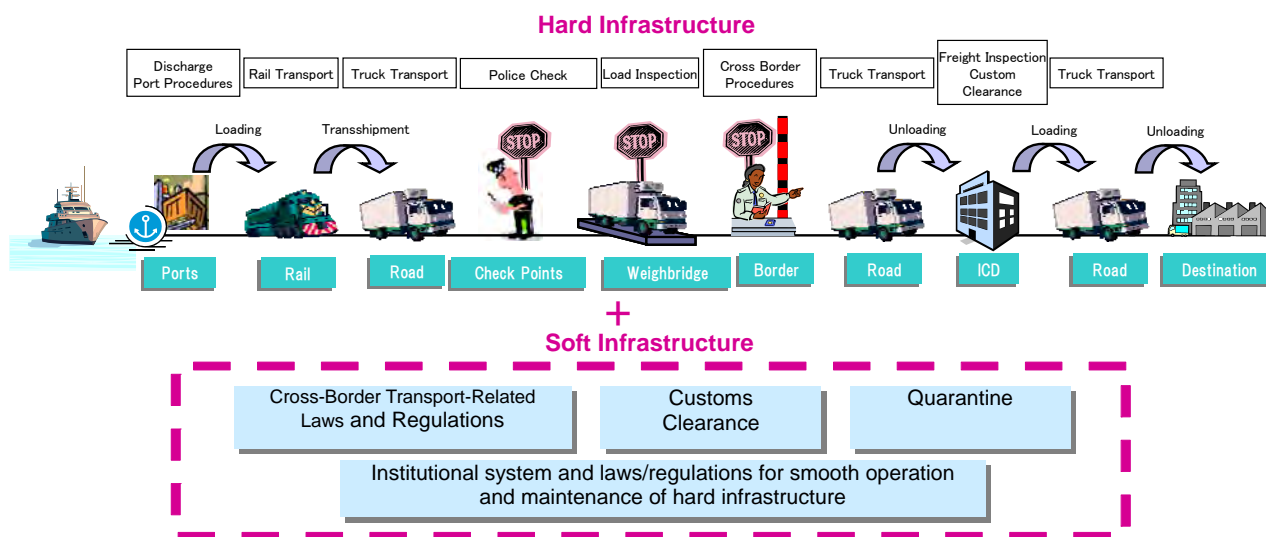
Recently, as these RECs have become more active, they have gained more international presence as recipients of donor assistance. On the other hand, most of these regional bodies are funded by their member states, and their decisions are not legally binding. They often face a number of challenges in promoting effective regional integration.

The African Union (AU), which is by far the largest regional community, includes all 52 states on the African continent except for Morocco.

2. Cross-Border Transport Infrastructure in Sub-Saharan Africa

What is Cross-Border Transport Infrastructure?

In this research study, CBTI is defined as the infrastructure required for transportation that crosses multiple national borders. It comprehensively includes physical “hard infrastructure” such as ports, railways, highways, cargo transshipment facilities, international border facilities, weighbridges (truck scales), and inland container depots (ICDs), as well as “soft infrastructure” such as transport laws/regulations related to border crossing (e.g., customs clearance, quarantine), and organizational systems and resources for smoothly operating and maintaining the hard infrastructure (Figure 2.1). This study aims at analyzing the current situation and issues regarding CBTI in Sub-Saharan Africa, and formulating a CBTI development strategy.



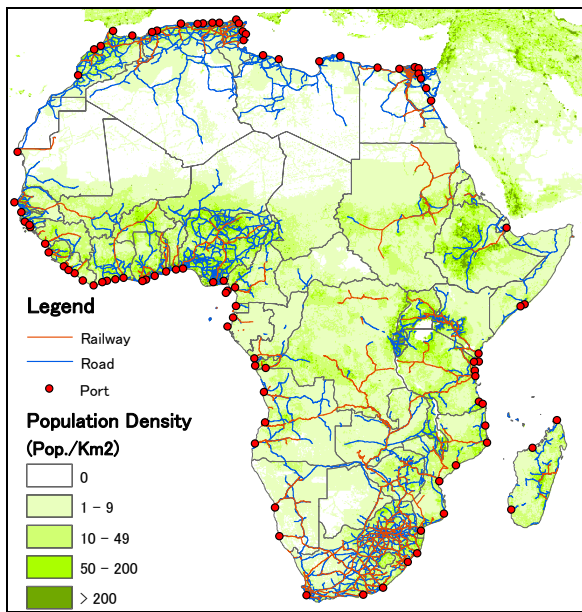
Source : Study Team

Figure 2.1 Main Elements of Cross-Border Transport Infrastructure

Historical Background of CBTI Development in Sub-Saharan Africa

It is critically important to consider the historical background of CBTI development in Sub-Saharan Africa. Ports and the land transport system to serving inland areas were developed in the colonial era. As these African colonies gained independence in 1960s to 1980s, their transport infrastructure progressively degraded due to insufficient investment. Under the import substitution industry policy at the time, the public sector played a leading role in imports of raw materials and exports of agricultural products. As a result, the transportation system, which was integrated into this industry policy, lost its efficiency. From the latter half of 1960s other industrialized nations rapidly underwent a transport revolution and containerization, and significantly improved their transport efficiency. It was not until the 1990s that the containerization “revolution” began in Africa. However, containerization also meant increasing port maintenance costs and a shortage of large-scale port facilities supporting the efficient utilization of container carriers and trucks. Due to these factors, the full cost reduction benefit from containerization has yet to be realized.

Current Situation of CBTI

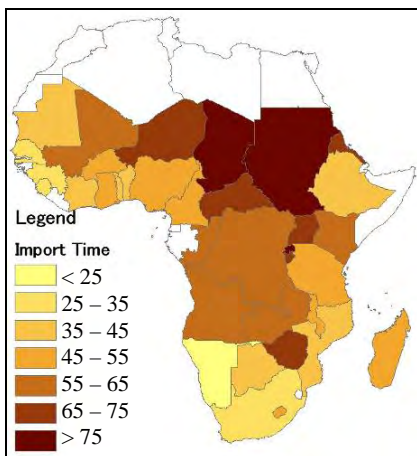


Source: Study Team (prepared from a variety of references)

Figure 2.2 Main Roads, Railways, and Ports with Population distribution

Most of the railways and highways in Sub-Saharan Africa were constructed and established in the colonial period, and they form a major CTBI network that provides trading links between densely populated inland areas and ports (Figure 2.2). However, there are few areas suitable for port development in the region due to natural constraints of water depth, and there are a very limited number of locations where large containers can be unloaded.

In addition, due to the poor maintenance of roads, railways, and ports after independence, most of the region’s infrastructure is deteriorating. A high percentage of highways are unpaved, and even paved roads are often degraded (Figure 2.6). Regarding railways, since the repair and renewal of rolling stock and track has been delayed, transport volumes have been decreasing. The shortage of port capacity and low port operational efficiency is also a factor, with cargo concentrated in the region’s limited ports. These factors have resulted in high transport costs (Figure 2.7), which in turn has caused a decline in competitiveness and increased living costs. Especially inland nations tend to face longer transport times, higher transport costs, and (as a consequence) lower GDP growth rates. Therefore, inadequate transport infrastructure is a major cause of intraregional economic disparities (Figures 2.3–2.5).



Source: Study Team (from World Bank WDI database)

Note: Time and costs for transporting 20-foot containers from the nearest port)

Figure 2.3 Average import time

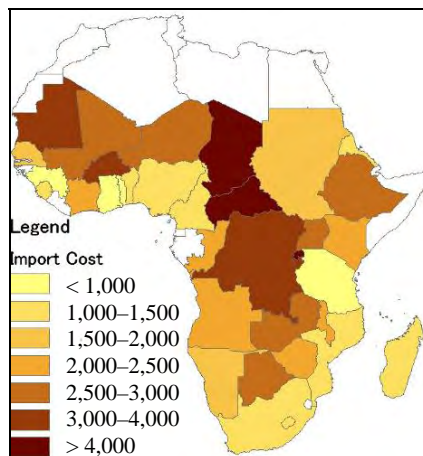


Figure 2.4 Average import cost(US\$)

