

Global Environment

Destroying the Environment to Overcome Poverty The End Result: A Deepening of Poverty

Tropical rain forest in Gunung Halimun Salak National Park, NCIC (Indonesia)

A vicious cycle operates in developing countries: poverty causes people to destroy the very environment that supports their livelihoods, which subjects them to yet deeper poverty. Piece by piece we are losing our irreplaceable natural environment, driving us to the need to realize a sustainable society and development in harmony with the environment. To do its best toward preserving the global environment that surrounds all human life, JICA is carrying out widespread cooperation on environmental issues, with efforts centered on nature conservation, environmental management, water resource and disaster reduction.

Nature Conservation —Efforts to Reduce Deforestation and Expand Forests—

Realizing Coexistence between Humans and Nature, Utilizing a Community-Based Approach

As a result of the large-scale development and massive consumption of natural resources, environmental degradation including the loss of forests, desertification and the extinction of various species is advancing rapidly throughout the world. Rain forests in tropical areas offer a typical example. Forests equivalent to one-third the area of Japan (about 129,000 square kilometers) is said to be lost annually.

Nature maintains balance through close mutual interaction. When a forest is lost, so is the biodiversity there, and any balance in the ecosystem is destroyed. Loss of forests can also lead to erosion and the expansion of degraded lands. Forest destruction does not end with the loss of forests; it extends to wider destruction of the natural environment.

Furthermore, it is believed that about 20% of the world's total green-

house gas emissions originate from deforestation and forest degradation. Reduction of the emissions from forest is a vital issue in the mitigation of climate change.

JICA understands the importance of eliminating the vicious cycle of environmental deterioration and poverty, and achieving the development of a society in harmony with nature. As such, JICA is making efforts to achieve the goal of harmonizing human activities with the natural environment, in an effort to achieve the following three development objectives:

In developing countries many persons live through the effective use of local natural resources (water, soil, trees and fruit, medicinal herbs, plants and animals, aquatic life, and so on). But together with steep population increases comes consumption that exceeds

the recovery capabilities of nature, causing deterioration in the environment that sustains our lives. To preserve nature and protect the livelihoods of local communities, people themselves must take responsibility for maintaining and restoring resources by emphasizing the concept of sustainability. Aiming at both nature conservation and the improvement of living standards, JICA is providing assistance for local resident-driven sustainable production activities, environmental restoration and conservation activities and improvement in local administration services for residents. Further, JICA offers aid for measuring forest resource levels and formulating forest management plans to support the sustainable and planned use of natural resources in developing countries' woodlands.



Climate change impact: JICA's activities in Indonesia

Example

Forest and Environmental Conservation

Brazil

The Project for Utilization of ALOS Images to Support the Protection of the Brazilian Amazon and Combat Against Illegal Deforestation

Efforts to protect the environment by not reducing forests constitute a trend in the world today. Whereas attempts to increase forests through afforestation and reforestation had been the conventional approach, the speed of forest shrinkage has proven overwhelmingly greater, prompting the realization that planting trees cannot be the final solution for global warming.

Monitoring activities of the Brazilian Amazon Forest have been conducted in an attempt to halt the loss of tropical rain forests caused by rampant illegal logging. However, in the Amazon where heavy clouds cover the land for half of the year during the wet season, existing monitoring systems have difficulty observing land surfaces. JICA is therefore trying to introduce a more effective observation system using Japan's Advanced Land Observation Satellite (ALOS), or "Daichi," which can monitor activities despite cloud cover. This is an excellent example of Japan's advanced

satellite technology proving a useful tool in environmental conservation. By continuing appropriate management with the help of "Daichi," the project hopes to conserve forests for generations to come.



Satellite monitoring system

Environmental Management (Antipollution Measures)

—Cooperation toward Developing Countries' Pollution Problems, Drawing on Japan's Experiences—

Developing Countries Gain Power to Prevent Worsening of their own Pollution Problems

Topic Overview

Environmental issues such as water and air pollution, once the problems of developed nations, now extend to developing countries as well, forming an obstacle to the healthy development of economic activities while threatening the health and livelihood of human beings and other life. Addressing environmental issues after damage has occurred to the health of ecosystems or humans is too late. What is needed now is an international approach that emphasizes prevention.

JICA's Initiatives

Environmental management aims to reduce the burden that all human activities place upon the environment, as well as maintain the natural state of the globe and hand down a healthy global environment to future generations. Environmental problems involve many multi-layered yet spatially-scattered factors that disallow quick solutions.

