
Appendix 4 Issues and the Current State of Transportation Sector in Developing Countries (according to income level and region)

Appendix 4 provides a description of priority issues and the current state of the transportation sector on a region-by-region basis. The particular needs in this area are outlined according to income group and region.

Although there is a need for analysis of detailed transportation infrastructure data on a country-by-country basis, due to time restrictions, the data currently available is limited and sufficient analysis has not yet been conducted. JICA therefore intends to continue collecting data, and to perform further analyses and studies.

4-1 Infrastructure Needs by Stage of Economic Development

Although the need for infrastructure by a developing country naturally varies according to its particular conditions, industrial structure, conditions of urbanization, and historical background, from the macro viewpoint, it could be seen that the need has a high correlation to the economic level. Infrastructure needs should thus be organized according to economic level. Figures in square brackets [\$] represent Gross National Income (GNI) per capita (US \$, 2001).

4-1-1 Low-Income Countries [\$745 or lower]¹

(1) Current Status

Infrastructure development in low-income countries mainly includes roads, bridges (particularly through grant aid) and the like.

(2) Infrastructure Needs

- a. Roads: The level of road maintenance and amount of investment in low-income countries are almost the same as that in middle-income countries. Roads are also indispensable infrastructures for convenient living and industrial activities such as transportation of farm commodities. Since car usage is relatively low compared with that in middle-income countries, it is believed that the economic spin-offs of road development are more restricted. Therefore, it is deemed important to invest in maintenance and in the development of small but quality roads in farm villages and similar areas as well as national trunk lines to enhance national connectivity. The high share of bridge projects in grant aid is considered reflective of these needs.
- b. Transportation: Among development study items, airports, as well as ports

¹ Classifications are according to the economic development levels defined by the World Bank (2003b). The World Bank provides four classifications according to economic level (Gross National Income (GNI) per capita): high-income countries, higher-middle-income countries, lower-middle-income countries, and low-income countries.

and harbors, occupy a comparably high proportion. This is probably due to the fact that international or extensive flows of people and products start to increase in tandem with economic development. Probably, this also serves as a stepping stone in achieving the next economic development stage. On the other hand, there is airport development aimed at tourism promotion. This is necessary to make prospective policies and master plans for urban traffic because urbanization and motorization are also advancing rapidly in low-income countries. There is, however, a possibility that actual development needs will remain restricted.

4-1-2 Lower-Middle-Income Countries [\$746-\$2,975]

(1) Current Status

Infrastructure stocks are twice those in low-income countries and basic infrastructures have been improved to some degree. Investments in roads are, however, low. In Central and South America, infrastructures have been considerably improved. In some countries, important issues are in terms of not only new investments but restoration and repairs, as well.

(2) Infrastructure Needs

- a. Urban development: Along with issues of urbanization and rapid increase in population in the capital, large cities also get to account for high proportions of productive or economic activities. The trend is that urban problems, such as increases in the urban poor, traffic congestion, power shortages, deterioration of water, and air pollution, are becoming severe. Congruently, it is also necessary to prepare for natural disasters like the flooding from rivers. It is assumed that there will be more need for infrastructure development that supports urban populations and functions including roads, water supply and sewage systems, electricity and communication facilities, and river improvements. Furthermore, development studies have a tendency to increase city and road plans.
- b. Roads: Although a definitive cause has not been pinpointed, a possible reason why relatively less road maintenance and development occurs in middle-income countries is because of constraints due to the increases in investments in electric power and other components. The supposition is that the need for road maintenance and development becomes higher than under normal conditions as the widespread use of cars increases and economic activities grow. Particularly, needs will increase in metropolitan areas where automobiles are heavily concentrated.
- c. Transportation: Because the advance of industrialization increases international exchanges, the need for ports, harbors and airports of larger sizes will also grow.

4-1-3 Higher-Middle-Income Countries [\$2,976-\$9,205]

(1) Current Status

Countries of this group have a GNI per person of \$2,976 or more. Advanced countries are included in this category. Other than the advanced countries, other countries, such as Malaysia in Asia and those in Europe, the Middle East, and Central and South America, belong to this group. These countries already have considerable significant infrastructure stocks, and self-development is substantially possible. Maintenance of infrastructure is, however, insufficient in Europe, and in Central and South America, and investments on this are necessary in some cases. It is a typical characteristic that investments in roads occupy a large part of overall investments.