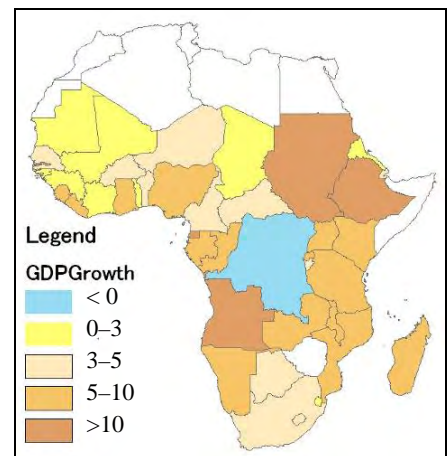
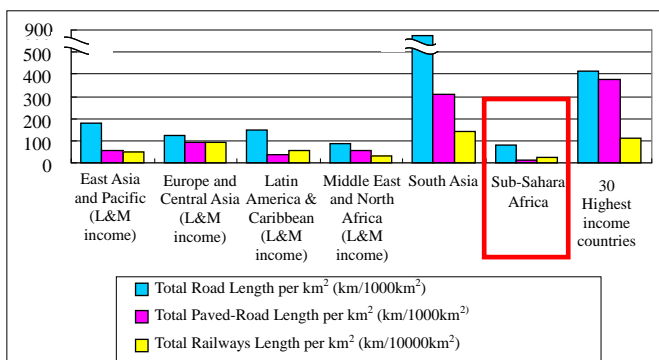
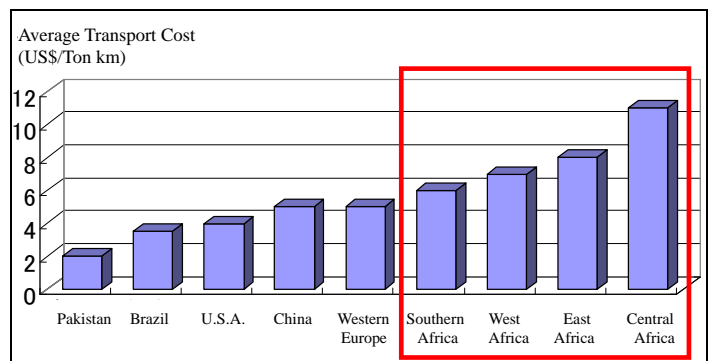


Figure 2.5 GDP growth rate 2007(%)



Source: Study Team (prepared from WB data)

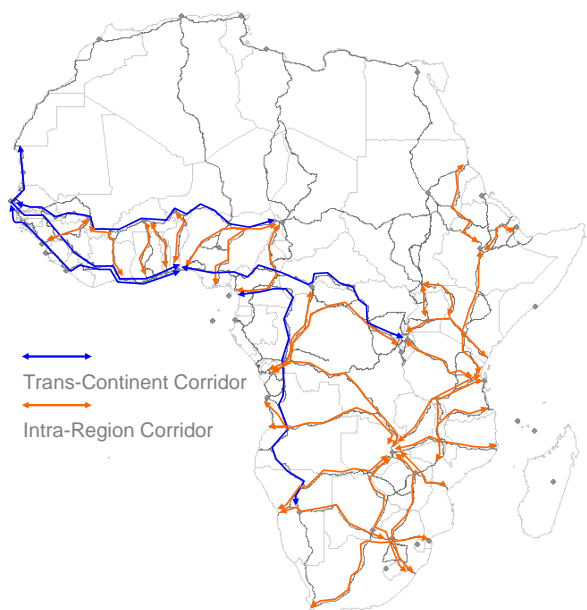
Figure 2.6 Comparison of Road and Railway Infrastructure



Source: Study Team (prepared from WB data)

Figure 2.7 Comparison of Average Transport Cost 2007

Development Priority Corridors and Areas

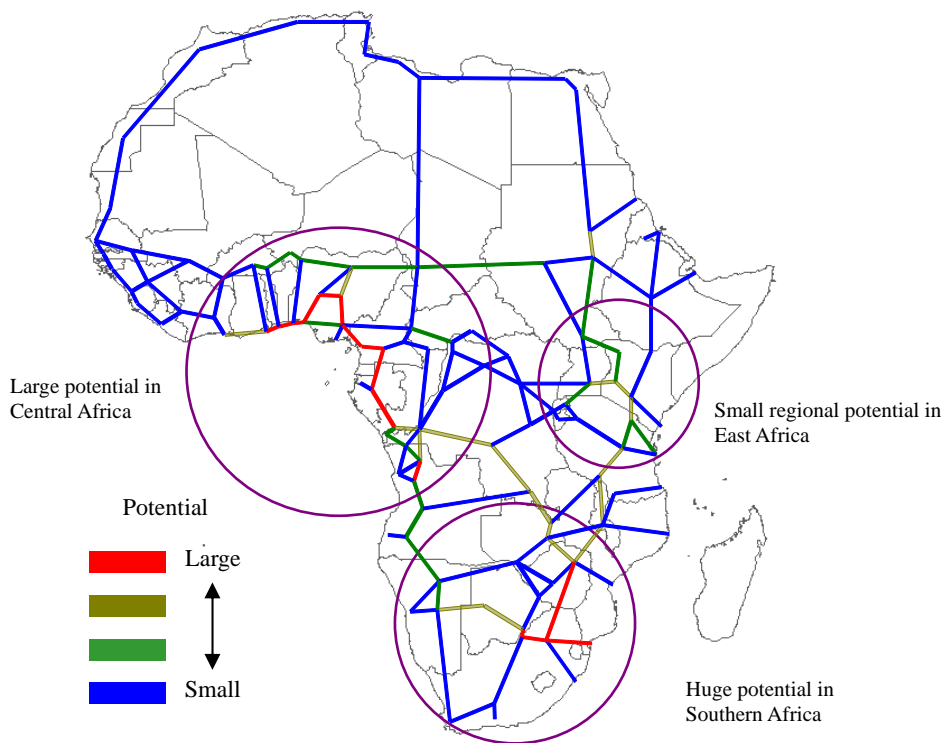


There are many existing and planned international transport corridors in Sub-Saharan Africa, e.g., the Trans-African Highway (TAH) and the Sub-Saharan Africa Transport Policy Program (SSATP) regional economic corridors (Figure 2.8). In order to determine maintenance priorities for these corridors, the Study Team analyzed potential transport demand along each corridor. Due to the unavailability of detailed statistical data on trade flows, GDP was defined and used as “potential value” of trade quantity. “Potential value” of trade quantity within Sub-Saharan Africa and that of between Sub-Saharan Africa and other regions were analyzed.¹

The analysis showed that there is a large potential in corridors around South Africa and Nigeria in terms of intraregional trade, moderate potential in long-distance corridors that link South/Central Africa and East Africa, and small interregional potential in the East Africa region (Figure 2.9).

Source: Study Team (prepared from a variety of references)

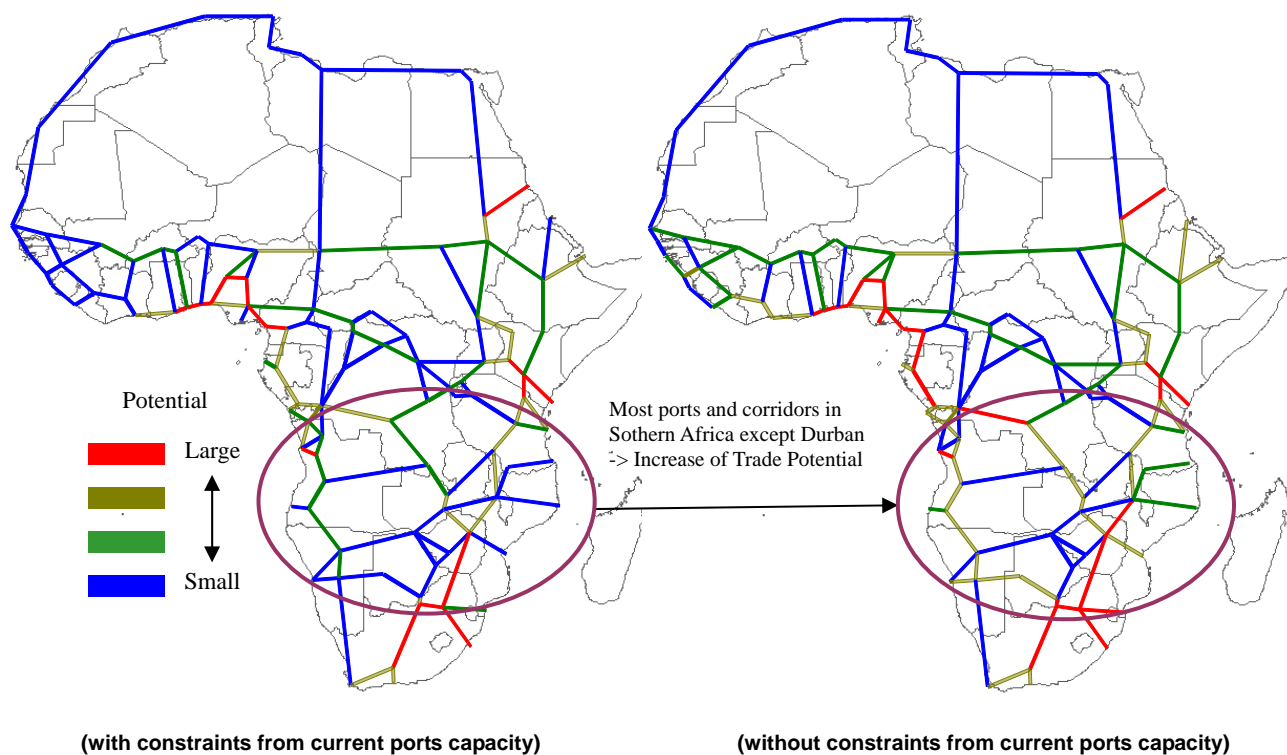
Figure 2.8 Major Corridors in Sub-Saharan Africa



Source: Study Team

Figure 2.9 Potential Volume of Intraregional Trade

Extra-regional trade potential was analyzed with (1) constraints from the current port capacity, and (2) without constraints. A comparison of the potential of Sub-Saharan Africa with that of the rest of the world showed that trade volume will increase in many ports as well as in inland corridors especially in southern Africa assuming that port capacity constraints are resolved (Figure 2.10). This result suggests that future improvement in port facilities will lead to a more efficient distribution network.