Along with cooperative projects aimed at capacity development (CD) in developing countries, JICA carries out aid that emphasizes creation of practi-

cal environmental management capacity based on environmental science and technology, on participation by diverse development parties, and on stepped cooperation matched to partner countries' development status. Specific efforts are shown below:

1) Atmospheric Environment

JICA's aid in this sector carries the goal of capacity development in developing countries, including capacity for air pollution monitoring and capacity for drafting pollution countermeasure plans. JICA also cooperates on the creation of air pollutant standards.

2) Water Environment

JICA provides aid for policies to prevent pollution of river, wetland, and marine water, such as water environment monitoring capacity, drafting of management plans, and improvement of policy proposal capacity. JICA also carries out support for capacity strengthening and the drafting of plans for treating wastewater from human activity, in projects such as sewer construction.

3) Waste Management

JICA supports the formulation of public investment plans for the collection, transportation, intermediate processing, and final disposal of general and industrial waste, along with transfer of technology to administrative officials. Recently, JICA is also active in support for areas such as promoting waste reduction and recycling, environmental education, and consciousness raising, to help form a recycling-based society through the "3Rs."

4) Other Environmental Management

In addition to the three areas above, JICA enacts support for mine pollution measures, soil pollution measures, acid deposition monitoring, and environmental management planning.

Example

Environmental Management China Project to Promote a Cycle-Based Economy

Contributing to Environmental Conservation in China, a Country with a Large Environ- mental Impact

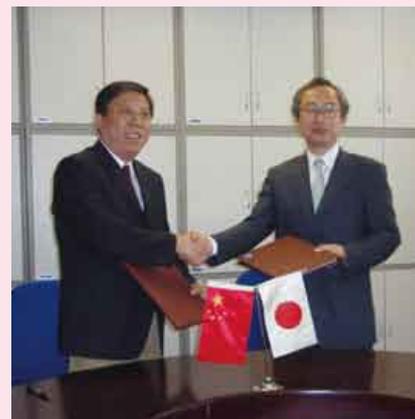
China has displayed rapid economic growth since the end of the 1970s. But unrestrained economic development brought environmental problems to the fore, and absolute shortages of resources, the fragility of natural habitats, and limits to environmental carrying capacity have become major issues facing growth in China. Despite efforts by the Chinese government toward environmental issues, many problems remain at present.

Against this background, JICA initiated aid for a new, large-scale project in China, the Project

to Promote a Cycle-Based Economy. Through personnel education and creation of systems that draw upon Japan's experiences, the project supports the realization of an environmentally-conscious, cycle-based economy which cuts resource consumption and pollution discharge throughout the processes of production, distribution, consumption, disposal, and reuse. Specifically, the project undertakes activities for five years through the Sino-Japan Friendship Centre for Environmental Protection, in areas including 1) promotion of green procurement, corporate environmental auditor systems, and environmental reporting, to raise companies' environmental consciousness; 2) promotion of environmental education to raise citizens' environmental consciousness; 3) promotion of industrial complexes for recycling; and 4) proper waste management.

The world has turned its attention to environmental problems, in apprehension of the possibility that the economic development pushed by

humankind now threatens our very roots. Environmental issues within the vast Chinese landscape have a proportionately large global impact. To contribute to environmental conservation in China, JICA is implementing action driven by long-term, diversified efforts.



A signing ceremony

Water Resources

—With Over One Billion People Lacking Clean Drinking Water, Unsanitary Water Accounts for 80% of Disease in Developing Countries—

JICA's Integrated Water Resource Management Leads to the Supply of Safe Water

Topic Overview

Today a third of the world's population faces water shortages, while over a billion people lack access to safe drinking water. More tragically, every eight seconds a child dies due to waterborne illness. Of the diseases found in developing countries, 80% are said to stem from unsanitary water. Food shortages caused by flooding damage and by unfair water distribution further add to the list of problems related to water resources.

JICA's Initiatives

JICA announced its basic policies for cooperation in the water resource sector at the 3rd World Water Forum held in Japan in 2003, and further reported on results of its international water-related activities at the 4th World Water Forum (2006, Mexico), First Asia-Pacific Water Summit (2007, Japan), and 5th World Water Forum (2009, Turkey).

Addressing water resources requires understanding countries' and regions' specific situations, tailoring aid appropriately. JICA has set the following goals for its concrete activities in this sector:

1) Promotion of Integrated Water Resource Management

JICA actively offers aid with emphasis on integrated water resource management, comprehensively taking in water-related issues including flood control, irrigation, and the water environment. Specifically, JICA supports the development of systems for collection and analysis of water resource information; integrated water resource management planning in watershed areas; and the establishment of watershed management systems.