(2) Infrastructure Needs

- a. Correction of regional disparities: In case of economic growth, there may be problems such as differences between the rural areas and large cities as well as urban concentration. If so, the development of regional cities is important. For this purpose, it is necessary to raise the level of the whole infrastructure in regional cities and improve high-speed transportation networks that connect regions.
- b. Disaster prevention: Needs for forest and river conservation, flood control and urban disaster prevention should be assumed because damage from natural disasters, such as earthquakes, floods, and landslides, can expand widely due to urban concentration. It is the higher-middle-income countries that have given much weight to river and sand control in the development studies.
- c. Roads: Investments in roads in higher-middle-income countries are increasing, contrary to the tendency in the lower-middle-income countries. It is supposed that investments in construction of full-fledged road networks are being made due to progressive car use. It also seems that roads of higher categories, such as expressways, are required.
- d. Transportation: What should be assumed are needs for transportation infrastructure including the upgrading of airports, ports and harbors, as well as operational and administrative techniques.

4-2 Infrastructure Needs by Region

The previous subsection clarified the needs for infrastructure. This necessitates the organization, by region and country, of the fields where future demand is assumed. In Japan, key regions are selected in a broad ODA outline, formulating what assistance per region should be and what assistance plans per country are moving forward. In this subsection, the socioeconomic circumstances in each region and the present levels of infrastructure development are summarized. The needs for infrastructure by region are also surveyed.

4-2-1 East Asia Region

(1) Current Status

In East Asia, while some countries like Korea and Singapore have experienced high economic growth and already transitioned themselves from beneficiary countries to donor countries, Least Developed Countries (LDCs) such as Cambodia and Laos still remain. As the number of ASEAN member countries increases, disparities within the ASEAN region are revealing. Along with cross-border transportation infrastructure development, such as for roads and bridges, cooperation such as ports and airports development to facilitate private sector trade and investment, and facilities upgrades to improve the safety and security of ports and airports in response to terrorism and safety concerns are all also being undertaken.

(2) Issues

In East Asia and Pacific countries, although infrastructure stocks in monetary value have steadily increased, the level of infrastructure stocks is still low. As the level of urbanization is comparatively low in both low- and middle-income countries, it is supposed that demand for transportation infrastructure such as urban road networks and public transportation systems will increase along with the expected development of urbanization in the future. In low-income countries, investments in basic social infrastructure will continue to be required in order to reduce poverty. It will also be necessary to make investments in the shift to market economies for sustainable development. In East Asia, the importance of cross-border infrastructure as a means of broad-based development and regional development (development of ASEAN, APEC, and the basin of the Mekong River) is rising.

4-2-2 Oceania Region

(1) Current Status

There are many relatively young countries in the Oceania region, and socially and economically independent nation building is a matter of urgency. In addition, this region faces problems that are relatively unique to island countries, such as small-scale economies, economies relying on primary industries, geographic dispersion of countries, and limited access to international markets. Transportation infrastructure developments thus far have concentrated on ports and airports, which, for island countries, are fundamental elements.

(2) Issues

For the Pacific, infrastructure development that is peculiar to island countries is required. These countries are commonly small in size, depend on primary industry heavily, and are vulnerable to external factors such as natural disasters and movements in the international market. They have development difficulties including their small domestic markets and great geographic distance from international markets. There are large needs for economic and social

infrastructures to overcome remoteness and geographical isolation such as provision of appropriate health-care services to residents and environmental preservation to reduce the impacts of natural disasters.

4-2-3 Europe and Central Asia

(1) Current Status

Transportation infrastructure such as roads and railways has developed to a fairly high standard in middle-income European countries such as Poland and Hungary. In contrast, since countries in Central Asia and the Caucasus are in a stage of transition from planned economies to market economies, it is important that cooperation should consider soft measures such as capacity development and institution building.

(2) Issues

In Europe and Central Asia, the level of infrastructure development is high, partly because of their historical and cultural background, and because their transportation infrastructure, such as roads and railway, have attained a level almost equal to that in high-income countries. These countries are still in a transition phase either to democratization or market economies. They require the development of transportation infrastructures, which are the foundations of independent economic development. What is required in regions that are in the period of post-conflict recovery and reconstruction is restoration and development of transportation infrastructure.

