

Urban and Regional Development / Transportation / Information and Communication Technology (ICT)

Infrastructure That Fulfills People's Hopes



Of the eight Millennium Development Goals (MDGs), relevant goals are shown in color.

Infrastructure contributes to the sustained improvement in quality of life by supporting the economic growth of a country or region and redistributing wealth. In today's era of globalization, developing countries must also become part of the global infrastructure network through measures like building more highways, ports, and airports and developing information and communication networks. They need to build even more expansive infrastructure due to urbanization, modernization, industrialization, and other forms of progress. The result is massive demand for infrastructure projects.

JICA provides assistance for infrastructure needs that differ for each stage of economic growth. One way is by preparing urban and regional development plans that include studies to determine the most suitable social systems and institutional frameworks. Transportation infrastructure, information and communication networks, and other projects are then implemented based on those plans. JICA also extends cooperation for strengthening organizations and training people needed for the maintenance and operation of these infrastructure systems.

Urban and Regional Development

● Overview of the Issue

The world's population is currently estimated to be 7 billion. In developing countries, the urban population has grown from 680 million in 1970 to 2.9 billion in 2014. By 2030, about 80% of the world's urban population is expected to be concentrated in developing countries.

Growth of urban areas is indispensable to a country's economic development. However, large number of cities in developing countries are facing difficulties in providing enough

housing, infrastructure, and employment to accommodate the surge of people seeking jobs. As a result, many people are forced to live on unstable incomes in poor living environments. Furthermore, growth of urban populations causes pollution due to traffic congestion and large volume of garbage, a decline in public security, and many other urban problems that are becoming more complex and serious year by year.

● JICA Activities

After World War II, Japan experienced urbanization at an unprecedented pace and faced a variety of urban problems. To



JICA is providing support that includes formulating redevelopment legislation to facilitating various measures to improve the Ger area, which has harsh living conditions, in Ulaanbaatar, the capital of Mongolia.

solve these problems, Japan devoted a lot of effort to constructing infrastructure and developing housing while establishing the standards required for urban development. Japan also focused on the development of new technologies in order to reduce pollution and boost productivity.

In addition, Japan quickly began taking action for disaster management and recovery in order to reduce risks associated with earthquakes, typhoons and other natural disasters.

JICA utilizes these experience and technologies to support urban and regional development in developing countries with a focus on the following six aspects.

1. Establishing basic infrastructure contributing to economic activities
2. Establishing good-quality living space
3. Establishing low-carbon cities
4. Establishing disaster-resilient cities
5. Establishing sound city management systems
6. Achieving revitalization of cities

Inclusive and Dynamic Urban Development

JICA provides support for creating sustainable cities that can generate a positive cycle of economic growth and poverty reduction and also respond to global-scale issues such as global warming. With the vision of “Inclusive and Dynamic

Urban Development,” JICA provides support with participation from all types of stakeholders. JICA is dedicated to meeting the diverse needs associated with urban and regional development in developing countries. Meeting these needs requires assistance at different stages such as the preparation of development plans, implementation of development plans, and operation and maintenance of the completed facilities. To execute these processes in a self-reliant manner, the capacities of organizations and people in charge of the implementation of urban and regional development plans must be enhanced, the necessary legal systems must be improved, and other measures must be taken.

“The Corridor Approach,” carried out as a method for regional development, is designed to promote regional economic development through consolidating a national axis that functions as a key to economic growth. With an aim to support broad-based project deployments focusing on strategic infrastructure development, industrial location, and efficient logistics, this method has been receiving attention as an unconventional and epoch-making effort for developing countries.

JICA approaches urban and regional development comprehensively through flexible combination of various types of assistance methods, such as Technical Cooperation, Grant Aid, and Loan Aid.

Case Study

Sri Lanka: Urban Transport System Development Project for Colombo Metropolitan Region and Suburbs

Supporting Development of Comprehensive Earth-Friendly Urban Transportation Policies

JICA supported the development of comprehensive urban transportation policies that cover the Colombo metropolitan region in order to mitigate the traffic congestion that has recently worsened in Colombo, the main city of Sri Lanka.

Worsening Traffic Congestion

Sri Lanka, with a land area approximately 80% the size of Hokkaido, is an island nation in the Indian Ocean with a population of 20 million. While its formal capital city is Sri Jayewardenepura Kotte, in a suburb of Colombo, the city of Colombo plays the main role as the political and economic center.

