

Infrastructure

Realizing Resilient and Sustainable Societies



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



Viet Nam: A construction site of the Ho Chi Minh City Urban Railway Line 1, between Opera House and Ba Son stations. An underground tunnel is being constructed with the shield tunneling method.

Sectoral Issues

- Building a universal infrastructure that supports quality growth and life, as well as realizing sustainable cities that coexist with the global environment, is an ongoing issue.
- In relation to natural hazards, swift reconstruction as well as resilient cities and infrastructure are vital.
- The strategic use of ICT is essential in addressing all kinds of issues.

Fiscal 2016 Initiatives

- JICA implemented a range of programs using Japanese expertise and technology and in cooperation with various actors. These efforts are best represented by a number of projects by JICA, including the Project for Urban Development Master Plan for Managua City in Nicaragua, the Project on Capacity Building for Information Security in Indonesia, the Project for Formulation of Master Plan on Logistics in Northern Economic Corridor in Kenya and Uganda, and cooperation for the high speed railway in India.

Future Cooperation

- Infrastructure development that underpins “quality growth” in cooperation with private companies, local governments, and various other actors.
- Further cooperation for realizing eco-friendly sustainable cities.
- Cooperation that will strengthen the trust relationship and networks that have been developed over many years with developing countries, and facilitate growth supported by co-creation and mutual learning.

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.

Disparities between urban and rural areas may also 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. 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
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. Building regional development with a longer-term development vision and/or a growth scenario
2. Promoting regional economic development and attracting investment
3. Developing inclusive and efficient infrastructure, including social infrastructure
4. Strengthening regional socioeconomic connectivity and reducing regional disparities
5. Building the structure and capacity to implement regional development

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 Finance and Investment Cooperation.

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 eradication. For the eradication of poverty and to achieve sustainable economic growth, it is indispensable to provide transportation service that facilitates the efficient movement of people and goods.

There is strong demand for transportation infrastructure worldwide. It is necessary to ensure efficient and sustained transportation services by promoting private-sector collaboration; prolonging the lives of existing facilities through better maintenance, repair, and replacement; and making efficient use of infrastructure assets. Sustainable utilization of infrastructure requires improving and consolidating operation and maintenance arrangements as well as ensuring sustained utilization of relevant systems and technologies. These two requirements, in turn, urgently call for training core personnel such as government officials, among other measures.

● 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.

In order to efficiently develop the transportation and road sector, building roads and bridges alone is not enough. This is why JICA's development cooperation also involves assistance designed to make wise use of developed infrastructure. There are a growing number of cases where large cities in developing countries fail to supply transport services that meet the fast-growing demand for infrastructure due to rapid population concentration. To help make efficient use of existing infrastructure, JICA supports not only physical infrastructure development ("hardware" assistance) and technical cooperation for such development ("software" assistance) but also human resources development that involves training personnel responsible for operating and maintaining the developed infrastructure, building organizational structures for facilitating users' altered awareness and educating them, and promoting awareness-raising activities ("humanware" assistance).

In addition, JICA has embarked on a new type of assistance designed to support infrastructure development projects that are unprecedented in scale and intent on introducing state-of-the-art technology. This type of assistance involves partner countries as program partners as it entails institution building and standards setting as well as human resources development. A case in point is a high speed railway project in India. This particular project is

supported by “all-Japan” efforts with Japan’s public and private sectors working as one. This represents a new dimension of the country’s development assistance.

Security-related development assistance is yet another new dimension of Japan’s ODA. In accordance with the National Security Strategy (NSS), which was endorsed by the Cabinet in December 2013, JICA provides assistance to countries along the sea lanes that are of strategic importance to Japan’s economic activity and national security. In cooperation with the Japan

Coast Guard, JICA assists these countries in enhancing maritime security capabilities by providing related equipment and training [[→ see the Case Study at the bottom left](#)].

