

## Part 2

# Evaluations of Individual Projects



# Chapter 1 Overview of Evaluations of Individual Projects in Fiscal 2003

JICA evaluated the following individual projects in fiscal 2003, using a consistent evaluation system from the ex-ante stage to the ex-post stage (Table 2-1 to 2-4). As JICA introduced a system to disclose evaluation results promptly on the website in fiscal 2003, the summaries of results of these evaluations were already available on the website. This chapter presents some cases of evaluation results as examples of ex-ante, mid-term, terminal, and ex-post evaluations.

The objectives of evaluations at each stage are shown below.

- **Ex-ante evaluation:** Examines the relevance of the contents of a project plan. The findings are utilized to obtain the final approval for project implementation.
- **Mid-term evaluation:** Examines if a project is properly producing effects at the mid-term of the project period. The findings are mainly utilized to improve the project strategy.
- **Terminal evaluation:** Examines if a project is properly producing effects right before the termination of the project. The findings are mainly utilized to determine whether the cooperation can be terminated or follow-up should be implemented.
- **Project-level ex-post evaluation:** Examines if the expected effects and impact are produced from a project in a certain time after the project termination. The findings are mainly utilized to effectively implement similar projects in the future.

**Table 2-1** Ex-ante Evaluation (Total 78 Projects)

Project Title	Country/Region	Cooperation Scheme
<b>Asia</b>		
Solid Waste Management Study in Dhaka City	Bangladesh	Development Study
The Integrated Master Plan Study for Dzongkhag-wise Electrification	Bhutan	Development Study
Cambodia-Japan Cooperation Center	Cambodia	Technical Cooperation Project
The Legal and Judicial Development Project (Phase 2)	Cambodia	Technical Cooperation Project
Gender Mainstreaming and Policy Development through Upgrading Information and Research Capacity	Cambodia	Technical Cooperation Project
The Project on Capacity Building for Water Supply System	Cambodia	Technical Cooperation Project
The Project for Human Resource Development of Co-medicals	Cambodia	Technical Cooperation Project
Battambang Agricultural Productivity Enhancement Project	Cambodia	Technical Cooperation Project
The Study on the Construction of Second Mekong Bridge	Cambodia	Development Study
The Feasibility Study on Establishment of Open Paddy Market	Cambodia	Development Study
The Study on Financial System Reform Program for the Western Area	China	Development Study
The Study on Regional Development and Urbanization Program in Western Region	China	Development Study
The Project for Prevention of Diarrheal Diseases in India (Phase 2)	India	Technical Cooperation Project
Technical Cooperation for Community Empowerment Program with Civil Society	Indonesia	Technical Cooperation Project
Training of Agricultural Extension Officers on Improvement of Farm Management	Indonesia	Technical Cooperation Project
Gunung Halimun Salak National Park Management Project	Indonesia	Technical Cooperation Project
The Study on Capacity Development for Jeneberang River Basin Management	Indonesia	Development Study
Preparatory Study Mission for the Development of the Feasibility Study on the Centers of Integrated Logistic Complexes in the Republic of Kazakhstan and Marketing Plan of Activities or Container	Kazakhstan	Development Study
Study on Effective Management of Agriculture and Processing Industry	Kyrgyzstan	Development Study
The Study on Integrated Development Plan of Issyk-Kul Zone	Kyrgyzstan	Development Study
Japanese Technical Cooperation on the Legal and Judicial Development Project	Laos	Technical Cooperation Project
The Upgrading IT Education Project (Information Technology Bridging Course)	Laos	Technical Cooperation Project
Forest Management and Community Support Project	Laos	Technical Cooperation Project
The Master Plan Study on Small Hydropower in Northern Laos	Laos	Development Study
Study for Establishment of Tax Education System	Mongolia	Development Study
Myanmar-Japan Center for Human Resources Development	Myanmar	Technical Cooperation Project
The Community-based Alternative Schooling Project (CASP)	Nepal	Technical Cooperation Project
Agricultural Training and Extension Improvement Project	Nepal	Technical Cooperation Project

