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

Of the 17 Sustainable Development Goals (SDGs), strongly associated goals are shown in color.

Infrastructure supports people's lives and economic growth at the country or regional level. In rapidly growing developing countries, there is massive and diverse demand for infrastructure projects due to urbanization, modernization, industrialization, and other forms of progress.

JICA provides assistance for needs that differ for each stage of development, such as preparing urban and regional development plans that include studies designed to determine the most suitable social systems and institutional frameworks for partner countries and assists in spatial and infrastructure development based on those plans. JICA's wide-ranging scope of cooperation also includes strengthening organizations and training people needed for the maintenance and operation of these infrastructure systems, as well as utilizing and applying information and communication technology.

Urban and Regional Development

Overview of the Issue

The world's population, which stood at 3.69 billion in 1970, exceeded 7.3 billion by 2015. This increase was mainly due to population growth in developing countries, especially in urban areas. The total urban population in the developing world jumped fourfold from 0.68 billion in 1970 to 2.97 billion in 2015. By 2050, it is expected to reach 5.23 billion, more than half of the projected world population of 9.55 billion.

Although cities can be an engine for economic growth, those in the developing world increasingly fail to deliver what is expected of them. Unable to cope appropriately with rapid population growth, cities are facing such challenges as lack of urban infrastructure, a deteriorating living environment, growing vulnerability to natural disasters, and widening economic disparities.

More attention is needed for directions for the development of the entire region in question while taking into account the relationship between urban and rural areas in and around the region. Cities also serve as a hub for the country or region; the development of cities will have a positive impact that will help revitalize the whole region. Meanwhile, development tends to be slow in rural areas as well as inland regions that are not easily accessible. This is because key infrastructure such as logistics and power grids remains insufficient and their industrial potential is consequently untapped. Such disparities between urban and rural areas may accelerate the rural exodus to cities and lead to more regional disparities, creating a vicious circle. Thus, cities and their surrounding areas are closely related to each other. This highlights the need to get an overall picture of the country or region and address urban and regional problems which are interconnected.

In addition, it would not be possible to achieve the Sustainable Development Goals (SDGs) or solve the problem of global warming without the wholesome growth of cities, where much of the world's population is concentrated. There is a need to expedite the process of urban and regional development with a view to addressing the dual challenges of achieving socioeconomic development and conserving the global environment so that future generations will be able to live with peace of mind.

JICA Activities

JICA provides assistance that is fine-tuned to meet the needs of each city by capitalizing on Japan's experience in overcoming powerful natural disasters and rapid urbanization that have no parallel in the world, as well as in taking the integrated approach to building a low-carbon society and achieving socioeconomic revitalization at the same time. Also, "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.

To help developing countries to achieve sustainable urban and regional development, JICA focuses on the following aspects:

Urban Development

1. Well-planned urban development that contributes to economic activity
2. Establishing a good-quality living environment

JICA has formulated the Strategic Urban Development Plan of the Greater Yangon for sustainable development of the former capital of Myanmar and its vicinity.

3. Establishing low-carbon cities
4. Establishing disaster-resilient cities
5. Establishing sound city management systems
6. Achieving post-conflict revitalization of cities

Regional Development

1. Strengthening regional socioeconomic connectivity
2. Achieving balanced regional development
3. Securing efficiency in investment in regional infrastructure

Directions for Cooperation

To provide fundamental solutions to the problems cities and regions are facing in developing countries, JICA will analyze the actual situation and issues in the city/region in question and put forward strategies and approaches as a comprehensive program that suits that city/region. To this end, JICA will flexibly combine various available aid modalities, including Technical Cooperation, Grants, and Loan Aid.

It is important to meet different needs for urban and regional development in developing countries, ranging from the formulation of development plans to the operation and maintenance of urban facilities. The essential requirements to this end include legal system development as well as capacity development for the implementing agencies and their staff responsible for urban and regional development. Accordingly, JICA will address these aspects as well.