Due to high dependence on the road system, the number of vehicle registrations doubled

from 2002 through 2010 in Western Province, where Colombo is located. The province has several traffic problems; for example, no efficient road systems have been developed due to the topographical constraint that the western side of the province faces the ocean, and the construction of ring roads connecting to roads radiated from the Port of Colombo has been delayed. These problems have caused heavy traffic congestion, especially during morning and evening commuting hours, resulting in a great economic loss.

Urban Transport System Friendly to People and the Environment

In this project, various types of traffic condition surveys were carried out to get an accurate understanding of the current conditions and to forecast the future traffic situation in the Colombo metropolitan region. These surveys

revealed that, if no effective measures were taken, the proportion of public transportation among all other means of transportation for intercity travel would decline to 41% in 2035, compared to 58% in 2013, due to increased use of private cars, etc.

Responding to these survey results, JICA suggested in this project that the Government of Sri Lanka construct minimal road systems while insisting on the necessity of further promotion of utilizing the public transportation system to address increased future demands. In this context, JICA also recommended taking measures to regulate automobile traffic and introduce new public transportation systems, including monorail lines and a bus rapid transit system (BRT).

If the plans proposed in this project are implemented, compared to the case of no effective measures taken, not only will carbon dioxide emissions be reduced by 10% or more by 2035, but also losses due to traffic accidents are expected to decline remarkably. With policy-making assistance from JICA, the Government of Sri Lanka successfully developed transportation policies and plans that are friendly to people and the environment.

As seen in this case, JICA is making efforts to deal with the problems of cities in the world with consideration for the global environment.



Traffic congestion in Colombo has worsened every year.

Transportation

● Overview of the Issue

In developing countries, the poor state of transportation infrastructure, including roads, railways, ports, and airports, has impeded attainment of both economic growth and poverty alleviation. Development of transportation infrastructure is indispensable to make economic growth sustainable, facilitating the efficient movement of people and goods.

The demand for transportation infrastructure is high worldwide. The need to maintain, repair, and upgrade aging structures is ever-growing. Securing funding is a big challenge for a government because infrastructure projects require significant amounts of financing. Public funds are limited and are far from sufficient to fulfill all infrastructure development needs. To fill the financing gap, other funding sources, including private capital, need to be tapped to ensure efficient and sustained transportation services.

Furthermore, it is also important to contribute to partner countries' efforts to address environmental challenges, like greenhouse gas emissions reduction and air quality improvement,



Egyptian engineers receiving guidance on bridge inspection methods (The Project for Improvement of the Bridges Management Capacity)

by reducing traffic congestion through introduction of public transportation and also by improving logistics through alternative transportation modes like railways.

● JICA Activities

The main aim of JICA's cooperation for the transportation

Case Study

India: Joint Feasibility Study for Mumbai-Ahmedabad High Speed Railway Corridor

Conducting Surveys for Commercialization of the First High Speed Railway System in India, Superpower in the 21st Century

Based on the Japan-India Joint Statement issued in May 2013, JICA and the Ministry of Railways of India carried out a joint feasibility study for the construction project of the 500km-long High Speed Railway (HSR) connecting Mumbai, India's largest city, and Ahmedabad, an industrial city in the western region.

Indirectly Supporting Japanese Companies in Exporting Infrastructure

With a steep increase in the traffic volume of people and goods due to recent rapid economic growth, it has become urgent for India to develop intercity transport systems. The Ministry of Railways of India (MOR) drew up the Indian Railways Vision 2020 in December 2009 and has sequentially started prefeasibility studies on seven potential HSR corridors. The section between Mumbai and Ahmedabad is identified as the first priority corridor.

In the joint study, the alignment plan of the first HSR in India has been developed by considering various factors, including environmental and social conditions as well as demand forecast. By conducting detailed comparison and examination of HSR systems throughout the world from the viewpoints of safety, reliability, rationality, meteorological conditions, cost for both construction and operation, and so on, the joint study finally proposed the most suitable HSR system for India by taking the above viewpoints and various conditions of India into consideration, including civil structure, rolling stock, signaling and telecommunication systems, and operation control systems. JICA also studied a wide range of matters, such as technical

specifications, construction plans, project/financial schemes, implementation structures, operation and maintenance plans, and human resources development plans. These issues have been concluded after a series of close mutual discussions and cooperation between JICA and MOR.