Source: Study Team

Figure 2.10 Potential Value of Trade between Sub-Saharan Africa and the Rest of the World

¹Analysis Procedures

In the analysis of intraregional trade potential in Sub-Saharan Africa, since trade volume origin-destination (OD) data for each country could not be obtained, the GDP of each country was assumed as their potential, and a gravity model was used to calculate the trade potential OD between each country pair. The results were allocated on major corridor networks by the shortest path search method. For trade potential between Sub-Saharan Africa and the rest of the world, the GDP and the container transaction volume of major ports (assumed to be proportional to the port capacity) of each country along with the gravity model were used in a similar manner as above to calculate the trade potential OD between each country and port. Also, similar calculations were conducted in cases in which all major ports have sufficient capacity (with improved port facilities).

In this analysis, the state of infrastructure such as roads, railways, and ports, and the cost and time required for crossing borders were not considered, so these assumptions differ somewhat from the reality. However, the relative comparison of each corridor's potential can serve as input for broadly assessing relative maintenance priorities.

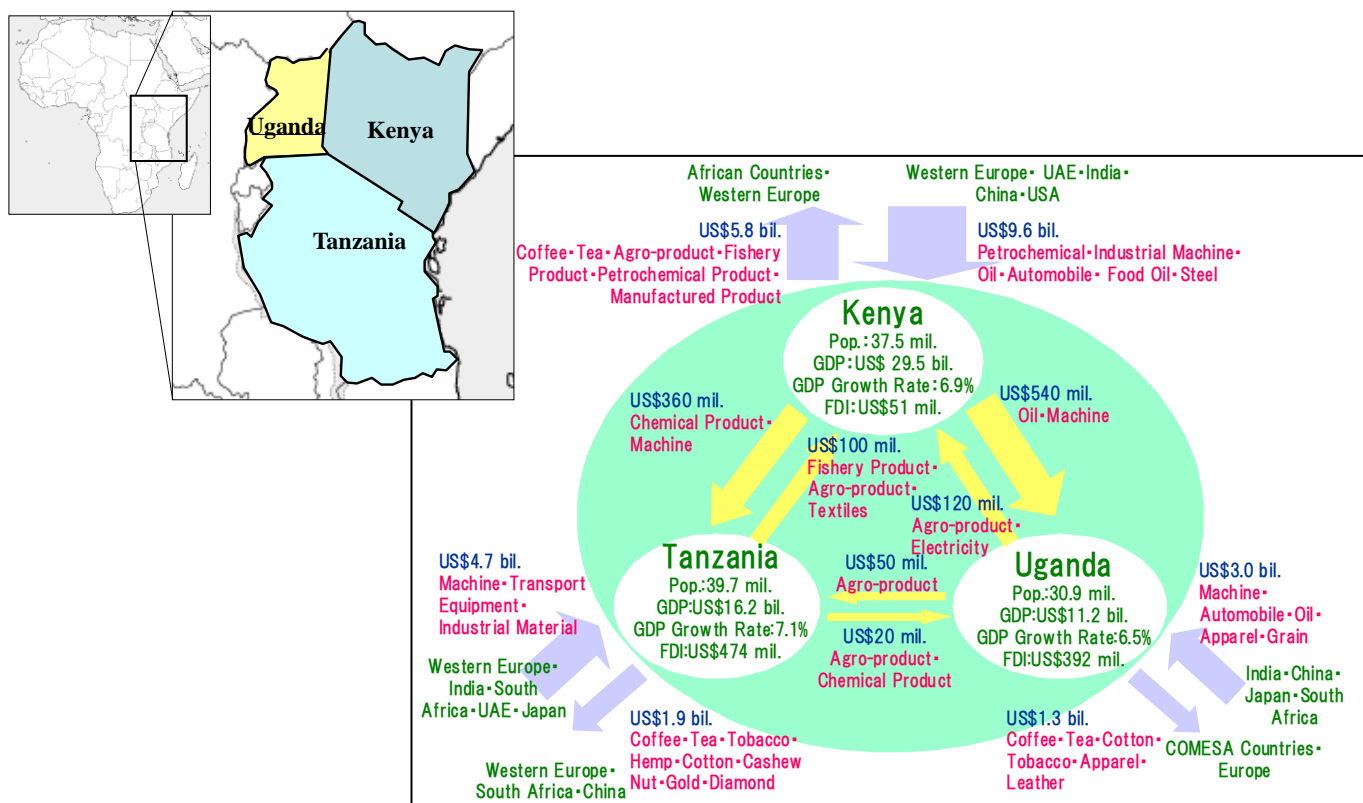
3. Assessment of CBTI – A Case Study in East Africa

CBTI consists of various subsectors including both physical (“hard”) and non-physical (“soft”) development aspects. Therefore, it is critical that CBTI development proceed not with a project-based approach but with a program approach that addresses development from a comprehensive viewpoint. Accordingly, this study prepared a model program of CBTI development, focusing on three countries in East Africa (Kenya, Tanzania, and Uganda).

Summary of Society and Economy in East Africa

Figure 3.1 summarizes the economy, trade, and investment in the three case study countries. Recently, horticultural products (flowers, ornamental plants, and vegetables) have been at the heart of trade promotion programs of the three countries. The export of these products is rapidly increasing in addition to main traditional products, e.g., coffee, tea, cigarettes. However, there has been difficulty in adding value to agricultural exports in the course of processing (except some products for which mass production, processing, logistics, and exports have been established with foreign investment). In addition, middlemen (intermediaries) lead to complexities in the logistics of agricultural exports, creating obstacles for businesses in price determination and market information sharing. A further limiting factor is that the infrastructure for logistics, e.g., access roads to markets, the cold chain (i.e., refrigerated trucks and facilities), and market information system, has not been developed well (Source: Ministry of Economy, Trade and Industry, “Research on Policy Consistency of ODA and Agricultural Trade”, 2007).

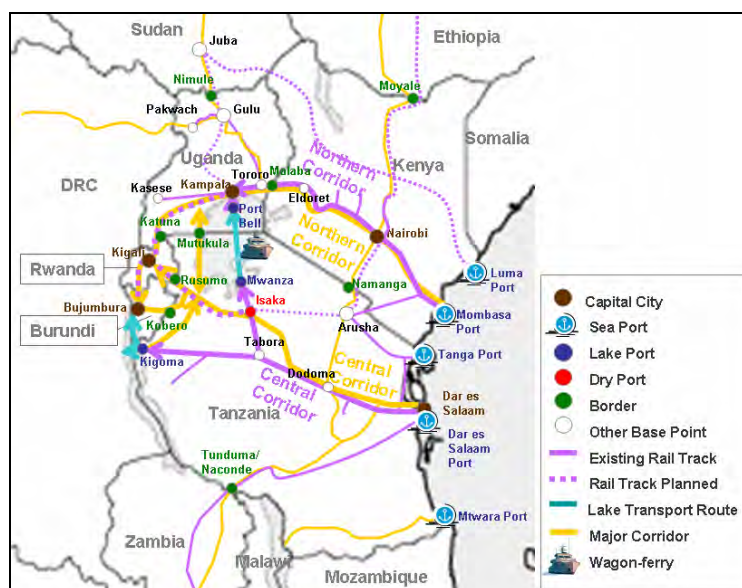
At the same time, regional economic integration is proceeding. The EAC has established a customs union (2005), and will abolish tariffs (by 2010). The Common Market for Eastern and Southern Africa (COMESA) established a Free Trade Area or FTA (2000) and will introduce intraregional tariffs (by 2008). The Southern African Development Community (SADC) will establish a customs union (by 2010) and a common market (by 2015), and will introduce a common currency (by 2018).