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

Case Study **Senegal: Project for Updating Dakar Urbanization Master Plan by the Horizon 2025**

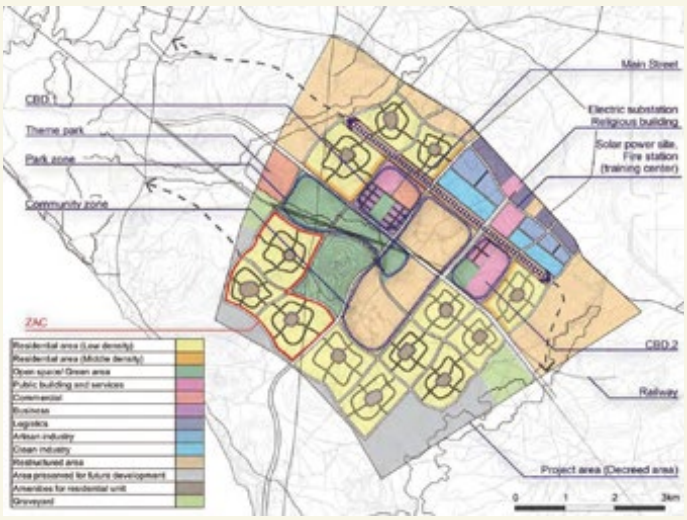
Toward Building a Sustainable City

JICA supported the formulation of a master plan for the development of a sustainable city for the Senegalese capital, Dakar.

Disorderly Urban Sprawl

Senegal is situated in the western part of Africa. The capital city, Dakar, has long served as a regional hub for politics, public administration, the economy, and international trade in West Africa. In recent years, Dakar has undergone sustained population growth. The city's population soared from about 0.5 million in 1967 to 3.1 million by 2013. Rapid urbanization has given rise to a number of urban problems, including traffic congestion, insufficient infrastructure, disorderly urban sprawl, a deteriorating living environment, growing urban disaster risks, and environmental pollution.

With the rapid economic and population growth, cities in developing countries have an increasingly greater impact on the sustainability of the earth, most notably in the context of climate change. This highlights the need for more consideration to the global environment in urban planning. This project attempted to assess the sustainability of Dakar after identifying the city's strengths, problems, risks, and impact on the global environment.



A land-use plan for the proposed Daga Kholpa urban subcenter

A City Vision for 2035: A Comprehensive Policy Package

In Dakar, JICA exchanged views with the local community and private sector at a total of 20 meetings, where a city vision, as well as the development policy and the project design, were considered based on the results of the sustainability assessment. Through this process a master plan for urban development was formulated. Advocating "City of Hospitality" as part of its city vision, this master plan was proposed as a comprehensive policy package that covers various fields from the development of urban subcenters and a transportation system centering on mass transit to the control of urbanization in the floodplain. The central government offices and local governments concerned will work together to put this plan into action.

This is only one example of JICA addressing challenges cities are facing in developing countries with due considerations to the global environment.

countries' efforts to address environmental challenges, like greenhouse gas emissions reduction and air quality improvement, 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 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, persons 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."

Training for trainers for road maintenance under a performance-based contract in Kenya as part of the Project for the Strengthening of Capacity on Roads Maintenance Management through Contracting, Phase II.

As cooperation for the transportation sector, JICA plans to strengthen policy-making capability, human resources and organizational capacity, and infrastructure development for

Case Study **Nepal: Project for the Construction of Sindhuli Road**

A Road That Draws on Japan's Technology Improves People's Lives and Contributes to Earthquake Disaster Relief Operations

A new trunk road whose construction has been supported by JICA for more than two decades has recently been completed. The new road has an instrumental role to play in improving the lives of people along its corridor as well as transporting rescue and relief supplies in times of natural disasters.

A 160-km Artery Supports Community Life

Since Nepal is a landlocked country, roads are vital, accounting for most of the country's transportation. However, road construction is no easy task in the mountainous country. In fact, Nepal's per-capita road length is the shortest in South Asia. Access to reliable and well-maintained roads is a major concern for people in rural areas. Even the trunk road that has long connected the capital city of Kathmandu in the north and the Nepal-India boarder in the south has sometimes been rendered impassable for long periods due to landslides caused by torrential rain, even though it is an economic lifeline for the landlocked country.

To rectify the situation, JICA launched a development study in 1986, which identified a new route that will connect Kathmandu with the Indian border. From 1995 onward, JICA supported the construction of this road, known as the Sindhuli Road, with ODA Grants. In March 2015, the whole road, totaling 160 km in length, was put into use.

The road, which took more than 20 years to complete, has brought gradual but positive changes to the people living along the road corridor. For instance, their income has increased due to significantly reduced transportation costs and time that have been brought about by the new road. Some farmers now use fertilizers and can transport milk and Junar oranges to urban areas. The new road has greatly contributed to improved education and health care as well.

