

# Global Environment

— For the Termination of the Vicious Cycle of Poverty and Environmental Destruction



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

In developing countries, a vicious circle occurs as the destruction of the environment, which is a basis for human life, causes the further escalation of poverty. Each passing moment brings the further destruction of the irreplaceable natural environment on which humanity depends, driving the need for the creation of a sustainable society based on the concept of harmony with the environment.

With the goal of preserving the global environment that affects all human life, JICA is focusing on the five issues of nature conservation, environmental management, water and sanitation, disaster risk reduction and climate change measures.

## Nature Conservation

### ● Overview of Issue

Over the past decades, 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, by logging, erection of infrastructure and other large-scale development and conversion to farmland. The world's forest are decreasing by about 13 million hectares annually, the equivalent of one third of the land mass of Japan. Similarly, it is estimated that overfishing, tourism development and other factors have caused the loss of 19% of the world's coral reefs. In addition, 80% of the world's fishing resources are being overexploited.

The natural environment supplies people with various resources essential to their lives, such as food, clothes and medicine; it also offers natural protection from disasters and other environmental risks. Degradation of ecosystem services damages the foundations of human existence.

As members of the international community, we need to contribute to the creation of a society that conserves the natural environment, such as the disappearing forests and wetlands of the world, and maintains harmony between ecosystems and human activity.

### ● JICA Activities

During the period from 2000 to 2011, JICA pursued natural conservation activities on 13.83 million hectares of land (11.4 million ha of forest conservation, 2.34 million ha of ecosystem conservation). In addition to conducting activities such as collecting forest data, formulating management plans and improving the livelihoods of local residents, JICA carried out afforestation activities for forest restoration on 3.05 million ha in various countries. A total of approximately 10.7 million people benefited from these activities. Nevertheless, land use changes along with development and the increased pressures on natural

resources remain major issues in developing countries. To that end, JICA provides cooperation on nature conservation in the following three areas, with the aim of facilitating harmony between the maintenance of the natural environment and human activities.

### 1. Sustainable Use of Natural Resources by Local Residents

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 in such way that excessive destroyed usage the ability of nature to reproduce itself. Moreover, sometimes friction occurs between residents and public administrations over the usage and management of resources. In these cases, it is important to take the views of the local residents into consideration in the decision-making process. While collaborating with public administrators is necessary, the issue is achieving natural resource management in which local residents play the main role.

With the aim of pursuing sustainability, natural resources management promotes collaboration of the government and communities of the counterpart country, JICA promotes endeavoring to establish systems and organizations and popularize the use of appropriate technology. Targeted countries include Laos, Viet Nam, Ethiopia, Malawi, Madagascar and Senegal.

### 2. Conservation of Biodiversity

It has been estimated that over 20,000 species of wildlife are at risk of extinction because of the loss of natural habitats, overhunting of wildlife, introduction of alien species, climate change and other factors.

JICA is assisting the efforts of developing countries to contribute to achieving the world's goals for conserving biodiversity through approach of cooperation, human resource development and other aid. JICA's efforts take into

consideration the “Aichi Target” that was adopted at the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10).

### 3. Sustainable Forest Management

Forests not only function timber resources; they also have the function of retaining and providing stable supplies of water, conserving soil while absorbing and accumulating greenhouse gas, i.e. CO<sub>2</sub> and preventing natural disasters such as floods and landslides. JICA recognizes that not only is it important to regenerate forests through afforestation and other methods, but also to make efforts to maintain and improve forest quality through proper management. Based on this recognition, JICA is implementing such activities as developing forest resources monitoring and inventory, developing afforestation technique, setting up systems for forest conservation and management, and improving the awareness of local residents. In addition, JICA is providing assistance to REDD-plus: reducing greenhouse gas emissions from deforestation and forest degradation measures in developing countries as part of mitigation measures against climate change.

## Environmental Management

—Reducing Risk and Loss Related to Environmental Problems and Achieving Sustainable Development

### Strengthening the capacity of developing countries to control environmental burdens relates to economic growth in a preventive manner

#### ● Overview of Issue

Along with economic development the water and air pollution and inappropriate disposal of waste have become serious problems in many developing countries, leading to concern about the depletion of limited resources, such as water and forests. These problems threaten the health and life of humans and other wildlife and inhibit the sound development of economic activities. Japan's experiences in the past prove that it is too late to address environmental issues once our ecosystems and human health are significantly damaged. Restoring the damaged environment requires much larger expenditures.