Source: Study Team (prepared from a variety of references, FDI data for 2006 and the other data for 2007)

Figure 3.1 Summary of Economy and Trade in the Three Largest Countries in East Africa

Current Status of CBTI in East Africa



Source: Study Team

Figure 3.2 Major Corridors in East Africa

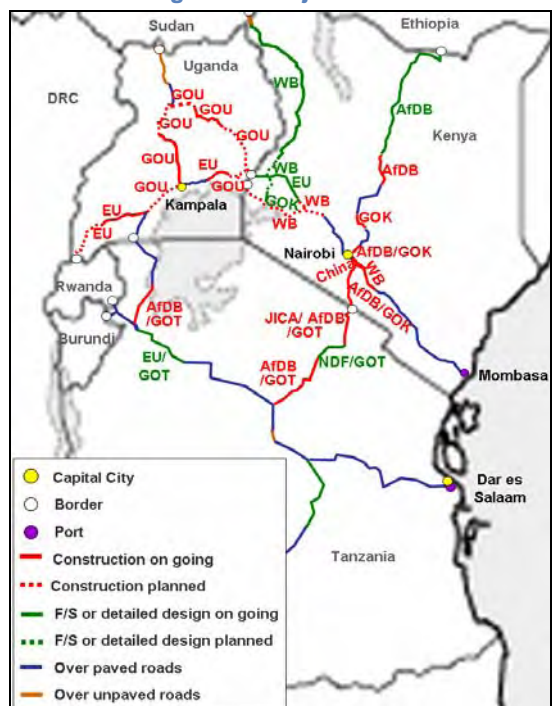
There are two major international corridors in East Africa: the Northern Corridor and the Central Corridor (Figure 3.2). Both start from a port and consist of two modes (road and rail). With assistance from the EU, the World Bank, the African Development Bank (AfDB), and others, CBTI has been developed mainly on the following two major corridors.

Roads

Road infrastructure on the major corridors is being improved with assistance from the Japan International Cooperating Agency (JICA), the African Development Bank (AfDB), the World Bank (WB), the European Union (EU), and the NDF (Nordic Development Fund) (Figure 3.3). JICA provides considerable research and grant assistance for bridges and roads. In addition, JICA is providing a yen loan for the Arusha (Tanzania)-Athi River (around Nairobi, Kenya)

road development project, with co-financing from the AfDB, in conjunction with a One-Stop Border Post (OSBP) project at Namanga.

However, there have been problems in maintaining pavements. Road bureaus and road funds for sustainable road maintenance were established in Kenya and Tanzania and are being established in Uganda. While institutional capacities are being enhanced to improve maintenance, the lack of capacity of the private companies that undertake road repair work remains a constraint.



Source: Study Team

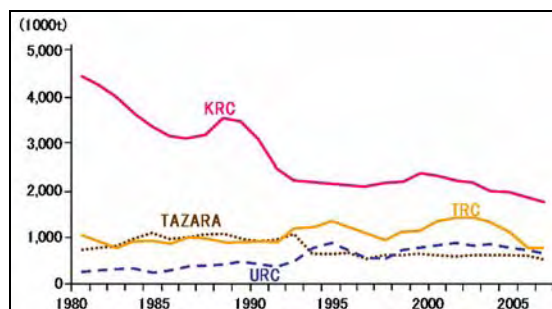
Figure 3.3 Current Status of Major Roads

Railways

The region's railways have been deteriorating. While the railways of the three case study countries have been privatized based on concession agreements, transport volumes after privatization have decreased and fallen far behind demand, which has increased with economic growth (Figure 3.4). This in turn has resulted in very long waiting times at ports before loading cargo on trains, leading to a greater dependence on road transport for most cargo. This is because the national railway organizations abandoned maintenance and the rehabilitation of infrastructure and rolling stock after the decision to privatize was taken, so when the operating companies took over the railways, the track and the rolling stock were degraded.

Ports

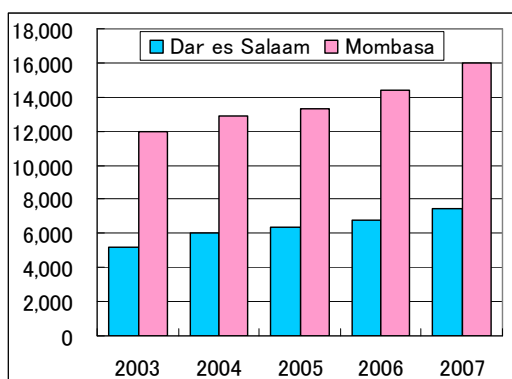
The performance of region's ports has also been poor. The ports of Mombasa and Dar es Salaam are always crowded because the cargo handling capacity is lagging behind the increasing demand (Figure 3.5). Import and export procedures require considerable time, and the detention of goods at ports has become a major obstacle to distribution (Figure 3.6). To help alleviate this constraint, JICA is assisting a port expansion project at Mombasa Port with yen loans; completion is expected in 2015.



Source: EAC Railway Master Plan, 2008

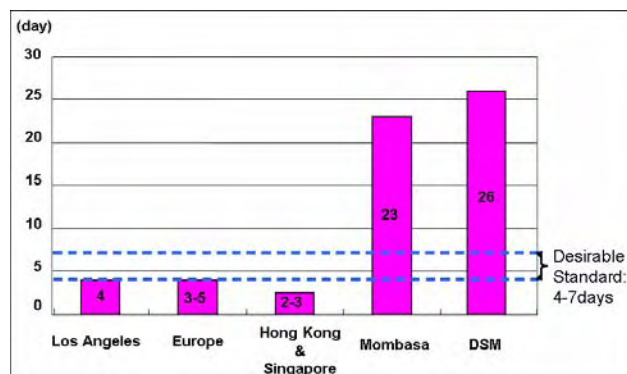
Note : KRC: Kenya Railway, TRC: Tanzania Railway, URC: Uganda Railway, TAZARA: Tanzania-Zambia Railway

Figure 3.4 Transitions in Handling Cargo of Railway Companies (thousands of tons)



Source: Study Team (prepared from a variety of references)

Figure 3.5 Cargo Handling at Major Ports (in thousands of deadweight tons, dwt)



Source: Study Team (prepared from a variety of references)

Figure 3.6 Detention Days of Cargo at Major Ports in the world (days)

Borders (OSBPs)

One-Stop Border Posts are now being established at international borders, supported by the World Bank, the United States Agency for International Development (USAID), and JICA. At the Namanga border between Kenya and Tanzania, OSBP support is provided in terms of both soft and hard aspects through JICA technical cooperation and yen loans. In Malaba between Kenya and Uganda, the first railway OSBP in East Africa was opened in 2007, and border crossing times for railway freight have been reduced to 30 minutes to one hour, while previously 1–2 days was required. OSBP support is also provided at other international borders by various development partners.

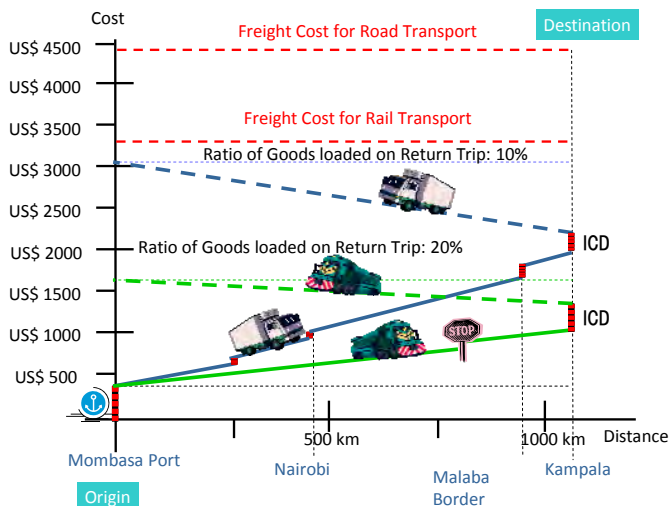
Cross-Border Transport System

Since the road transport agreement concluded by the three case study countries in East Africa is to be applied to Rwanda and Burundi, growth in cross-border transport is envisaged. To address the bond (guarantee) system, one of the barriers impeding cross-border transport, the countries are seeking to establish a common bond system under the auspices of COMESA; a pilot project has already been initiated in the Northern Corridor with support from USAID. Weighbridges, police checks (inspections), and escorts (police accompanying cargo vehicles) to prevent smuggling and the evasion of customs duties are also factors that cause delays in cross-border transport, but these are expected to be improved by the introduction of a global positioning system (GPS) for trucks with World Bank assistance.

The coordination of cross-border transport systems among multiple countries is carried out by the EAC and COMESA, and in the Northern Corridor the Northern Corridor Transit Transport Coordination Authority (NCTTCA) is involved. Also in the Central Corridor, a similar coordination authority is now being established with support from the African Development Bank.

Analysis of Transport Time and Cost

As with the cases in Sub-Saharan Africa, long transport time and high transport cost cause major hurdles for economic development, trade, and private finance. In order to identify the causes for long transport times and high transport costs, the transport time and cost for cargo imported from overseas was analyzed for the Northern and Central Corridors. The results of the analysis for the Northern Corridor (from Mombasa to Kampala) are set out below.



