

Environmental Conservation and Management / Water Resources / Disaster Risk Reduction



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

The global environment, which nurtures our lives, is deteriorating year by year due to population growth, economic growth, and other factors. Ecological destruction, environmental pollution, water scarcity, and increasingly frequent natural disasters are significantly affecting our

lives.

JICA works with the international community to support developing countries, in various ways, in improving the global environment, protecting people's lives, and achieving healthier lives.

Environmental Conservation and Management

Natural Environment Conservation

● Overview of the Issue

Excessive exploitation and large-scale land use changes have led to the rapid destruction of natural environment worldwide. Those include deforestation, reduction in wetland, deterioration of coastal ecosystems, soil degradation and the extinction of species. The world's forest are decreasing by about 3.3 million hectares annually,¹ the equivalent of twice the area of Japan's Shikoku island. In addition, around 75% of the world's coral reefs are in danger.

The natural environment supplies people with various resources essential to their lives, such as food, water and medicine; it also offers natural protection from disasters and other environmental risks. As members of the international community, we need to contribute to the creation of a society that conserves the natural environment, and maintains harmony between ecosystems and human activity.

● JICA Activities

To conserve the natural environment, which is the foundations of human existence, JICA provides cooperation on nature conservation in the following three areas, with the aim of facilitating harmony between the conservation of the natural environment and human activities. During the period from 2000 to 2015, JICA pursued natural conservation activities such as collecting forest data, formulating management plans, and improving the livelihoods of local residents on 18.36 million hectares of land in conservation areas. In addition to those activities, JICA carried out afforestation activities for forest restoration on 3 million hectares of land. JICA also contributed to the capacity building of 630,000 administrative officials and residents.

1. Climate Change Measures through Sustainable Forestry Management

Forests provide timber; they also have the function of retaining and providing stable supplies of water, conserving the fertility of soil while absorbing and accumulating greenhouse gas (GHG), i.e. CO₂ and mitigating natural disasters such as floods and landslides. In recent years, forest conservation has been emphasized globally as a measure on climate change. The 21st

Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, held in December 2015 in Paris, agreed to encourage the international community to work on REDD+ (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries).

JICA actively supports institutional improvement and sustainable forestry management for promoting REDD+ [→ see the Case Studies on pages 30 and 88]. JICA also provides assistance for disaster risk reduction (DRR) and watershed management utilizing multilateral functions of forests in key watersheds, disaster-prone areas, and so on. Such assistance is defined as ecosystem-based disaster risk reduction (Eco-DRR).

2. Sustainable Use of Natural Resources to Improve Livelihoods of Vulnerable Communities

In developing countries, most people rely on local natural resources in daily life. However, there are many cases where the foundation for local livelihoods has been exploited by excessive usage that destroys the function of nature to reproduce itself. Moreover, sometimes friction occurs between residents and public administrators over the usage and management of resources.

To cope with such problems, JICA is promoting activities for sustainable utilization of natural resources in surrounding communities and improvement of livelihoods while working cooperatively with partner countries, international organizations, and NGOs in Sub-Saharan African countries and other areas.

3. Conservation of Biodiversity through Management of Protected Areas and Buffer Zones

It has been estimated that over 20,000 species of wildlife are at risk of extinction because of excessive use of natural resources, overhunting of wildlife, introduction of alien species, climate change and other factors.²

In protected areas such as national parks and surrounding buffer zones, JICA is providing various forms of support to promote the harmonious coexistence of nature and humans: management and formulating of plans, implementation of surveys and monitoring, capacity building of persons concerned, introduction of ecotourism, and environmental education. JICA is also contributing to the achievement of the Aichi Target, which was adopted at the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10).

1. *World Resources Report 2011 and 2013*

2. *The International Union for Conservation of Nature (IUCN) Red List of Threatened Species 2015*

Environmental Management

● Overview of the Issue

Along with economic development, population growth and urbanization, inappropriate disposal of waste, and water and air pollution have become serious problems in many developing countries. Because many environmental issues involve complex factors in a multilayered manner and are spread over a wide area, it is difficult to find solutions in a short period of time. Moreover, in comparison with infrastructure development, etc., the response to environmental issues is apt to be slow in many cases as outcomes of efforts are hard to detect. Especially due to their tight national budgets, this trend can be seen frequently in developing countries.