In June 2012, at the United Nations Conference on Sustainable Development (Rio + 20) held in Rio de Janeiro, Brazil, it was recognized that further measures by the international community to deal with environmental issues were indispensable. Moreover, the conference agreed that promoting

#### Case Study Viet Nam Assistance for Forest Conservation

### Assistance through Natural Resource and Environmental Conservation Program

**JICA assists the Vietnamese government in achieving its policy goal through natural resource and environmental conservation program**

Because of the past wars, conversion of forest to farmland due to a growing population and poverty, illegal logging and other factors, the forests that used to cover about 43% of Viet Nam's total area in 1945 have decreased to about 27.7% of that in 1990. The government of Viet Nam is working to recover forest area and realize sustainable use of its natural resources to improve those conditions. The government has set a goal of recovering forest coverage to 45% of the country's total area by 2020.

JICA assists the Vietnamese government in achieving its policy goal through natural

resource and environmental conservation program. More specifically, JICA has dispatched a forestry program advisor to the Vietnam Administration of Forestry, Ministry of Agriculture and Rural Development in Viet Nam to assist with the formation of policy measures and donor coordination. In addition, “The Project for Sustainable Forest Management in the Northwest Watershed Area” assists with participatory forest management by local residents as well as their livelihood development. On the other hand, with “The Dien Bien REDD-plus Pilot Project,” JICA transfers

knowledge, such as institution building and forest monitoring system necessary to REDD-plus implementation, through the formation of the REDD-plus action plan of Dien Bien Province. JICA will continue to contribute to forest recovery and sustainable use of the natural resources based on effective collaboration between local residents and the government.



Project member instructs local residents in planting seedling.



Scene of partial deforestation by shifting cultivation.

green economies is essential for development in harmony with the environment and that developed countries would strengthen their aid for developing countries.

Under these circumstances, strengthening the capacity of developing countries to deal with environmental issues is becoming increasingly important.

## ● JICA Activities

Because many environmental issues involve complex factors in a multilayered manner and are spread over a wide spatial area, it is difficult to find solutions in a short period of time. Moreover, in comparison with direct investments, such as in infrastructure, the response to environmental issues is slow in many cases. Especially due to their tight national budgets, this trend can be seen frequently in developing countries. Nevertheless, even at the previously mentioned Rio + 20, the international community has recognized the following two goals. Economic development should be pursued with the aim of achieving harmony with the environment. Furthermore, sustainable development should be pursued centered on “people” with the ultimate goal of eliminating poverty. For that purpose, sound “environmental management” is important as a means of achieving sustainable development while keeping the overall burden of human activity on the environment to a minimum.

Against this backdrop, JICA provides various forms of aid in accordance with the development status of each developing country or region. Within that process, it is essential to give priority to preventive measures. Consequently, JICA is emphasizing the establishment of environmental management systems through a capacity development approach.

In so doing, JICA recognizes that it is essential to enhance the capacity of the organizations and individuals to conduct environmental management. Accordingly, in recent years, JICA has been further strengthening environmental management capacity development. In addition, JICA has been promoting Triangular cooperation by utilizing prior cooperation efforts to achieve effective aid measures [➡ See page 121]. Specific measures being taken to strengthen environmental management are as follows.

### 1. Water Environment

JICA support measures to prevent pollution in rivers, wetlands and oceans. This includes support for increasing the capability to monitor water quality, for drafting management plans and making policy proposals. JICA also provides support for the drafting of plans and the operation and management of facilities needed to treat waste water from households and industry and improve the hygienic environment, such as support for the improvement of sewage facilities.

### 2. Atmospheric Environment

JICA supports measures to prevent air pollution, such as increasing the capability to monitor air quality, and improving capacity for drafting management plans and making policy

proposals. JICA is also providing support for the development of air pollutant removal facilities, and new methods to measure contaminants.

### 3. Waste Management

JICA supports measures for improving waste management, such as increasing the administrative service capabilities for the collection, transportation, intermediate treatment and final disposal of waste, and improving capacity for drafting management plans and making policy proposals. Especially in recent years, JICA is increasing its support to create a sound material-cycle society by promoting the 3Rs (Reduce, Reuse, Recycle) of waste. JICA is also providing support for building recycling systems for electrical and electric waste or “e-waste.”