Project Title	Country/Region	Cooperation Scheme
The Study on the Solid Waste Management for the Kathmandu Valley	Nepal	Development Study
Tuberculosis Control Project	Pakistan	Technical Cooperation Project
The Study on Drainage Improvement in the Core Area of Metro Manila	Philippines	Development Study
Mannar District Rehabilitation and Reconstruction through Community Approach Project (MANRECAP)	Sri Lanka	Technical Cooperation Project
Project on Assistance of Public Health Insurance Information System Development	Thailand	Technical Cooperation Project
Agricultural Statistics and Economic Analysis Development	Thailand	Technical Cooperation Project
The Capacity Building for Implementing Accounting System (TA for Implementing the Accounting Act)	Thailand	Development Study
The Study on Restructuring of Water Supply System of Tashkent City	Uzbekistan	Development Study
Japanese Technical Cooperation in the Legal and Judicial Field (Phase 3)	Viet Nam	Technical Cooperation Project
Enhancing Capacity of Vietnamese Academy Science and Technology in Water Environment Protection	Viet Nam	Technical Cooperation Project
<b>Latin America</b>		
Natural Environment Conservation Project in the Ignazu Area	Argentina	Technical Cooperation Project
Healthy Municipalities Project in Northeast Brazil	Brazil	Technical Cooperation Project
The Project for Forest Conservation and Environmental Education in the Eastern Amazon	Brazil	Technical Cooperation Project
Improvement of School Education (Child Centered Teaching Project)	Bolivia	Technical Cooperation Project
The Study on Sustainable Technical Development for Rice Cultivation in the Central Area	Cuba	Development Study
Regional Primary Health Service Reinforcement Project	Dominican Republic	Technical Cooperation Project
The Study of the Improvement/Construction of the International Airport	Guatemala	Development Study
Project for Vector Control for Chagas Disease	Honduras	Technical Cooperation Project
The Improvement of Teaching Method in Mathematics	Honduras	Technical Cooperation Project
The Project for the Promotion of Self Management Enterprise of Women in Rural Area	Honduras	Technical Cooperation Project
Project on the Assistance Plan for Small Producers in El Soconusco Region	Mexico	Technical Cooperation Project
The Study for Establishment of Base Maps and Hazard Maps for GIS	Nicaragua	Development Study
Water Quality Monitoring Technique	Panama	Technical Cooperation Project
The Sustainable Agricultural Training and Extension Project in Rural Areas	Panama	Technical Cooperation Project
The Study on the Comprehensive Ports Development Plan	Panama	Development Study
Lima Metropolitan Transportation Planification	Peru	Development Study
The Study on Capacity Development for Water Quality Management in Montevideo City and Metropolitan Area	Uruguay	Development Study
<b>Europe</b>		
The Study on Community-based Eco-tourism Development	Bosnia and Herzegovina	Development Study
The Study for Establishment of Base Maps for GIS	The Former Yugoslav Republic of Macedonia	Development Study
<b>Oceania</b>		
Project for Promotion of Smallholder Rice Production	Papua New Guinea	Technical Cooperation Project
<b>Middle East</b>		
Strengthening of Non-Formal Education Project	Afghanistan	Technical Cooperation Project
Improvement of Science and Mathematics Education in Primary Schools	Egypt	Technical Cooperation Project
Study on Flood and Debris Flow in the Caspian Coastal Area Focusing on the Flood-hit Region in Golestan Province	Iran	Development Study
The Study on the Integrated Tourism Development Plan	Lebanon	Development Study
Study in the Roads Network Development	Oman	Development Study
<b>Africa</b>		
Community-based Basic Education Improvement Project	Ethiopia	Technical Cooperation Project
The West African Center for International Parasite Control Project	Ghana	Technical Cooperation Project
Participatory Forest Resource Management Project in the Transitional Zone of the Republic of Ghana	Ghana	Technical Cooperation Project
The Development Study on the Project of Mechanization of Irrigated Agriculture and Water Management in the Plain of Sonfonia	Guinea	Development Study
Strengthening of Mathematics and Science in Secondary Education (Phase 2)	Kenya	Technical Cooperation Project
The Social Forestry Extension Model Development Project for Semi-arid Areas	Kenya	Technical Cooperation Project
The Study on Rural Development and Watershed Management in the South-West Region of Alaotra	Madagascar	Development Study
The Study on the Strategic Plan of Mineral Resources Development	Mauritania	Development Study
The Basic Education Improvement Program for Rural Area	Morocco	Development Study
School for All	Niger	Technical Cooperation Project
The Study on Fisheries Resources Assessment and Management	Senegal	Development Study
Strengthening of National Bureau of Statistics in Data Providing Service	Tanzania	Technical Cooperation Project