The Sustainable Development Goals (SDGs) include many goals in the environmental management sector that concern water and sanitation, urban development, and sustainable consumption and production.

In consideration of such circumstances, a cross-sectoral and comprehensive perspective is necessary for assistance in the field of environmental management.

● JICA Activities

JICA provides various forms of aid in accordance with the development stage of each developing country or region. Within that process, JICA gives priority to preventive measures and is emphasizing the establishment of environmental management systems through a capacity development approach. JICA puts emphasis on enhancing the capacity of the organizations and individuals to conduct environmental management.

In fiscal 2016, JICA will focus on the following four strategic areas while taking note of important considerations regarding specific environmental issues such as solid waste, water pollution, and air pollution.

1. Assistance in Solid Waste Management and Establishment of a Sound Material-Cycle Society

The amount and composition of solid waste depend largely on the level of economic development of each partner country. This highlights the need to extend assistance according to such stages. JICA has defined three developmental stages as shown below. Assistance will be extended according to the developmental stage of each partner country or region, as well as to their conditions and needs.

Stage I: Improving public health and sanitation [→ see the Case Study on page 89]

Stage II: Reducing environmental impacts and pollution control
Stage III: Using 3R (reduce, reuse, and recycle) initiatives to establish a sound material-cycle society

2. Assistance in Addressing Pollution of the Water, Air, etc.

JICA will assist with regulatory and institutional development, as well as capacity development for public authorities and citizens, together with assessment of the actual situation. Special priority will be given to (1) offering integrated assistance in both developing sewerage and building the capacity to operate and maintain it; (2) offering assistance in water environment management in urban areas; (3) addressing air pollution, including PM2.5; and (4) addressing mercury pollution and managing chemical substances.

3. Comprehensive Assistance at the City Level

JICA will assist with eco-city planning and associated legislative arrangements as well as human resource development to address cross-sectoral challenges involving the environment, public health, global warming, recycling and waste management, and other issues at the city level.

4. Assistance That Takes Advantage of Japan's Experience

Local governments in Japan have accumulated expertise in countermeasures against climate change, solid waste

Case Study

JICA-JAXA Partnership for Building a Forest Monitoring System Using the ALOS-2 Satellite

Protecting Tropical Forests in the Developing World with Japan's Satellite Technology

JICA and the Japan Aerospace Exploration Agency (JAXA) have agreed to build a forest monitoring system using JAXA's ALOS-2 satellite. This system, namely, JJ-FAST (JICA-JAXA Forest Early Warning System in the Tropics), will achieve constant monitoring of deforestation and forest loss throughout the tropics that is accessible from around the world.

Full-Time Access from Anywhere

Illegal logging and deforestation in developing countries lead not only to the depletion of forest resources but also to the loss of biodiversity and the poverty of local residents who depend on local natural resources.

Since 2008, JICA has provided assistance that uses JAXA's Advanced Land Observing Satellite (ALOS), the predecessor to ALOS-2, to countries with tropical forests in Asia, Latin America and the Caribbean, and Africa. ALOS, equipped with radar capable of observing deforestation regardless of the weather, 24 hours a day throughout the year, provides a powerful tool for monitoring tropical forests

despite the cloud cover that is typically found in such areas. The satellite has proven highly effective; in the Amazon rainforest in Brazil, it has discovered more than 2,000 incidents of illegal logging, and its deterrent effect has contributed to a 40% reduction in the amount of forest area destroyed.

In recent years, developing countries are in growing need of satellite-based measures for forest conservation and against illegal logging. However, they face the challenge associated with the cost of introducing such a system and the development of human resources for it. As such, JICA and JAXA concluded an agreement in April 2016 to build a Web-based

intensive forest monitoring system that provides free access to analyzed data from around the world. The development of this system and training for administrators and forestry officials are expected to promote tropical forest management designed for the sustainable use and conservation of forest resources.



JICA's project in Mozambique that utilizes satellite data (the Project for the Establishment of a Sustainable Forest Resources Information Platform for Monitoring REDD+).

management, sewerage development, and air pollution control. By strengthening partnership with such local governments, JICA will make more effective use of Japanese experience in formulating projects in these sectors. It will also take advantage of the technology and know-how of Japanese businesses, universities, and research institutions in supporting the development of environmental technologies that fit the conditions of developing countries.