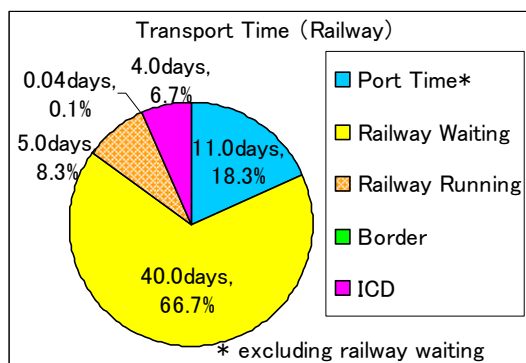
Source: Study Team

Figure 3.7 Time Analysis between Mombasa-Kampala for transit of 40Ft container

Long waiting time at port: Waiting time at port accounts for a significant proportion of the total time required for transportation along this corridor: 61% for road transport, and 85% for railway transport (including railway waiting time) (Figures 3.7–3.9). Especially for rail, cargo is sometimes detained for periods as long as 40 days due to a serious shortage of rail capacity. There are other issues such as the shortage of port infrastructure capacity including berths and yards, delays in customs clearance procedures that involve multiple institutions, and delays in document inspection and cargo acceptance by cargo recipients (e.g., distributors). Also, since cargo storage fees at ports are inexpensive, some ports are used as if they were warehouses to store cargo.

Transit time across national borders and inland container depots (ICDs):

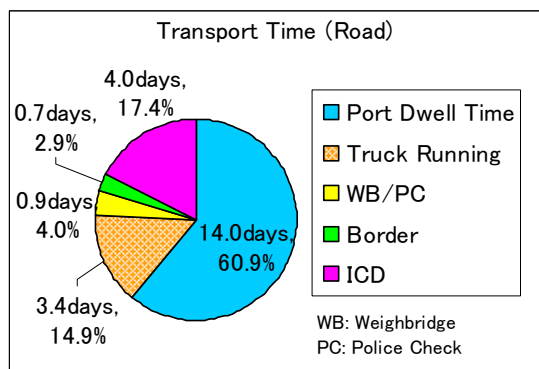
The transit time at the Malaba border crossing along the Northern Corridor is 6–8 hours by road, and only about one hour by rail (substantially reduced with the introduction of an OSBP). Therefore, transit time across national borders accounts for 2.9% of total time in the case of road transportation, and for 0.1% of that for rail transportation (Figures 3.8–3.9). The facts indicate that other factors, such as ports, are more influential than transit time across national borders. In the case of regional trade without ports, transit time across national borders accounts for about 6% of total transit time. At the other national borders in EAC, about one day is required for transit time across national borders. More importantly, a few days are required at the ICD at the destination (Kampala) to carry out clearance. In addition, accidental detentions and transportation delays occur frequently due to incomplete preparation for border crossing procedures.



Source: Study Team

Figure 3.8 Breakdown of Time and Distance between Mombasa-Kampala (railway)

Although transit across national borders is still of some importance, the impact of improvements in transit across national borders in East Africa is relatively insignificant from the view of total transport system. The total improvement of transit across national borders should be considered.



Source: Study Team

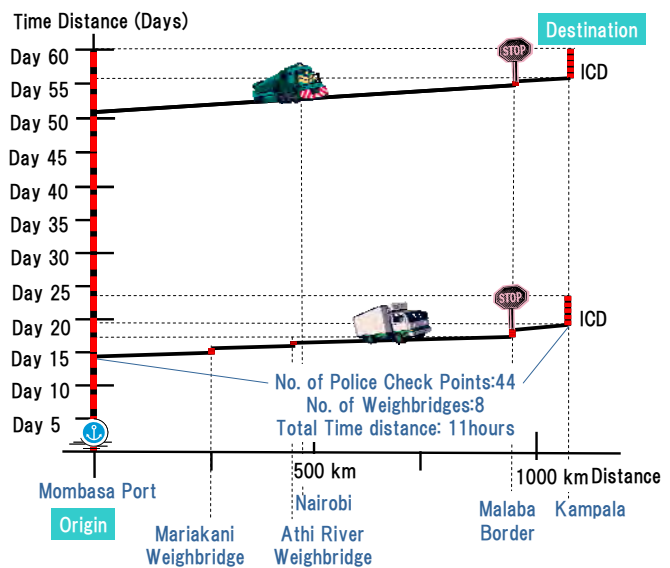
Figure 3.9 Breakdown of Time and Distance between Mombasa-Kampala (road)

Weighbridges, police checks, and police escorts:

There are many weighbridges and police checkpoints to control illegal loading/unloading and overloading in transit countries. If necessary, police escorts are also provided. Although weighbridges normally require three minutes for transit, some weighbridges may require five hours due to congestion caused by the lack of proper equipment and design problems. Also, unofficial payments have been reported, imposing a significant psychological burden on companies.

Slow travel speed: The travel speed of trucks is fast due to good pavement conditions, but normally trucks do not run at night because of security concerns. Trains cannot operate fast due to poor track maintenance; their average speed is about only 10 km per hour.

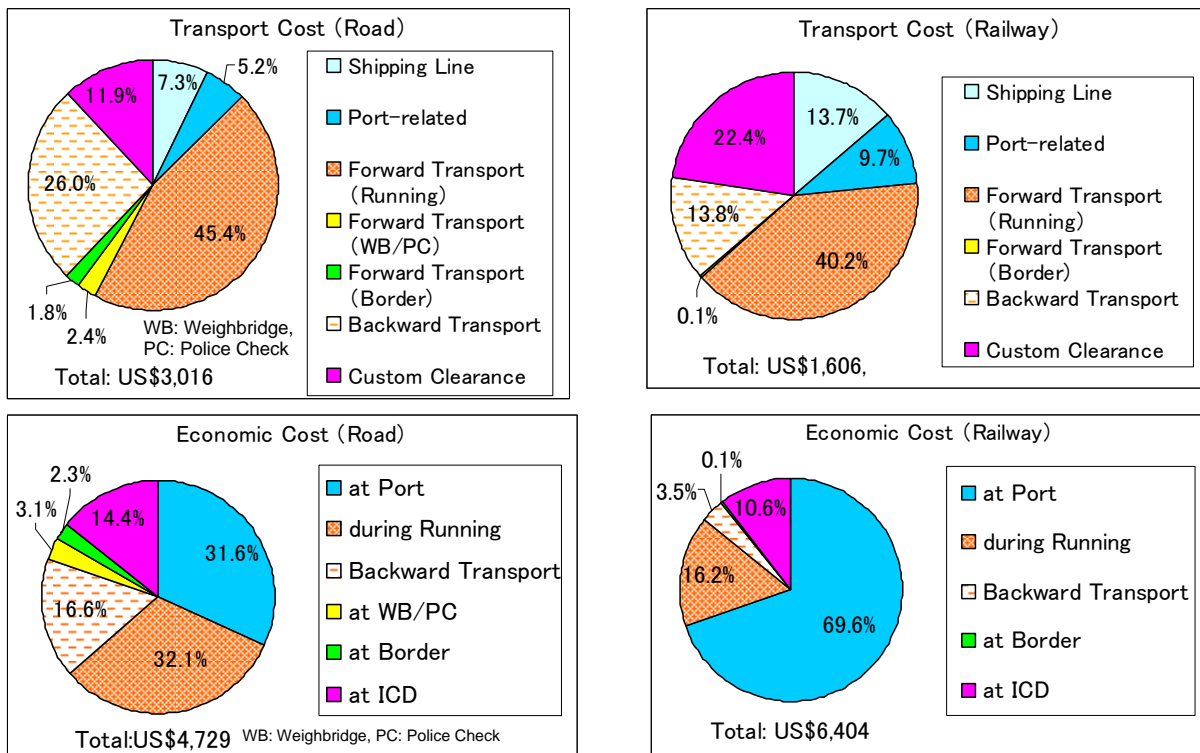
Required cost: Required costs consist of transport fees and procedural charges at ports and ICDs. A key factor is the additional costs associated with the return run. Since the cargo volume of the homeward trip (from inland to port) is overwhelmingly small compared with that of the outward trip (from port to inland), loads are typically carried one way only, and consequently the cost of the homeward trip is included in the cargo transport fee of the outward trip. Also, there is a large difference between the financial cost and the transport price (fees that are actually paid to the distributor); one of the reasons for this is said to a protective policy for distributors. On the other hand, the rates charged by trains are lower than those of trucks (Figure 3.10–3.11).



Source: Study Team

Figure 3.10 Cost Analysis between Mombasa-Kampala for Transit of 40-foot Containers

Economic cost: Economic cost is defined as the required cost plus the value of time of the cargo. Economic cost significantly affects business activities. Long port waiting time results in a significant percentage of port-related economic cost, especially with respect to railway transport. It is clear that ports are a major bottleneck in the distribution system (Figure 3.11).