2) Urban Water Supply

In urban areas, JICA supports the planning of water facility development; the operation, maintenance and management of water supply facilities in order to ensure efficient operation of water projects; and capacity development for addressing non-revenue water and for establishing water tariff collection systems.

3) Rural Water Supply

In rural areas, JICA assists hydro-geological studies for well construction; creation of development plans for wells and other facilities; enhancement of maintenance and manage-

ment systems in existing water supply facilities; and sensitization of hygiene and sanitation activities.

4) Flood Control

JICA supports implementation of balanced flood control measures for the entire watershed from upstream to downstream, considering and combining both structural and non-structural aspects. Projects include facility development planning and strengthening of community organizations with regard to flood prevention, as well as the development of warning systems.

5) Conservation of the Water Environment

From a standpoint of integrated water resource management that makes effective use of limited water resources and promotes sustainable development, JICA provides support for strengthening water environment conservation systems through a range of activities that include establishment of environmental standards; monitoring; control measures for contaminated sources; and IEC (Information, Education and Communication).

Example

Water Resources

Thailand

Integrated Study Project on Hydro-Meteorological Prediction and Adaptation to Climate Change in Thailand (IMPAC-T) (Science and Technology Research Partnership)

Employing Japan's Premier Science and Technology in the Water Resource Sector

Thailand has undergone marked social and economic growth in recent years with development

of the industrial sector and changes in lifestyle causing an increase in water demand. Against this background, water shortages in the dry season, floods in the wet season, unseasonable weather and other problems brought about by climate change create an impact that is forecast to further grow, calling for a strengthening of the capacity to prepare countermeasures against those risks. Toward that goal, the project aims at establishing an integrated system prototype to help decision-making on the adaptation of water-related risks due to the impact of climate change, by means of hydro-meteorological monitoring, hydrological modeling and prediction in-

corporating anthropogenic activities as well as impact and risk assessment.

The world has increasingly high expectations for the role of Japan's science and technology in international cooperation on global environmental issues; even within Japan, attention is paid to the strengthening of science and technology diplomacy and the importance of ODA use. Under these circumstances, JICA is carrying out this project with Kasetsart University in Thailand and the University of Tokyo, in cooperation with the Japan Science and Technology Agency (JST).

Disaster Management

—Disaster Spurs Poverty and Impacts the Livelihood of People in Developing Countries— Improving Disaster Response Capability through Compound Measures Emphasizing Non-Structural Aid

Topic Overview

Wind damage, earthquakes, volcanic activity and floods – disasters like these occur across the globe daily. Particularly in developing countries where social infrastructure is inadequate, disasters have a huge impact on people's livelihoods, aggravating poverty. Whereas conventional disaster-mitigation aid was centered on measures such as construction of dams and levees, there is also a need for compound measures that emphasize “soft” non-structural aid to systematically improve disaster response capacity, including the establishment of disaster warning systems and disaster-resistant communities.

JICA's Initiatives

Based on the disaster management cycle (DMC) of prevention which entails: an immediate emergency response; recovery and reconstruction; and the promotion of further prevention activities, JICA has set the following four comprehensive goals:

1) Efforts toward Socioeconomic Development from a Disaster Readiness Stance

Recognizing that the disaster risk in developing countries hinders anti-poverty measures and socioeconomic development, JICA supports efforts toward sustainable development incorporating measures to both mitigate existing disaster risks and prevent new risks.

2) Support for Understanding Disaster Risk

Employing Japan's leading prowess in disaster mitigation technology, JICA aids activities for understanding disaster risk in developing countries (such as creation of hazard maps) and for the sharing of disaster risk information at all levels of the nation, region, and community.

3) Support for Integrated Disaster Mitigation Planning

JICA supports the creation of integrated disaster mitigation master plans and action plans that incor-

porate factors including the understanding of disaster risk, improvement of administrative bodies' disaster prevention systems and capacity, establishment of relevant legal frameworks, enhancement of disaster mitigation awareness, and strengthening of response capabilities in the event of disaster.

4) Support from the Viewpoint of Securing Human Safety through Community Education

In developing countries where the capability of administrative disaster mitigation systems is inadequate, communities' own disaster measures are vital. Toward that, JICA is aiding direct efforts to strengthen the disaster mitigation capabilities of communities and individuals, as well as aiding disaster mitigation efforts that link administrations to communities and individuals.