Water Resources

● Overview of the Issue

Water resources are essential not only for human life and health but are also essential for supporting economic activity and maintaining the ecosystem. Yet approximately 2.9 billion people in the world lack water due to population growth, urbanization, economic growth, and other factors. Given this ever-increasing pressure of water demand, scientists predict that half of the world's population will be living with water scarcity by 2025.

Considering these circumstances, the SDGs include a goal to “ensure availability and sustainable management of water and sanitation for all” by 2030 (SDG 6).

Through developing water-supply and sewerage systems, Japan has steadily developed a society that utilizes water resources in a sustainable manner. On the other hand, Japan depends on imports for much of its food consumption. This means Japan is relying on water in other countries, including developing countries, in terms of the water necessary to produce such products. This makes Japan responsible for taking part in solving the water resources problems of developing countries.

● JICA Activities

1. Safe Water Supply

In the context of “quality infrastructure,” safe water supply is also attracting attention, since it will entail enormous demand for infrastructure. JICA has a long track record in this sector. At the ASEAN Business and Investment Summit in November 2015, Prime Minister Shinzo Abe mentioned an example of Japan's involvement in water supply service. He spoke of the example of Phnom Penh, where the water supply coverage expanded from 20% to 90%.

To help meet the demand for safe water, JICA conducts projects in combination with technical cooperation and financial assistance, such as drafts of master plans to improve water supply services, capacity development on operations and maintenance, and construction of facilities. Through these projects JICA will also contribute to goals for SDGs and goals set at the Sixth Tokyo International Conference on African Development (TICAD VI). Also, in order to help achieve universal access to safe water as called for in the SDGs, JICA will intensify its activities designed to reduce water supply disparities and improve water supply service in its development programs and projects that accommodate the socioeconomic conditions of each partner country. For conflict-affected states in particular, JICA will promptly deliver its cooperation while taking stock of their vulnerability.

One of the strengths of the Japanese water supply system is its stable and safe water supply under the integrated management system, which covers components from the water source to the tap. JICA conducts its projects utilizing the strengths of Japan's water supply management skills by working with Japanese local governments, which are the water service providers in Japan [→ see the Case Study on page 90].

2. Water Resources Management

JICA will contribute to one of the targets of SDGs' Goal 6, that

Case Study

Sudan: The Project for Strengthening Solid Waste Management in Khartoum State of Sudan

Fixed-Time, Fixed-Place Collection: Transferring What Is Business as Usual in Japan to Sudan

Khartoum, the Sudanese capital city, with a population of some 6 million, generates a daily average of 5,000 tons of solid waste, much of which is not collected properly. To help rectify the situation, JICA has been working to improve the sanitary conditions of the capital by upgrading waste-related public services, from collection and transportation to final disposal.

Collection Vehicles Adorned with Captain Tsubasa Stickers

This project involves a number of measures to increase the waste collection rate. They include the provision of 80 collection vehicles and the introduction of the Japanese method of collecting waste at a fixed time and place.

In Sudan, the Japanese popular animation program *Captain Tsubasa* is aired on TV and is popular among Sudanese people. The collection vehicles Japan provided are decorated with Captain Tsubasa stickers, attracting the attention of local residents. This arrangement is expected to raise both public interest in waste collection and public understanding of the need

for such collection.

Making Neighborhoods Clean with Community Power

A Japanese Expert Team and Sudanese counterparts are working to ensure that the fixed-time, fixed-place collection system will take root in the capital. Activities to this end include explaining the system to local residents, improving methods of taking out the garbage, and bettering the collection routes.

Women's communities in the city's neighborhoods are beginning to take action as well. They are now calling on local residents to clean up the streets or lanes in front of their homes



A waste collection vehicle adorned with a Captain Tsubasa sticker.
© Yoichi Takahashi/SHUEISHA Inc.

for community beautification and providing guidance on how to take out the garbage to the collection points. Voluntary cleanup activities at collection points have been launched.

The behavior of the residents will not change in a day. Yet it is changing gradually and steadily as the experts, local authorities, and communities take opportunities to meet and discuss the issue.

is, to “implement integrated water resources management at all levels.” JICA will assist in developing scientific information on water resources and strengthening the capacity to formulate and implement plans needed for water resources management, and will also share the knowledge gained through its programs and projects with other development partners. Amid growing concerns about the impact of climate change on water resources,³ JICA will also make active use of scientific knowledge and technology for climate change prediction and impact assessment through partnership with universities, among other means.