Source: Study Team

Figure 3.11 Breakdown of Required and Economic Cost between Mombasa-Kampala for Transit of 40-foot Containers

4. Cross-Border Transport and Economic Development in East Africa

The linkage between industrial development and trade should be considered together with public-private initiatives and CBTA develop to strengthen industry and trade. Accordingly, in preparing a model program for CBTI development in East Africa, this study examined the economic development measures that should be implemented together with CBTI development.

CBTI Development and Industrial and Trade Promotion

To maintain sustainable economic growth in Sub-Saharan Africa, it is important to break the “negative spiral” resulting from a delay in transport infrastructure development, together with laggard regional and industrial development in this subregion (Figure 4.1). Transport demand for CBTI in Sub-Saharan Africa is certainly lower than that in the Greater Mekong Subregion (GMS) of Southeast Asia, the study area in the previous phase of this research series. Thus, implementation of strategies to stimulate traffic demand through industrial development in conjunction with CBTI development is very much needed in this subregion.

In this study, the following measures may be proposed as industrial development and trade promotion strategies in conjunction with CBTI strategies: (1) elimination of various barriers to promote market expansion within and outside the subregion, (2) development of the agro-processing industry and promotion of export of primary agricultural products, and (3) effective linkages with mineral resource development. The development of industrial human resource and employment creation should be implemented as a sub-strategy to complement these three strategies.

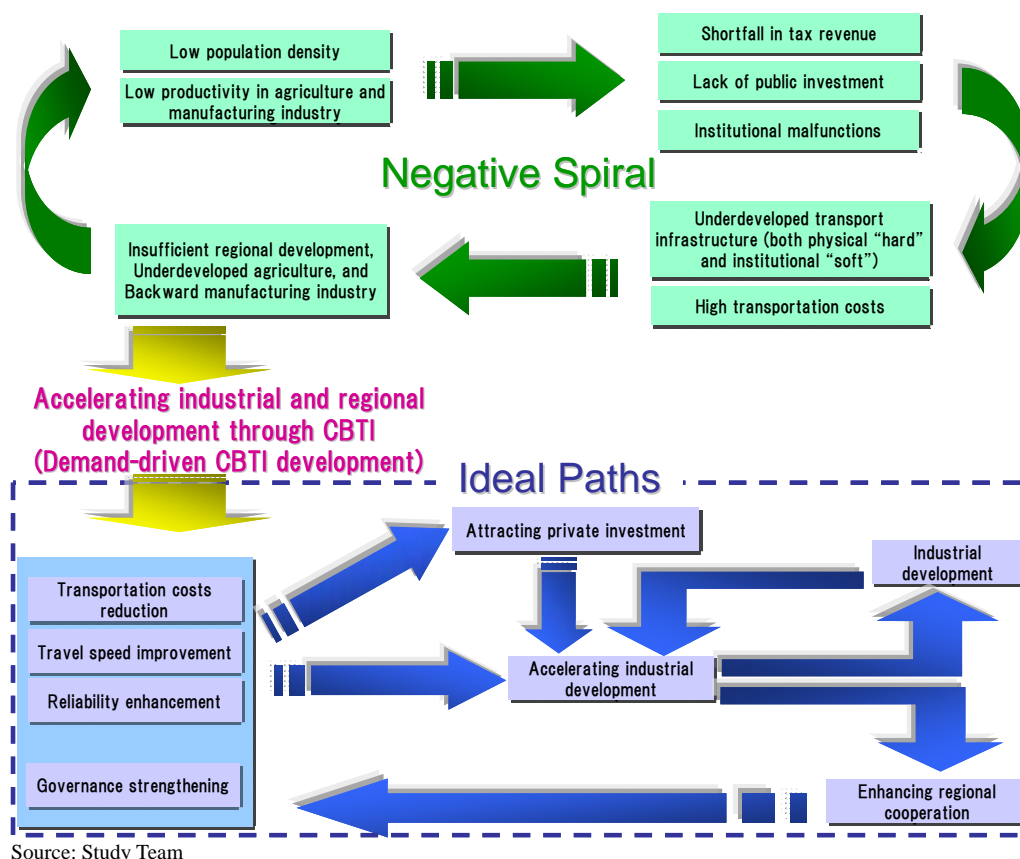


Figure 4.1 CBTI Development and Trade and Industry Promotion in Sub-Saharan Africa

Strategy 1: Reduction of physical and institutional barriers to contribute to the expansion of interregional and intraregional markets

Efforts should be made to increase the flexibility of freight rates by further promoting deregulation of the transport/distribution industry in the region and eliminating freight cartels, in order to maximize the effects of CBTI development for reducing transport costs. At the same time, it may be effective to indirectly support the ongoing market integration and currency unification in many RECs and to carry out measures to reduce trade barriers.

Strategy 2: Development of the agro-processing industry, promotion of the export of primary agricultural products, and demand stimulation

As a basic policy, it is recommended to provide comprehensive support with a view to the value chain from input, production to processing, distribution, and export, and to promote the export of strategic agricultural products through effective linkages with CBTI development (i.e., to provide support that will add value at each stage of the value chain):

1. Production phase: Provide support to enhance access to market information. In particular, develop mobile phone and information technology (IT) infrastructure (including wireless local area network or LAN facilities) in rural areas along corridors and secondary roads (taking public-private initiatives/cooperation into consideration.)
2. Processing phase: Provide support for agro-processing and packaging techniques. Enhanced processing techniques will help to keep products from deteriorating during transport and therefore resolve various problems related to quarantine issues.
3. Distribution phase: Improve distribution systems (the building of secondary roads feeding main corridors, developing a cold chain along a corridor, and fundamentally improving the distribution system by building Agro-Processing export processing zones (EPZs)/special economic zones (SEZs), taking public-private initiatives/cooperation into consideration).
4. Distribution/export phase: Support quality control/management and product tracking/traceability management.
5. Processing/distribution/export phase: Construct an EPZ/SEZ near a mode junction (port) or a border to draw agro-processing businesses, and develop it as a core of processing and distribution systems. In addition, stimulate the demand of businesses related to agriculture and service industries, with a view to including related service industries (e.g., microfinance and other finance businesses, logistics, retailing, taking public-private initiatives/cooperation into consideration).

Strategy 3: Linkage with mineral resources development

Considering the current status of mineral resources development in Sub-Saharan Africa, it is recommended to conduct the following actions to secure mineral resources in coordination with CBTI development:

1. To build access infrastructure in specific mine development projects (e.g., construction of roads to inland mines, upgrading of embarkation ports), based on cooperation with mining juniors/minors, especially in targeting rare and non-ferrous metals.
2. The targeted region is Southern Africa, which has large amounts of rare and non-ferrous metal deposits. (The region is more promising in terms of the type and scale of deposits than East Africa.)
3. Coordination of CBTI development with other commitments at the fourth Tokyo International Conference on African Development (TICAD-IV) (e.g., support for infrastructure development for electricity, water, and sewage services), for example combining the development of electric power resources with those of mines and related infrastructure.

Sub-strategy: Development and employment promotion of industrial human resources

This study proposed the development of industrial human resources and employment promotion as a complementary strategy. Targeting the logistics and transport industries addressed in Strategy 1 and the agro-processing and distribution industries addressed in Strategy 2, concrete actions are recommended as follows:

1. Development of industrial human resources for the logistics and transport industries: Support forwarders and logistic service providers in customs clearance, border crossing procedures, and the like.
2. Capacity building among customs officers: Strengthen the JICA Technical Cooperation Project (TCP) scheme.
3. Development of industrial human resources for the agro-processing and distribution industries: Transfer processing technologies, support business owners in business management techniques, and provide technical support related to distribution quality control and tracking/traceability management, among other measures.
4. Capacity building for quarantine officials: Conduct capacity building using the JICA Technical Cooperation Project (TCP) and other schemes (especially for the quarantine of agricultural products for strategic export).

Views on Public-Private Initiatives for Cross-Border Transport Development

Table 4.1 shows the directions of public-private initiatives/cooperation for CBTI development combined with industrial development and trade promotion measures. For the implementation of these measures, Other Official Flows (OOF) as well as Official Development Assistance (ODA) will be considered and incorporated.