In April 2015, soon after the completion of the road, Nepal was struck by a powerful earthquake with a magnitude of 7.8. Everyone who was involved in construction of the road worried that the Sindhuli Road might be damaged, but the road remained passable without major damage. As a matter of fact, the road was packed with vehicles carrying relief supplies and others carrying people who were fleeing from Kathmandu to the provinces. Indeed, the Sindhuli Road became a path that saved Kathmandu's citizens in a time of need.

The Sindhuli Road meanders through the Mahabharat Range, with the Himalayas in the background. (Photo: Nippon Koei Co., Ltd.)

developing countries, with a focus on "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 32, 46, 51 and 77].**

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.

As part of the business startup support activity of ICT Private Sector Development & Policy Development Support in Rwanda, JICA supports setting up the country's first fabrication laboratory (Fab Lab), a type of workshop equipped with a range of digital fabrication tools, such as 3-D printers and laser cutters, to make "almost everything."

Information and Communication Technology (ICT)

Overview of the Issue

Information and communication technology (ICT) has been advancing rapidly throughout the world. ICT is common infrastructure and an effective tool to solve social issues. ICT has been used in administrative, social, and economic fields: 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.

In many developing countries, the rapid spread of broadband Internet and mobile Internet (3G or LTE) services has primarily been seen in urban areas. However, when viewing such countries as a whole, the spread of ICT infrastructure and utilization of ICT have been slow in some respects. 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.

In recent years, developing countries have been facing the issue of how to address cyber security—a global challenge that is difficult to tackle only at the national level. Inadequate policies, institutional arrangements, and security measures render developing countries more vulnerable to cyber threats. They have difficulty building protection against such threats on their own.

JICA Activities

JICA's development strategy in the ICT sector comprises four components: improvement of ICT policy-making capacity, development of human resources to support ICT, development of ICT infrastructure, and promotion of use and application of ICT.

This development strategy has been translated into specific measures, including dispatching promotion and policy advisors on ICT, supporting the training of ICT engineers, developing fiber-optic networks, and delivering assistance with the use and application of ICT in such sectors as education, industrial promotion, and disaster risk reduction. In the cyber security sector, JICA works with the framework of cooperation between the Japanese government and ASEAN member states, namely,

the Japan-ASEAN Ministerial Policy Meeting on Cyber Security Cooperation, to assist these countries in building their cyber security capacities, thereby contributing to safe and secure cyberspace [➡ see the Case Study below].

ICT Policies Linked to Social and Economic Development

The use of ICT is called for in the newly agreed Sustainable Development Goals (SDGs). In fact, ICT is increasingly applied for development purposes in developing countries where this technology is spreading. In view of these developments, JICA is currently considering industry-based solutions, business-enabling solutions, and incubating solutions to further promote the use and application of ICT in relevant development sectors in developing countries.

(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 [➡ see the Case Study on page 102], ITS, and harbor EDI[1])

(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 **Indonesia: The Project on Capacity Building for Information Security**

To Protect Societies against Cyber Attacks

Developing countries are facing the global challenge of how to cope with cyber-attacks. JICA supports the development of the cyber security capacity of the Indonesian government.

Working with Other ASEAN Countries to Build Safe Cyberspace

The rapid spread of the Internet and the expanding scope to be covered by ICT in the workplace mean that the need to address cyber security is growing day by day. In fact, cyber-attacks, which are most notably designed to deface the websites of government offices and businesses and leak their confidential information, are taking an increasing toll on a global scale. Countries with inadequate cyber security measures are not only vulnerable to cyber-attacks, they may also be used as originating or transiting sites for cyber-attacks, like springboards.

These circumstances prompted the Indonesian government to launch an initiative designed to strengthen cyber security in 2007. In this regard, JICA has been providing assistance since July 2014. This assistance involves strengthening the information security management and technical capacity of government offices in Indonesia, enhancing cooperation with other ASEAN member states, and raising public awareness.

Since cyber-attacks are carried out mainly via the Internet, what a single country can do about them is limited. This JICA project attaches importance to cooperation with other ASEAN member states. It organizes training and sessions to exchange views for government officials from Cambodia, Myanmar, and Laos, which lag behind other ASEAN countries in terms of cyber security. In this way, the project is also helping to improve the level of cyber security of the ASEAN region as a whole.

The project organized a training session for government officials from Cambodia, Laos, and Myanmar who are responsible for cyber security.

Training participants analyze a recent cyber-attack.