Disaster Risk Reduction

● Overview of the Issue

In recent years, natural disasters have been increasing in both consequence and frequency in many parts of the world. Related economic losses due to disasters are on the rise. Amidst the rapid progress in social and economic development and population concentration in urban areas, developing countries are especially vulnerable to natural disasters, because of inadequate prior investment in disaster risk reduction (DRR) measures, including city planning and infrastructure development that incorporates DRR perspectives. For this reason, once a large-scale disaster strikes a developing country, the outcomes of development and opportunities for sustainable growth for the country will be lost, making it difficult for the country to untangle itself from the downward spiral of disaster and poverty.

The Sendai Framework for Disaster Risk Reduction 2015–2030, adopted at the Third UN World Conference on Disaster Risk Reduction in March 2015, sets out prior investment in DRR, “Build

Back Better,” risk assessment, and governance as the priorities for action, which Japan called for based on its experience. The framework also refers to the importance of involving various stakeholders in DRR and the need to strengthen means of implementation for developing countries with assistance from the international community.

Some of the 17 Goals of the SDGs embrace the perspective of DRR, such as “no poverty” and “infrastructure.” This bears witness to the fact that the international community has recognized DRR as a condition for addressing any development challenge.

● JICA Activities

In extending assistance in DRR, JICA places importance on preventive phases for promoting prior investment in DRR. For various reasons, however, developing countries often fail to mobilize adequate human and financial resources in the preventive phases. It is important for central governments to understand the negative effects and impacts disasters have on development and economic growth. They need to show leadership in promoting the “mainstreaming of DRR” in every development project by promoting prior investment in DRR and taking measures to reduce disaster risks.

To ensure that these measures are taken appropriately, JICA supports the development of a framework for coordination among the central government, local governments, private sector and other stakeholders.

If a disaster unfortunately occurs to a developing country, JICA will assist that country in making continuous efforts from recovery

3. IPCC Fifth Assessment Report and others

Case Study Third Study Meeting with Local Governments

Aiming to Strengthen Partnership for Assistance in Water Supply Sector

JICA organized a study meeting that was designed to strengthen partnership with local governments to make better use of Japan’s experience in water supply in its international cooperation.

Sharing Know-How and Practice Solutions

In line with Japan’s Development Cooperation Charter, JICA has been taking various actions to enhance partnership with Japanese local governments as water service providers in Japan. Since 2013, JICA has organized study meetings for local governments involved in international cooperation. In February 2016, JICA and the Yokohama Water Works Bureau co-organized the third such meeting.

On the first day of the meeting, JICA first briefed the participants on trends in its international cooperation in water supply. Then Chiba Prefecture and Yokohama City made a presentation on their activities designed to promote understanding among citizens and employees about international cooperation

and to train their employees involved in such cooperation. Activities in Timor-Leste by Chiba Prefecture were also presented. They shared their ingenious solutions that may prove useful for other local governments, as well as the difficulties they faced and the lessons they learned in their activities in the developing countries.

On the second day, Saitama Prefecture, Tokyo Metropolitan Government, Sapporo City, Yokohama City, Toyohashi City, Ube City, and Kitakyushu City made a presentation on their know-how to formulated projects under the JICA Partnership Program, as well as their activities involving such projects.

More than 80 participants had animated discussions, trading questions and answers and exchanging views. They evaluated the meeting highly. Some said it provided a valuable



A Chiba Prefecture official working in Timor-Leste as a JICA expert.

opportunity to learn how other local governments make international contributions, and how they utilize their experiences to improve water supply service in developing countries for elaborating solutions to their domestic problems. Others noted that they realized anew that JICA’s training program is a precious opportunity to develop personal contacts.

JICA will continue to deepen partnership with local governments and relevant organizations as nodes for international cooperation in order to provide assistance for supplying safe water to people in the developing world.

to reconstruction for building more disaster-resilient society than before, based on the concept of “Build Back Better” [→ see the **Case Study on page 91**].

Under the concept described above, JICA has set out five strategic goals:

1. Establishment and Strengthening of DRR Governance

Toward building disaster-resilient countries and communities, JICA supports to establish and strengthen DRR governance through the three priorities: (1) legislating a basic law on DRR and establishing an organizational structure responsible for DRR; (2) strengthening the institutional DRR capabilities of the central and local governments by developing plans, standards, and frameworks for DRR; (3) reinforcing organizations and human resources responsible for DRR and promoting relevant studies through public-private-academia collaboration as well as cooperation among concerned organizations.