### 4. Other Areas of Environmental Management

In addition to supporting for the formulation of a basic plan for environmental management, JICA also supports more advanced environmental management. JICA also supports more advanced environmental management such as measures for treating chemical substances that place a large burden on the environment as well as being harmful to human beings.

## Water and Sanitation

### ● Overview of Issue

Water is essential for human life. In addition to drinking water, water directly and indirectly supports human existence as a necessity for food production and various economic activities to maintain lives of people.

However, the water resources available to humans are not unlimited. Even though the Earth is called the Water World, the amount contained in relatively easily accessible rivers and lakes is a mere 0.01% of all water on the earth.

Nevertheless, the demand for water continues to rise in developing countries as their populations expand. Consequently, these countries are now facing the extremely difficult problem of how to allocate limited water resources for the survival of their citizens, for national economic development as well as for the preservation of the natural environment.

Another issue closely related to water is sanitation. Around the world, 1.5 million children 5-years old or younger die from diarrhea annually. Diarrhea in many cases is caused by infection with pathogenic bacteria discharged from feces transferred to people’s mouths through water, food, fingers or other means. Therefore, building sanitation facilities (toilets) is extremely important to isolate human excreta from the living environment. In addition, the infection routes can be cut off by such hygienic practices as washing one’s hands after defecation and keeping areas around water supply facilities clean. In other words, a mutually complementary relationship exists between improved sanitation that is essential to keep water safe to drink, and water that is vital in such hygienic behaviors as washing one’s hands. The simultaneous improvement of water supply and sanitation is extremely



important to reduce water-related diseases.

Japan has experience in steadily developing water supply and sewage systems to build sanitary society, while overcoming flooding and drought during postwar economic growth. On the other hand, Japan remains a major water-consuming country, importing large volumes of “virtual water” from other countries.

This makes Japan responsible for taking part in solving the water and sanitation problems of developing countries.

Based on this perspective, JICA is pursuing cooperation with emphasis on the following areas of water and sanitation.

### Case Study Technical Cooperation Project in Burkina Faso

## The Project for Enhancement of Water Supply Infrastructure Management and Hygiene and Sanitation in the Central Plateau Region

**To improve the poor access to safe water in Sub-Saharan Africa, JICA is providing Technical Cooperation to strengthen water supply operation and maintenance capacity that involves both the public and private sector.**

In 2012, based on JICA Grant Aids, 300 wells were completed in the central plateau region and southern central region in Burkina Faso. In tandem with this program, JICA has been pursuing the Project for Enhancement of Water Supply Infrastructure Management and Hygiene and Sanitation in the Central Plateau Region, which began in 2009.

In Burkina Faso, new wells may stop operating because of the lack of leadership by water management committees in charge of managing each well and the low awareness of the need for participation by local residents. To avoid this problem, JICA combined multiple water management committees into water utilization cooperatives for each rural settlement. The main point to this type of organization lies in members of the cooperative mutually targeting a sustainable management system with technical support from public administrative institutions. Under the system, when large-scale repairs for a well are beyond the capabilities of the water management committee in charge, it can be handled by the cooperative. Consequently, the operating rates of the well improve. In addition, the project is aiming to build a water supply facility operation and maintenance system in which the roles and responsibilities of each stakeholder, such as local public bodies, water utilization cooperatives and pump repairers, have been clarified through agreements and contracts. The project seeks to persistently explain the advantages of the new system to local residents while establishing water utilization cooperatives and strengthening their capacity. The initial pilot operations in three prefectures in the central plateau region has spread to the entire region and looks to be going to spread throughout the country. Moreover, through the hygiene education activities that were combined with the project right from the start, JICA is also providing aid in getting local residents to understand the importance of safe water and in establishing good hygiene habits, such as washing hands.



Communal wells have been built in each village in rural settlement areas of Burkina Faso. Women and children carry the heavy water tanks for many kilometers back and forth from the wells.



Spreading good hygiene habits among the villages is the job of volunteers.

## ● JICA Activities

### 1. Water Resource Management and the Efficient Use of Water

The appropriate management of water resources is essential in the situation where available water resources are limited against the growing demand for water. This refers to a need for coordinating water allocation to different sectors while preserving the water environment. Avoiding this coordination would increase the disorderly use of water, resulting in repeated environmental destruction such as “the Tragedy of the Aral Sea”. Furthermore, it is anticipated that there will be frequent incidents of flooding and drought due to climate change. From the perspective of promoting integrated water resource management, evaluating the impact of climate change on water resources, JICA actively supports developing countries mainly in the formulation of water resource management plans.