Table 4.1 Directions of Public Private Initiatives/Cooperation for CBTI Development

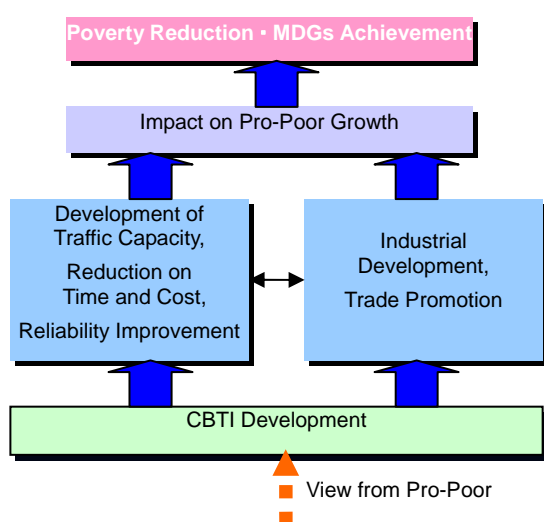
Type	Directions of Public-Private Initiatives/Cooperation for CBTI Development
Supporting Infrastructure Development	<ul style="list-style-type: none"> ✓ Develop supporting infrastructure (e.g., electricity, water, sewerage, ports, access roads and railways) for EPZ/SEZ construction at transportation nodes and national borders ✓ Develop cross-border access roads and railways for mine development ✓ Develop physical distribution infrastructure (e.g., cold chain)
Public-Private Partnerships (PPPs)	<ul style="list-style-type: none"> ✓ Apply for port operation under PPP (for Mombasa and Dar es Salaam Ports) ✓ Apply to a construction project for a cross-border bridge ✓ Apply to operation and maintenance, and service delivery of infrastructure projects ✓ Capacity building for government officials in charge of PPP projects
Policy Making and Institutional Development	<ul style="list-style-type: none"> ✓ Assist RECs in establishing customs unions, free trade zones, and monetary union. ✓ Collaborate among industry, government, and academia to implementing the above ✓ Improve food safety standard and quarantine system (responding to EUREP-GAP an internationally recognized set of standards) ✓ Assist deregulation of transport/distribution industry
Corporate Social Responsibility (CSR) and Bottom of Pyramid (BOP)	<ul style="list-style-type: none"> ✓ Support CSR activities of private companies located in EPZs/SEZs ✓ Provide projects linking One-Stop Border Post (OSBP) development and HIV prevention ✓ Assist small and medium enterprises (SME)/non-profit organization (NPO) activities for fair trade of primary agricultural products (especially of the main export products of each country) ✓ Provide market information on agriculture products (e.g., through the development of mobile phone network and wireless LAN systems.)
Public Financing	<ul style="list-style-type: none"> ✓ Risk sharing between public and private sectors in high risk projects such as mine development
Others	<ul style="list-style-type: none"> ✓ Through public-private cooperation, develop human resources in the distribution industry and assist business management of domestic distribution companies ✓ Assist private companies located in EPZ/SEZ in securing human resources (e.g., through the provision of short-term vocational training) ✓ Support NPOs/nongovernmental organizations (NGOs) involved in agriculture development / trade promotion projects

Source: Study Team (prepared from reports and papers by the Ministry of Foreign Affairs, Japan, and Keidanren, Japan Federation of Economic Organizations)

5. Strategic Directions for CBTI Development in Sub-Saharan Africa

CBTI development is essential for facilitating industrial development, trade, economic revitalization, and poverty reduction in Sub-Saharan Africa. However, complex factors are inhibiting the facilitation of cross-border transport, and it is impossible to fully improve the entire cross-border transport system by implementing individual projects. Therefore, when forming and implementing CBTI projects, it is necessary to adopt a program approach, seeking more effective measures by keeping the entire vision and strategy of CBTI development in mind, and considering the synergy with related projects currently implemented by various development partners. Thus, the Study Team proposed the following future directions of CBTI development support in Sub-Saharan Africa and a model program of CBTI development in East Africa.

Poverty Reduction and MDGs Achievement through CBTI Development



Source: Study Team

Figure 5.1 Future Goal of CBTI Development

In Sub-Saharan Africa, poverty reduction is the most important development goal. CBTI development will contribute to achievement of the Millennium Development Goals (MDGs), which is an international commitment concerning poverty reduction.

CBTI development will reinforce physical infrastructure, reduce transportation costs, and improve transport system reliability to help increase the required traffic capacity. This is expected to facilitate industrial development, trade, and economic growth contributing to poverty reduction, i.e., pro-poor growth (Figure 5.1).

In order to achieve the MDGs, it is estimated that by 2015 an annual economic growth rate of 7%² and an annual trade volume growth of 12% will be required. To provide this increase in trade volume, a 2.4-fold increase in traffic volumes is required by 2015.³ Therefore, this expansion of traffic capacity was set as the CBTI development goal by 2015.

2. African Development Indicator 2007

3. Based on a regression analysis of trade growth rate and GDP growth rate in Sub-Saharan African countries over the past five years, this is the estimated trade growth rate required for 7% GDP growth.

Comprehensive Themes and Strategic Direction for CBTI Development

The comprehensive themes that show the future direction of CBTI development in Sub-Saharan African consist of two pillars: (1) Integration of Sub-Saharan Africa and (2) Linkage between Sub-Saharan Africa and the Rest of the World. In addition, the Study Team recommended the following four items as strategic directions for implementing CBTI development in order to achieve the comprehensive themes (Figure 5.2):

Comprehensive Themes

Integration of Sub-Saharan Africa:

By providing seamless and efficient transportation services on an integrated transportation network, promote economic and social integration between and among countries in Sub-Saharan Africa.

Linkage between Sub-Saharan Africa and the rest of the world:

By providing seamless and efficient transportation services with the rest of the world, promote economic and social linkage between Sub-Saharan Africa and the global economy.

Strategic Directions

Perspective as a system: Consider all CBTI:

elements as a system, and carry out improvement after understanding mutual relations and the significance of each element.

Coordination with Regional Economic Communities (RECs):

Carry out CBTI development in coordination with “soft” infrastructure improvement activities implemented by RECs.

Effective linkage with trade and industrial development:

Carry out CBTI development linking with trade promotion and industrial development policies.

Introduction of public private initiatives/cooperation:

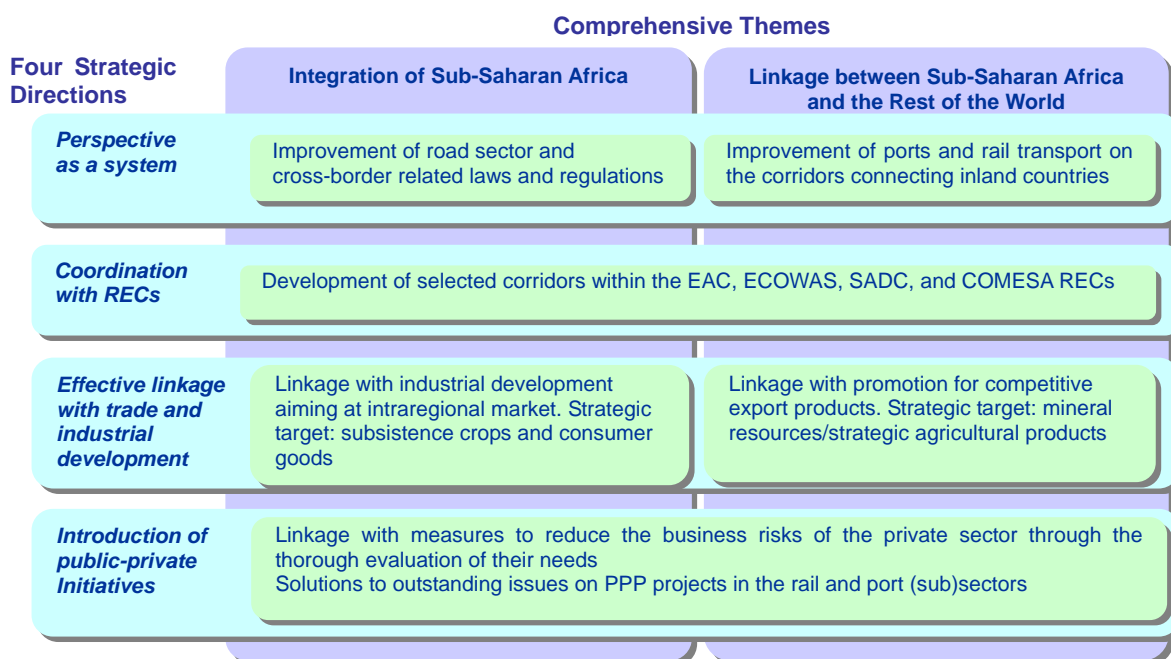
By understanding the needs of the private sector, carry out CBTI development that can reduce the business risks of the private sector.

Source: Study Team

Figure 5.2 Comprehensive Themes and Strategic Direction for CBTI Development in Sub-Saharan Africa

Priority CBTI Subsectors

Based on a program approach, the Study Team examined priority subsectors in CBTI development. Figure 5.3 summarizes the six strategies on subsectors incorporating the two comprehensive themes and four strategic directions as discussed in the previous section.