2. Correct Understanding of Natural Disaster Risk and Promotion of Common Understanding

Appropriate disaster risk assessment and analysis are essential for promoting DRR through such means as studying DRR measures and incorporating preparedness into socioeconomic development programs and projects. A common understanding of disaster risks among all the stakeholders will make DRR more effective. For this reason, JICA assists risk assessment and analysis in the policymaking process as well as hazard mapping for better understanding of disaster risks. JICA also assists to promote DRR education and capacity building of communities to carry out DRR activities.

3. Implementation of Risk Reduction Measures for Sustainable Development

In order to reduce casualties and social, economic and

environmental damages by natural disasters, JICA provides the best mix of structural and nonstructural measures. In flood control, for instance, a structural measure may mean flood prevention works, while a nonstructural measure may mean a land-use plan based on the inundation area so that the hazard areas will not be measured off as residential areas. Issues to be addressed include public-private-academia collaboration, initiatives involving stakeholders at all levels, ranging from the national to community levels and incorporating disaster prevention and mitigation measures into all development projects.

4. Speedy and Effective Preparation and Response

In order to forecast natural disasters and issue early warnings in a timely manner, JICA assists in (1) improving the forecasting and warning capabilities of government agencies responsible for meteorological observation; and (2) developing evacuation and response systems for appropriate alert and evacuation orders based on the information thus obtained [→ see the **Case Study on page 54**]. JICA also dispatches Japan Disaster Relief teams to disaster-affected areas for prompt rescue and relief operations.

5. Seamless Recovery and Reconstruction for a Disaster-Resilient Society

“Build Back Better” is a concept that post-disaster recovery and reconstruction should do more than just restoring the pre-disaster conditions. To build more disaster-resilient society than before, while learning the lessons drawn from past disaster experiences, JICA addresses not only the structural aspect such as infrastructure development, but also regulatory and institutional improvements as well as assisting livelihoods. In the process, JICA conducts seamless approach from response to recovery and reconstruction, with no gaps between programs in terms of time, sectors or project components.

Case Study

Nepal: Seamless Cooperation from Emergency Response to Preparedness for the Next Disaster

Toward Achieving “Build Back Better”

The recent major earthquake that hit Nepal is the first large-scale natural disaster after the Sendai Framework for Disaster Risk Reduction 2015–2030 was adopted in March 2015. In line with this framework, JICA worked on reconstruction assistance there to help Nepal build a more disaster-resilient society.

DRR Cooperation That Also Anticipates the Next Quake

On April 25, 2015, a major earthquake with a magnitude of 7.8 struck Nepal, killing 8,891 people. Some 611,000 homes were totally destroyed and about 290,000 were partly destroyed. The next day, on April 26, JICA dispatched a Japan Disaster Relief Search and Rescue Team to Nepal. On April 27, it decided to provide emergency supplies and dispatch a Medical Team to the quake-stricken country.

In line with such emergency assistance, JICA on May 1 sent a study mission tasked with exploring directions for reconstruction planning. On May 25, just one month after the earthquake, JICA held a reconstruction seminar in the Nepalese capital city, Kathmandu.

Japanese experts shared Japan’s experiences in reconstruction, most notably those in the aftermath of the Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake. They also communicated the “Build Back Better” concept. At the international conference for Nepal’s reconstruction, held by the Nepalese government on June 25, JICA made concrete proposals on, among other things, the preferred construction method in relation to urgently needed housing assistance.

In July that year, JICA launched the Project on Rehabilitation and Recovery from Nepal Earthquake. This project involves assistance for the reconstruction of housing and schools as well as support for recovery and reconstruction planning for the capital and the provinces, along



A construction expert providing guidance on how to make buildings more quake-resistant.

with the development of teaching materials for better housing reconstruction. In this project, JICA is also assisting Nepal in rehabilitating public facilities with high priority, restarting local economic activities, and reconstructing livelihoods in order to promptly meet local needs.

Another example of seamless cooperation that JICA has conducted for Nepal is a more detailed assessment of earthquake risks, contributing to disaster management that anticipates the next quake with more accurate DRR planning.