The final report of the joint study was submitted in July 2015, and the HSR implementation plan and specification proposed in the report are expected to be utilized for its realization. The Japanese government has shown interest in providing India with financial, technical, and operational support for the introduction of an HSR system by utilizing Japan's Shinkansen

system. After a mutual agreement between the Indian government and the Japanese government, JICA will also examine the possibility of providing ODA Loans and technical assistance, including human resources development, for project implementation.

Railways, including HSR and urban railways, have been receiving international attention as environmentally friendly modes of transportation. Various types of HSR systems have been under contemplation, especially in Asian countries with remarkable economic growth, specifically Thailand, Malaysia, Indonesia, and Viet Nam. While addressing the development needs of developing countries, JICA will continue providing support for overseas expansion of Japanese companies based on cooperative relationships with partner governments that Japan has cultivated over many years.



Image of India's High Speed Railway

sector is to contribute to improvement in the living environment and increase in incomes by vitalizing socioeconomic activities through attainment of swift, smooth, and safe transportation of people and goods.

For developing countries, building roads and bridges alone is not enough for transportation infrastructure development. A plan for a rational transportation system needs to be prepared, and human resources need to be developed and organizations strengthened for proper infrastructure planning and maintenance. Also, institutional arrangements should be made to enable transportation operators to sustainably manage their infrastructure assets. JICA focuses on developing and realizing universally designed infrastructure that are user-friendly also for women and children, people with disabilities, minority groups, and actively promotes community participation and collaboration with NGOs, giving serious consideration to “who will use it and for what purposes.”

As cooperation for the transportation sector, JICA plans to strengthen policy-making capability, human resources and organizational capacity, and infrastructure development for developing countries, with a focus on the “quality growth with inclusiveness, sustainability, and resilience,” as specified in the Development Cooperation Charter of February 2015. JICA is also engaged in the following development activities: “international transportation” that facilitates trade and the flow of people and strengthens regional economies beyond national borders, “national transportation” that ensures people’s fair access to transportation services and balanced development, “urban transportation” that supports sustainable urban development by improving urban mobility, “rural transportation” that improves living standards of rural areas, which tend to be left behind urban areas, and utilization and application of information and communication technology, including intelligent transportation systems (ITS) [→ see the Case Studies on pages 26, 37, and 42].

In order to make maximum use of Japan’s technologies and expertise, JICA will also work on enhancing cooperation among industry, academia, government, and people and civil society; achievement of operation and maintenance cycles in terms of proper asset management; and safety measures for construction phases.

As such, JICA pursues “inclusive and dynamic development” so that all people can share the benefits of development.

Introducing Advanced Technologies to Address Transportation Issues in Developing Countries

To respond to transportation challenges in partner countries, JICA has helped enhance knowledge on a range of technologies and build capacities to choose and adopt the best solutions that reflect local conditions and constraints. There are many cases where advanced technologies are applied to traffic problems in developing countries, particularly to those that use Information and Communication Technology (ICT). In this kind of field, combining a private firm’s expertise and academic knowledge is a key for successful intervention. JICA plays a coordinating role to help partner countries address transportation challenges, facilitating the participation of various sectors [→ see the Case Study on page 77].

Information and Communication Technology (ICT)

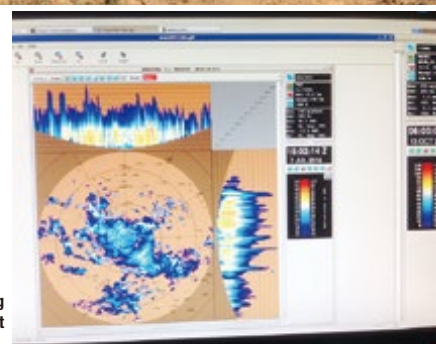
● Overview of the Issue

Information and communication technology (ICT) has been advancing rapidly throughout the world. ICT is a common infrastructure that spans social issues as well as an effective tool that can address not only industrial development and economic growth but also improvement of people’s living conditions and livelihoods. In this context, ICT has been used to computerize central government operations (e-governance), educate via the Internet (e-learning), and facilitate digital trade and commerce (e-commerce). ICT also has the potential to support a variety of improvements that can enhance quality of life, including increasing the efficiency of the economic and social systems of countries, raising productivity, and conserving energy. It is not an exaggeration to say that ICT has become vital to the functioning of modern-day society.