To properly manage limited water resources, the efficient use of water becomes paramount. This includes the promotion of water-saving in agriculture and reuse of treated wastewater. JICA is proactively providing assistance in this area, particularly in the reduction of non-revenue water caused by leaks from pipes, etc., where Japan’s experience and technology can be put to good use.

### 2. Improving Access to Safe Drinking Water and Sanitation Facilities

The access to safe drinking water and basic sanitation facilities (toilets) is included in the Millennium Development Goals (MDGs) and is one of the major development challenges of the international community. The access to safe water and sanitation was declared a “human right” at the United Nations’ General Assembly held in July 2010.

Nevertheless, in 2010, 780 million people around the world still did not have access to safe drinking water and 2.5 billion were without access to basic sanitation facilities.

As a member of the international community, JICA is working proactively to accelerate the progress towards improving the situation. Specifically, JICA is promoting construction of water supply facilities through financial assistance while strengthening operation and maintenance of the facilities through technical assistance both in urban and rural areas. Particularly in urban water supplies, JICA deals with the improvement of water supply corporations management, mobilizing private sector financing to meet the huge needs for developing water supply facilities.

With regard to the stagnant progress towards improving access to sanitation facilities, JICA is steadily expanding its intervention primarily in Sub-Saharan Africa.

### 3. Mitigation of Water-Related Disasters

Water or the lack of it is also a cause of disasters: the lives and assets of many people are lost to floods, drought, and other water-related disasters around the world. The increase in torrential rains and drought due to climate change has led to growth in the number of water-related disasters. These

disasters represent a major obstacle to achieving sustainable societies and economic development in developing countries. To prevent the hard-earned results of aid by developed countries and efforts at progress by developing countries to be wiped out by a disaster, it is important to build strongly disaster resistant societies in developing countries.

Toward that goal, JICA is providing aid that leverages Japan’s experience with and technology for dealing with flood control and drought management to the maximum. By providing financing cooperation for building anti-disaster structures, Technical Cooperation and other aid, JICA is working to bolster developing countries’ capacity for dealing with floods and other water-related disasters.

## Disaster Risk Reduction

### ● Overview of Issue

The prevalence and damage of disasters has increased in the past 30 years or so, as storm and flood damage, earthquakes, volcanic activities and other disasters occur across the globe almost daily. People in developing countries are particularly vulnerable due to urbanization, which accelerates the concentration of people in cities and delays the provision of social infrastructure. Natural disasters do more than claim life; they directly impact people’s livelihood and aggravate the poverty cycle. Whereas the previous mainstreams of disaster assistance were centered more on structural measures such as construction of dams and levees, there is also a need for compound measures that emphasize nonstructural assistance such as installation of disaster warning systems, creation of hazard maps, and evacuation drills to improve the emergency response of people and society to disasters.

## ● JICA Activities

### 1. Activity Policy

Based on a disaster management cycle (DMC), which entails emergency response, recovery and reconstruction, and preparedness and mitigation activities, JICA leverages its experience to provide assistance in the following areas.

#### 1) Efforts toward a Safe and Secure Society

The risk of natural disasters is increasing in developing countries. JICA makes use of Japan’s leading technical capabilities in disaster prevention to evaluate risk in developing countries, propose measures to mitigate latent risk and preventive measures for conceivable disasters so that people can live with peace-of-mind.

#### 2) Aid for the Formulation of Integrated Disaster Management Plans

JICA provides aid for the formulation of integrated Disaster Risk Management plans and action plans that include identifying disaster-related hazards and risks, improving the disaster management systems and capabilities of administrative institutions, establishing the relevant legal framework, enhancing awareness and strengthening response.

## Investigative Research on “Mainstreaming Disaster Risk Reduction” Aimed at Achieving Sustainable Development

Based on collaboration with external experts, JICA has established an investigative research project on mainstreaming disaster prevention. The project is examining what type of sustainable development can be achieved based on the measures taken for disaster prevention.