Example

Disaster Mitigation Sri Lanka Survey of Plans for Strengthening Disaster Mitigation Capability (Survey-style Technical Cooperation on Development Plans)

Employing Experience and Knowledge from Japan in Disaster Mitigation Systems

The tsunami generated by the December 2004 Indian Ocean earthquake struck over 70% of the Sri Lankan coastline, causing unprecedented damage that included 35,000 dead and 516,000 homeless refugees.

In the aftermath of the tsunami, the government of Sri Lanka undertook disaster mitigation measures, including establishment of a disaster agency that effectively started from zero. For its part, JICA placed focus on the flood and landslide disasters common in Sri Lanka, and provided aid for flood measure planning, construction of warning and evacuation systems, and the enhancement of disaster-related capabilities in rel-

evant agencies. In addition, JICA is working toward the enhancement of everyday disaster awareness, preparing evacuation systems and enacting evacuation training so residents can take appropriate action upon receiving disaster information, all while applying the lessons of the tsunami toward the provision of information to residents via schools, media, relevant agencies, and the prompt issuance of disaster alerts and evacuation orders.

Experience and knowledge to protect life and property from disaster, built up over Japan's long history, is now aiding the preparation of disaster mitigation systems in Sri Lanka.



Hazard mapping to analyze areas at risk of disaster within residential areas

Climate Change Measures —Leaving a Stable Climate for Future Generations—

Promoting Developing Countries' Climate Change Measures through Development Cooperation

Responding to the Uncertainties of Climate Change

Climate change is a phenomenon with a high degree of uncertainty that thwarts accurate predictions of its impact. To address such an uncertain phenomenon, it is vital to control the occurrence and scope of climate change (i.e., mitigation), and in the event of occurrence, to take measures that minimize the extent of damage (i.e., acclimation).

About half of the world's emission of greenhouse gases comes from developing countries, which means that controlling the occurrence and scope of climate change will be difficult unless those countries join developed nations in controlling gas emissions. Further, as the brunt of impact from climate change would be felt by developing countries, and most keenly by their impoverished sectors, actively addressing climate change becomes vital from the standpoint of securing human safety.

Promoting Developing Countries' Climate Change Measures through Development Cooperation

JICA supports climate change measures in developing countries, making full use of Japan's experiences and technology in civilian and other sectors, and drawing upon JICA's own past achievements and results in aiding developing countries. Among mitigation measures, JICA supports aid for greenhouse gas reduction paired with sustainable development in developing countries, such as promotion of reusable energy and projects for forest conservation and reforestation. In addition, to promote the spread of Clean Development Mechanisms (CDMs), JICA carries out group training and CDM registration support for cooperative projects. Instances of JICA-supported energy reuse/reduction and reforestation projects have been registered as CDMs.

As the effects of climate change vary by country, JICA enacts support for

acclimation measures that are matched on scientific grounds to countries' specific situations. JICA supplies aid in both structural and non-structural areas for example, measures for stable supply of clean drinking and agricultural water in regions with worsening water shortages, and measures for mitigation of disaster from floods and high water in regions with frequent floods or a growing risk from rising sea levels.

Measures like these to address climate change are tightly intertwined with many development issues, requiring action based on a long-term vision for sustainable development in developing countries. JICA is supporting creation and enactment of policies for the coexistence of climate change measures and sustainable development in developing countries.

(For details on JICA's climate change measures, see page 16 of the Feature section).

Example

Climate Change Egypt Zafarana Wind Power Plant Project

Making Use of Egypt's Abundant Wind Energy

Demand for electricity is booming in Egypt, with continued demand growth estimated at 5–7% annually. Although thermal power plant construction is proceeding under current power development plans, the country is facing a sudden need to plan for added generation capacity. Yet even as it takes action to secure that needed capacity, Egypt is also making efforts at environmental conservation. To promote the use of new and reusable energy sources, the country has stated a policy of supplying 880 MW of power from those sources by 2010, including 815 MW from wind power.

Situated 220 kilometers southeast of the capital city of Cairo, the project is constructing a new 120 MW wind power plant in the Zafarana district along the Red Sea, which offers stable wind speed and direction. The use of wind power supports both the securing of needed power supply



The Zafarana wind power plant, expected to combine electrical power supply with environmental conservation

capacity and environmental conservation, contributing to lowered air pollution and greenhouse gas emissions by reducing the use of fossil fuels.

In June 2007, the project marked the world's first registration of a large-scale ODA project as a CDM. Its contribution toward the reduction of CO₂ gas emissions is about 250,000 tons annually, roughly equivalent to the amount absorbed by a forest the size of the 23 wards of Tokyo.