ICT is able to save time by introducing various technologies and streamlining processes, to achieve development regardless of distance through networking, and to create developing countries’ own distinctive services. Therefore, utilization and application of ICT for various social issues beyond the limitations of time and distance is expected to facilitate more efficient and effective project implementation.



An Automatic Weather Station (AWS) set up under the research project Information Network for Natural Disaster Mitigation and Recovery in India.



A monitor visualizing the information sent from AWS units.

In many developing countries, the rapid spread of mobile phones and Wi-Fi has been seen primarily in urban areas. However, when viewing such countries as a whole, the spread of ICT has been slow. This leads to a digital divide with developed countries and an ICT gap between urban and rural areas within countries, resulting in a structure of widening economic disparity.

● JICA Activities

Regarding ICT as a foundation and a driving force for economic growth, the Japanese government stipulated in the Development Cooperation Charter of February 2015 that Japan would provide necessary support for developing countries and also continue promoting improvement in the ICT policies, development of infrastructure, and assistance in human resources development as approaches to sustainable growth and poverty reduction specified in the New Medium-Term ODA Policy of February 2005. In the same manner, JICA also adopts four approaches in its thematic guidelines “ICT and Broadcasting”: improvement of policy-making capacity, development of human resources, development of infrastructure, and promotion of use and application. In consideration of the current ICT dissemination trend, JICA will focus on encouraging the use and application of ICT.

ICT Policies Linked to Social and Economic Development

To promote use and application of ICT in developing countries, JICA is currently considering industry-based solutions, business enabling solutions, and incubating solutions for challenging fields in developing countries in addition to conventional ICT infrastructure support projects.

- (1) Industry-based solutions: providing ICT service as a package to address problems in developing countries, utilizing ICT solutions used in Japan and other countries (i.e., a central bank core system, ITS, and harbor EDI¹)
- (2) Business enabling solutions: proposing utilization of ICT service as a tool to further improve the effectiveness of existing projects (i.e., an e-learning system, remote medical care, smart cities, and an agriculture market information distribution system)
- (3) Incubating solutions: utilizing ICT to support the setup of new projects, services, etc. in developing countries (i.e., an incubation center utilizing ICT, and a settlement service for developing countries)

1. EDI stands for Electronic Data Interchange, a system to electronically process applications at harbors.

Case Study Myanmar: The Project for Urgent Improvement of Communication Networks

Promptly Strengthening the Communication Environment to Address the Dramatic Increase in Communication Demand

Myanmar is currently facing rapid democratization and economic reforms. In response to a steep increase in communication needs, JICA provided prompt assistance for the country through Grant Aid to improve the communication environment in three major cities.

In the Context of Progress in Economic Reform

The penetration of fixed-line phones, mobile phones, and the Internet is significantly low in Myanmar; the penetration rate as of 2013 remains at 1.0%, 12.8%, and 1.2%, respectively. Because the conventional communication network was not always designed efficiently, there were significant problems in communication quality, such as comfort and accuracy in transmission quality, promptness in connection quality, and quality of communication stability.

On the other hand, communication demand is expected to grow dramatically along with progress in economic reform, and accordingly it is essential to improve the communication infrastructure. Since the shift to civilian rule in March 2011, political and economic reform has also affected the communication sector, which is now enjoying a rapid increase in subscribers after large discounts on communication fees. There has also been a gradual increase in the number of data communication users, and it is anticipated that the number of users will increase even more in the future.

In such a situation, for three major cities

with high social needs — Yangon, Mandalay, and Nay Pyi Taw — JICA strengthened the core communication network among the cities, enhanced the city communication network in the cities, developed broadband communication environments, and bolstered the functions of the International Gateway Exchange.

For Expansion of Communication Networks through ODA Loan

Prompt implementation of this project contributed to the Southeast Asian Games in December 2013 being hosted by Myanmar as well as realizing smooth information communication for Myanmar to chair ASEAN in 2014.

For further improvement of the Myanmar’s communication environment, JICA will carry out the Communication Network Improvement Project through ODA Loan to expand

the communication networks that were deployed in this project.

In the medium term, improvement of the communication infrastructure that is the basis of economic activities and people’s livelihoods is expected to revitalize economic activities, uplift people’s quality of life in the three cities, and streamline public administration. In addition to these developments in various fields, improvement of the investment environment will encourage investment activities by Japanese companies.



Communication equipment deployed in this project contributed to improving the communication environment in Myanmar.