Source: Study Team

Figure 5.3 Priority Subsector in CBTI Development

Detailed Strategies by Subsectors

Based on the above matrix, the Study Team recommends the following detailed strategies by subsector:

Port Subsector: This is the highest-priority subsector. It is essential to improve cargo handling volumes at existing ports in the short term to address the shortage in the number of ports and their capacity. Both “hard” infrastructure development and “soft” infrastructure improvement will be crucial for this subsector, especially regarding specific measures for container terminal improvement.

Railway Subsector: Railways should be a focus for improving long-distance transport between ports and inland countries as well as providing access to mine resources. To address the aging infrastructure, efficient implementation of the operation system/framework (including privatization) is urgently required.

Road Subsector: Construction of missing links and development of rural roads is important from a pro-poor perspective. Also, strengthening of the operation and maintenance capacity is still needed. Cross-border transport laws/regulations are recognized as one of the bottleneck areas to be addressed through coordination by the RECs.

Civil Aviation Subsector: It is recommended to improve the air transport sector concurrently with the development of industrial products suited for air transport such as light and high-value goods.

Soft Infrastructure: This issue is important because of its critical impact on cross-border movement. RECs must implement strategic measures addressing these issues in coordination with measures to improve hard infrastructure.

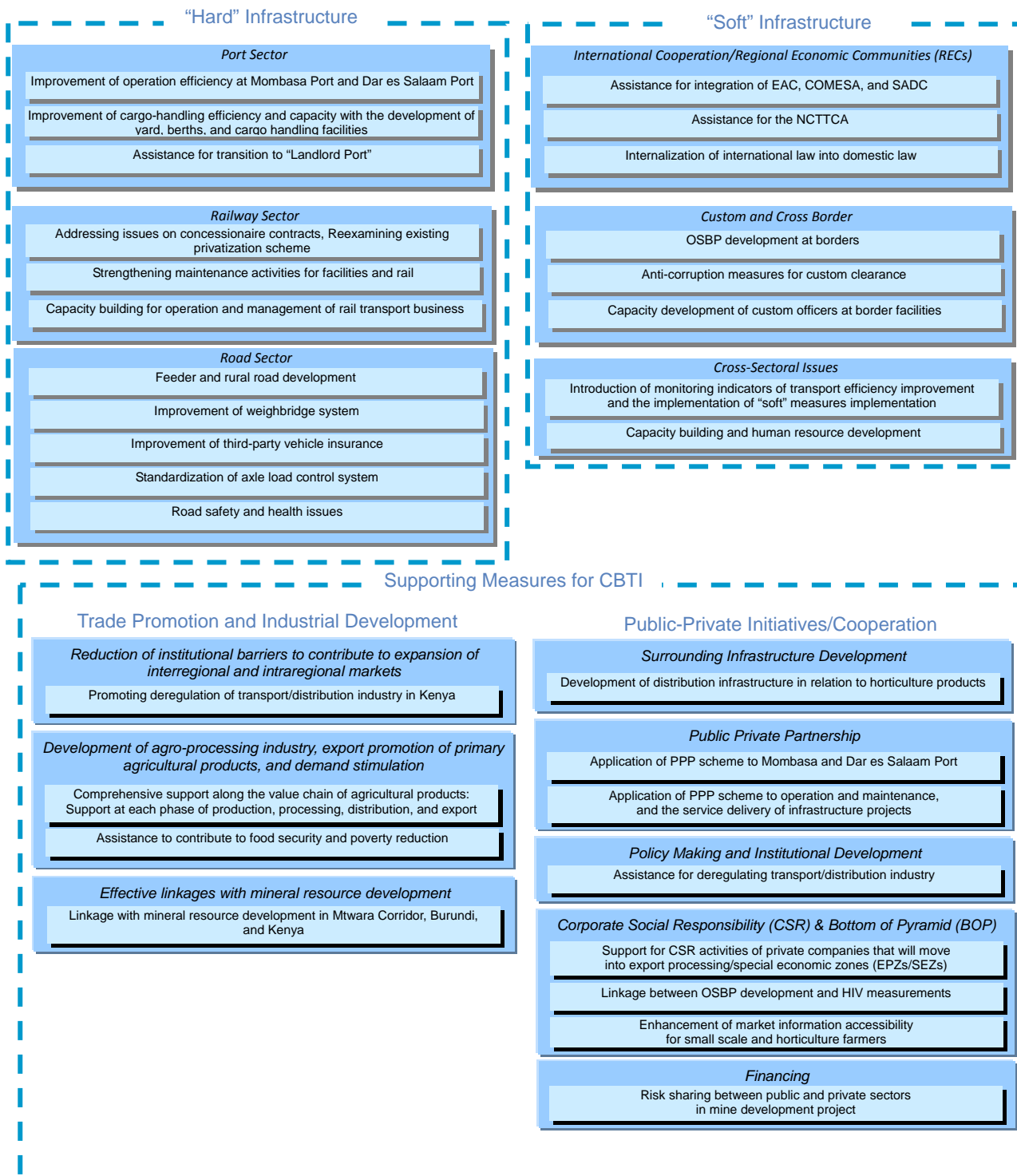
The following are supporting measures for CBTI that should be implemented in collaboration with CBTI development.

Supporting Measures for CBTI 1: Trade Promotion and Industrial Development: The agro-processing industry, which contributes to export promotion, is highlighted in the strategies of this sector. Regarding the effective linkage with mineral resources development, Southern Africa with its abundant deposits of rare and non-ferrous metals, should receive emphasis. In addition, mining development in East Africa can also be considered.

Supporting Measures for CBTI 2: Public-Private Initiatives/Cooperation: A new approach considering “to what extent the public sector can support the wide range of activities by the private sector” and “how to pull and promote private investments” is required on the public sector side. It is necessary to introduce a mechanism to substantially hedge the mining risks of the private sector.

Model CBTI Development Program in East Africa

Based on the subsector strategies mentioned above, the Study Team listed required measures and prepared the model program, classifying these measures into short-term measures that should be implemented within a few years and medium- and long-term measures. The short-term measures that should be implemented with high priority for CBTI development in East Africa are summarized in Figure 5.4.



Source: Study Team

Figure 5.4 Short-Term CBTI Measures in East Africa

Directions of Japanese Official Development Assistance (ODA) in East Africa

For the future directions of Japan's assistance to East Africa with regard to CBTI development, it is needed to consider assistance programs that focus on the comparative strengths of Japan, together with coordination with other development partners. Also, strategic views from both "hard" and "soft" infrastructure aspects are indispensable for effective aid delivery, because institutional and organizational malfunctions still remain. Among the above long list of priorities for CBTI development in East Africa, the right column shows selected areas that can fully utilize the past experience and know-how of Japan's foreign assistance.

Port Development: Along with the ongoing yen loan project for Mombasa Port development, simplification of port procedures and improvement of access to arterial roads and railways are recommended. In the case of Dar es Salaam Port, which is more congested than Mombasa Port, simplification of port procedures are also required, as well as yard expansion.

Rail Transport Improvement: Streamlining operation and management of business administration, increase in rolling stock, rail track rehabilitation.

Cross-Border System Improvement: Introduction of information technology in customs clearance procedures in coordination with OSBP development, improvement of weighbridges and police checks with utilization of a global positioning system (GPS) vehicle tracking system.

Industrial Development Support: Agro-processing industry development, mineral resource development, human resource development, construction of EPZ/SEZs at ports and at nodes of regional corridors (in coordination with CBTI development).

Issues for Future JICA Assistance

The results of this study suggest the following issues that JICA should assist for the development of CBTI in Sub-Saharan Africa in the future.

Project Formulation in East Africa: Further research is necessary to formulate concrete projects in East Africa. The Study Team recommended detailed strategies in the following subsectors: ports, railways, cross-border facilities, and industrial development, to be assisted by Japanese ODA. It is necessary to conduct research to identify project scope to facilitate the immediate implementation.

Study of Private Needs and Public-Private Risk Sharing: Trade promotion/industrial development and public-private cooperation are essential for the development of CBTI. A study of schemes and application methods for public-private risk sharing based on recognition of private needs is important. In particular, it is also essential to build a framework for decision making to adopt private demands quickly.

Response to Operational and Management Problems of Ports and Railways: It is essential to formulate a framework that can accumulate knowledge and propose measures for the operation and management problems in the port and railway subsectors, currently the most important transport subsectors. In particular, it is necessary to accumulate the knowledge for the solutions of various problems in privatization.

Study of Subsector Issues: Analysis of issues in each subsector for the implementation of CBTI and complementary policies should proceed with the research results to be fed back into the CBTI program. Related subsector studies should actively involve analyses of roles of CBTI.

Evaluation of Regional Impacts of CBTI Development: It is necessary to evaluate how much CBTI development helps reduce poverty, develop industry, and promote trade.

The Research on the Cross-Border Transport Infrastructure: Phase 3

Final Report

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