G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment

At the Ise-Shima Summit in May 2016, the G7 leaders adopted the G7 Ise-Shima Principles for Promoting Quality Infrastructure Investment, among other outcome documents. This document calls on Japan and the other G7 countries to provide assistance related to infrastructure investment and development so as to contribute to the global efforts for the SDGs in accordance with five principles, some of which include ensuring safety and resilience as well as economic efficiency, ensuring job creation for local communities, and addressing social and environmental impacts.

In line with these principles, JICA will provide assistance at multiple levels to close the global infrastructure gap in transportation. This will involve “international transportation” that spans national borders, “national transportation” that ensures balanced development, “urban transportation” that supports sustainable urban development by improving urban mobility, and “rural transportation” that improves living standards of rural areas, as well as assistance that underlies all types of development and maintenance—most notably, capacity development for government agencies of developing countries and training of personnel who will support the future of these countries [[→ see the Case Study on page 28](#)].

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

Human Resources Development for Road Asset Management and Maritime Safety and Security Policy



Strategically Developing Core Personnel Who Support the Future of the Transportation Sector

JICA devises ingenious ways to sustain the outcomes of technical cooperation in transportation as well as other sectors.

JICA is now providing technical cooperation for the maintenance of roads and bridges in a total of 19 developing countries. Yet allocations of financial and human resources to such maintenance have been inadequate in many of these countries. This has prompted JICA to pay attention to Nagasaki Prefecture’s *michimori* (road keeper) project designed to train personnel that will help prolong the lives of roads and bridges. Since 2016, JICA has been providing such training in cooperation with Nagasaki University. In 2017, JICA plans to work with other universities in Japan to accept fast-track junior officials from the 19 countries as foreign students.

JICA has been training personnel who will play a pivotal role in maritime safety and security as well. In September 2016, eight maritime safety and security officials from ASEAN countries completed a master’s course program jointly offered by the National Graduate Institute for Policy Studies and the Japan Coast Guard Academy. The one-year program allowed the eight participants to acquire advanced skills in planning and proposing maritime safety and security policies in order to play a core role in maritime safety and security in their countries. The program also provided opportunities for mutual understanding and exchanges among maritime authorities of the participating countries and Japan. Expectations are high that these participants will help to strengthen cooperation in ensuring maritime safety and security among these countries and contribute to maintaining and developing international maritime order.



Participants in the Maritime Safety and Security Policy Program jump for joy under a cherry tree in bloom. (Photo: Japan Coast Guard)

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 advisers on digitalization of terrestrial television broadcasting, supporting the training of cybersecurity engineers, developing backbone communication networks, and delivering assistance with the use and application of ICT in sectors such as education, industrial promotion, and disaster risk reduction [→ see Case Studies at right and on page 30]. 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.

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. intelligent transportation system [ITS] and disaster risk communication)
- (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)

Case Study

Jamaica: The Project for Improvement of Emergency Communication System Preparatory Survey



Building a Robust Emergency Communication System for Disaster Risk Reduction

JICA is assisting this disaster-prone island nation in developing a digital radio communication network, thereby contributing to achieving two SDGs: Goal 11, making cities and human settlements inclusive, safe, resilient and sustainable; and Goal 13, taking urgent action to combat climate change and its impacts.

An island country in the Caribbean Sea, Jamaica is situated in the Atlantic Ocean hurricane belt, and major hurricanes and tropical rainstorms often cause flooding and landslides, taking a toll on human life and infrastructure in the country. The existing radio communication network for disaster risk reduction (DRR) is underused due to inadequate channel availability and radio coverage. This makes warning, damage assessment, and response untimely.

JICA has recently completed a preparatory survey for the subsequent Grant for developing a digital radio communication system for DRR and early warning systems throughout Jamaica. Based on the findings of the survey, the Grant project will put in place 24 radio repeater stations, 15 integrated command and control stations, 1,256 two-way radio terminals, and 15 local early warning systems. This is expected to make timely and stable communication possible across Jamaica in times of disaster, thereby reducing damage.



A pylon on which a digital radio antenna will be mounted. A total of 24 such pylons will be constructed throughout the country.