“Mainstreaming Disaster Risk Reduction” means to include measures to reduce the risk of a variety of scales of disasters in “every stage of development in every field.” Through this process, JICA seeks to build a disaster-resilient and flexible society, protecting people’s lives from disasters and aiming to achieve sustainable development.

From the latter half of the 1980s, the international community has steadily recognized the importance of disaster risk reduction (DRR) as part of development efforts. This was formally recognized at the 1st World Conference on Disaster Reduction in 1994 with the declaration in the Yokohama Strategy that “Sustainable economic growth and sustainable development cannot be achieved in many countries without adequate measures to reduce disaster losses.” At the following 2nd world conference held in 2005, the announced Hyogo Framework for Action confirmed the importance of effectively including consideration of DRR measures in sustainable development efforts.

In Japan as well, the government has in the past made strategic and continued investment in measures to reduce the risk of disasters. After the mega disasters such as Ise Bay Typhoon (1951) and the Great Hanshin-Awaji Earthquake (1995), the Japanese government has revised its laws and systems based on the country’s experiences with these large-scale

disasters, making continued efforts to get a DRR perspective incorporated in various sectors. These measures have not only contributed to reducing the number of lives lost to disasters, but also to Japan’s economic development.

For example, in Bangladesh it has been reported that considering DRR when building a school has contributed to reducing the number of lives lost during flooding disasters. An emergency shelter function was added during original construction.

However, does such investment in DRR contribute to economic growth? In other words, until now, there has been no quantitative proof of the benefits of investment in DRR. To that end, JICA set up an investigative research project on mainstreaming DRR based on collaboration with external experts. The project has developed a Dynamic Stochastic General Equilibrium (DSGE) model named as the DR<sup>2</sup>AD Model. Using Pakistan as a test case, the project created a simulation using the DR<sup>2</sup>AD Model. The findings showed that investment in DRR not only contributed to economic growth, but also to correcting social disparities. The results of the simulation are outlined on page 87 of the United Nations International Strategy for Disaster Reduction (UNISDR)’s Global Assessment Report on Disaster Risk Reduction. JICA plans to make the model available to the public in future. It is expected that the model will be used for

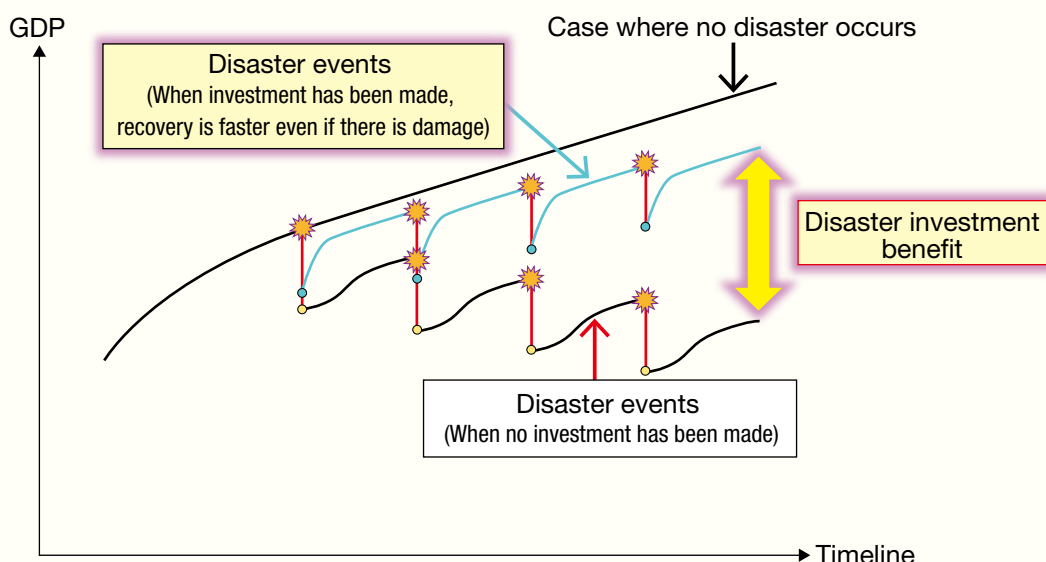
simulations in various countries, leading to further refinement of the model.