4-2-4 Central and South America

(1) Current Status

Some countries in Central and South America have not yet fully recovered from the effects of economic disaster in Argentina of December 2001. The level of social infrastructure in middle-income countries is fairly high. And the level of economic infrastructure is also relatively high when compared with other regions. However, infrastructure stock of roads and railways in low-income countries is still low, and disparities within the region are apparent.

(2) Issues

In middle-income countries in Central and South America, road infrastructures have been improved to high levels, and transportation infrastructure is at a relatively high level compared with that of middle-income countries in other regions. Also, infrastructure development through private investment is active. Although urbanization is already high in these countries, there is still a large need for transportation infrastructure to narrow income gaps and regional disparities. This is because there still exist regions that lag behind in the development of economic and social infrastructures and because the gap between the rich and the poor is still wide. An examination of the low-income countries in this region revealed that the level of both social and economic infrastructure is low and that it is required to improve economic and social

infrastructures for environmental improvement, which contributes to the active private participation and the promotion of investments from foreign countries.

4-2-5 Middle East and North Africa

(1) Current Status

While urban population rates in low-income countries in the Middle East and North Africa are low at 20%, the same figure is fairly high for middle-income countries at 60%. Economic infrastructure development has fallen behind in both low-income and middle-income countries.

(2) Issues

Countries in the Middle East and North Africa range from the oil producers to the least developed countries (LDCs). The conditions of each group also vary. The development of social infrastructure is comparatively advancing. Particularly, middle-income countries are on the same level as in the middle-income countries in Europe, Central Asia, and Central and South America. Economic infrastructure is, however, at a low level. In low-income countries, while the level of social infrastructure stocks is advancing in comparison with other regions, that of economic infrastructure stocks is still low and the need for them is still considered to be large.

These countries are principally crude-oil-producing countries and can exercise some form of influence on peace and stability in areas of the world such as in the Middle East and Iraq. It is supposed that high-income countries will require infrastructure development to promote investments from foreign countries for economic diversification (i.e. to grow out of their dependence on oil), as well as measures for environmental preservation. What is necessary in low-income countries is the development of basic economic and social infrastructures such as the development of agriculture and water resources.

4-2-6 South Asia

(1) Current Status

Urban population rates in both low-income and middle-income countries in South Asia are low, at around 30%. This is attributable to the significant role played by agriculture. While roads are relatively advanced in middle-income countries, railway development has fallen behind. In low-income countries, development of both roads and railways has fallen behind. Future demand for roads and railways development can be expected to increase.

(2) Issues

In South Asia, transportation infrastructure stocks in monetary value are steadily increasing, which is similar to East Asia. However, the level of infrastructure development is still low. The level of urbanization is low in both middle- and low-income countries and it is supposed that the need for infrastructure development along with urbanization will increase in the future. Since poverty groups are still substantially great in this region, requirements

include development of basic infrastructure as measures against poverty, development of economic and social infrastructures, environmental development for intraregional economic deregulation and regional cooperation, as well as measures for environmental preservation suitable for environmental overloads accompanying increases in population.

4-2-7 Sub-Saharan Africa

(1) Current Status

While urban population rates in low-income countries in Sub-Saharan Africa are around 50%, this is around 30% in middle-income countries. While roads and railways are relatively well developed in middle-income countries, infrastructure development has fallen behind in low-income countries, resulting in large disparities within the region.

(2) Issues

Sub-Saharan Africa has many problems that block development. These include concerns of being left in the heap of economic globalization, military conflicts, and the growing problem of AIDS. In addition, road and railway stocks are decreasing due to insufficient maintenance and management work. In middle-income countries, as transportation infrastructures show relatively high levels, it is supposed that operation and maintenance will be important in the future in addition to new investments. However, over half of the countries in Africa are considered least developed countries (LDCs) and/or heavily indebted poor countries (HIPC). Therefore they require the development of basic infrastructures such as measures against poverty and social development. Also supposed are the increase of needs for development such as that of the private sector, industries and agriculture, and for infrastructure development to promote intraregional cooperation, which will bring about economic independence and political stability in Africa.