Based on the model’s results, JICA is making it a policy to pursue effective investment in DRR and plans include a DRR perspective in all of its development activities. Up to this point, consideration of DRR was mainly included when executing projects in various sectors. For example, when building roads in a region of Cambodia where flood risk is high, the road levels were raised to give them the function of a levee, reducing the risk of a flooding disaster. In future, JICA plans to systematize this “internal packaging of a DRR point of view.” By first determining the disaster risk and incorporating measures as necessary at the start of all projects, JICA intends to mitigate the risk of disaster, and by extension achieve sustainable development in counterparty countries.



The above school in Bangladesh is an example of mainstreaming DRR. The school was built to also function as an emergency shelter in the case of a disaster.

### Basic Conceptualization of Investment in Disaster Prevention





### 3) Assistance with Understanding and Popularization of Disaster Risk Management

Based on Japan's experience, in addition to "public-help," "self-help" by developing countries and "mutual-help" are important. However, community-based measures are especially key in developing countries where the disaster risk management capabilities of administrative institutions remain insufficient. To keep such measures operating on an ongoing basis, JICA directs assistance toward strengthening such capabilities among communities and individuals, as well as reinforcing collaboration by these groups with public organizations.

## 2. Major Activities

JICA collected and analyzed training and other materials used during the Great East Japan Earthquake. Based on that analysis, JICA proposed a new international disaster cooperation approach aimed at creating a "Disaster-Resistant, Flexible Society." The three points of the approach are 1) The ability to recognize risk and take action properly (Risk Literacy), 2) mitigating the risk of disaster by formulating disaster measures for multiple cases and including a disaster prevention perspective of activities in other fields (Redundancy) and 3) continuously upgrading disaster measures to adapt changes in society and scientific verification (KAIZEN).

Among other activities, major flooding occurred in Thailand for more than three month commencing in July 2011. The flooding affected as many as 2.3 million people. Industry, including Japanese-affiliated companies suffered serious damages. JICA quickly dispatched investigative and expert teams and pumper trucks, implementing an emergency response and activities to support recovery and reconstruction.

## Climate Change Measures

### ● Overview of Issue

The issue of climate change has an impact on the entire infrastructure of human life, including the ecosystem, society and the economy. It is a global challenge that poses an enormous threat to equitable economic growth, poverty reduction and human security. Recently, phenomena considered as negative effects of climate change, such as the submersion of coastal lowlands due to rising temperatures and sea levels and increases in extreme weather and natural disasters including droughts, torrential rain, floods, and declines in food production and water resources, have been reported in various places. The impact of climate change is expected to seriously affect our lives more intensively and extensively in the future.

### ● JICA Activities

#### 1. Supporting the Efforts for Reduction of Greenhouse Gases

In recent years, greenhouse gas emissions from developing countries have been increasing rapidly. In order to minimize the negative effects of climate change, it is essential that the

ongoing efforts to reduce emissions of greenhouse gases or "mitigation measures," involve not only developed countries but also developing countries.

For those developing countries faced with large number of issues such as poverty reduction, it is important to take an approach that both reduces greenhouse gas emissions and bears benefits such as improvements in livelihood and economic development. JICA extends cooperation in areas including the introduction of renewable energy, promotion of energy saving, improvement of urban public transportation system, solid waste management, forest management and support for afforestation. JICA also provides extensive support for the formulation of policies and strategies, such as development of national greenhouse gas inventories, establishment of energy-saving laws and low-carbon urban development.

#### 2. To Protect People in Developing Countries from the Negative Impact of Climate Change

Developing countries, and the poor in particular, are extremely vulnerable to the impact of climate change. JICA provides assistance to adaptation measures in accordance with each country's needs. These include developing capacity in shore protection and embankments, construction of drinking water supply facilities, appropriate management of water resources, ecosystem protection, promoting irrigated agriculture and dissemination of drought-resistant agricultural crops.

Furthermore, JICA is formulating and implementing adaptation measures tailored for each region and country based on meteorological observation, climate change prediction and impact evaluation. Such cooperation will become increasingly important in the future.

#### 3. Concurrently Targeting Climate Change and Sustainable Development

The climate change issue is closely related to a variety of issues faced by developing countries in sectors such as energy, transportation, forests, water resources, disaster prevention, agriculture, and health and sanitation. For the developing countries, the climate change issue is inseparable from development.

By drawing on past experiences and achievements in supporting sustainable development, and on the basis of international discussions, JICA provides support for climate change measures in developing countries in a comprehensive way, from the policy level to implementation of projects, research, etc., while collaborating with concerned domestic and international organizations.