Project Title	Country/Region	Cooperation Scheme
The Study on the Rural Water Supply Project (Phase 2)	Tunisia	Development Study
The Study on Improvement of Post-harvest Processing and Marketing System	Uganda	Development Study
Study on Poverty Eradication through Sustainable Irrigation Project in Eastern Uganda	Uganda	Development Study

**Table 2-2** Mid-term Evaluation (Total 24 Projects)

Asia		
The Project for Technical Service Center for Irrigation System	Cambodia	Technical Cooperation Project
The Sino-Japan Friendship Center for Environmental Protection Project (Phase 3)	China	Technical Cooperation Project
The Model Planning Project for Water-saving Measures on Large-scale Irrigation Scheme	China	Technical Cooperation Project
Integrated Sediment-related Disaster Management Project for Volcanic Areas	Indonesia	Technical Cooperation Project
The Forest Fire Prevention Management Project (Phase 2)	Indonesia	Technical Cooperation Project
Coal Mining Enhancement Project at Ombilin Mines Training College	Indonesia	Technical Cooperation Project
Freshwater Aquaculture Development Project	Indonesia	Technical Cooperation Project
Project for Human Resource Development in Information Technology through Capacity Building of University of Colombo School of Computing	Sri Lanka	Technical Cooperation Project
The Project of Capacity Building on the Development of Information Technology for Education (ITEd)	Thailand	Technical Cooperation Project
Uzbekistan-Japan Center for Human Development	Uzbekistan	Technical Cooperation Project
Coal Mine Firedamp Gas Management Center	Viet Nam	Technical Cooperation Project
Viet Nam-Japan Human Resources Cooperation Center	Viet Nam	Technical Cooperation Project
The Reproductive Health Project in Nghe An Province (Phase 2)	Viet Nam	Technical Cooperation Project
Latin America		
Project on Establishment of Control Capacity for Industrial Wastewater and Waste	Argentina	Technical Cooperation Project
Caribbean Disaster Management	Barbados	Technical Cooperation Project
Project on Productivity Improvement for Enterprises	Costa Rica	Technical Cooperation Project
Project on Improvement of Vocational Training	Ecuador	Technical Cooperation Project
Strengthening Continuing Education in Nursing and Midwifery in the South of the Republic of Paraguay	Paraguay	Technical Cooperation Project
Middle East		
Establishment of Extension System for Artisan Fisheries	Morocco	Technical Cooperation Project
Project for the Establishment of the Vocational Training Center for the Electric and Electronics Industry	Tunisia	Technical Cooperation Project
Establishment of Industrial Automation Technologies Departments in Anatolian Technical High Schools	Turkey	Technical Cooperation Project
Africa		
Project for Capacity Building of ERA Training and Testing Center Alemgena	Ethiopia	Technical Cooperation Project
Strengthening District Health Services in Morogoro Region	Tanzania	Technical Cooperation Project
The Strengthening of Laboratory Systems for HIV/AIDS and TB Control Project	Zambia	Technical Cooperation Project

**Table 2-3** Terminal Evaluation (Total 84 Projects)

Asia		
Project of Human Resources Development in Reproductive Health	Bangladesh	Technical Cooperation Project
Participatory Rural Development Project	Bangladesh	Dispatch of Expert Team
National Tuberculosis Control Project	Cambodia	Technical Cooperation Project
Workshops on Primary Education and Gender Issues	Cambodia	Technical Cooperation Project
Improvement of the Survey and Forecast System on Meteorology and Agro-meteorology	Cambodia	Dispatch of Expert Team
Anhui Primary Health Care Technical Training Center	China	Technical Cooperation Project
Enhancement of Agricultural Extension System Project	China	Technical Cooperation Project
Sino-Japanese Cooperation Center for Soil and Water Conservation	China	Technical Cooperation Project
Energy Conservation Seminar for Senior Managers	China	Technical Cooperation Project
The Mangrove Information Center Project	Indonesia	Technical Cooperation Project
Project on Supporting Industries Development for Casting Technology	Indonesia	Technical Cooperation Project
Detailed Design of Flood Control and Water Resources Development Project in Semarang	Indonesia	Technical Cooperation Project
Malaria Control in Lombok and Sumbawa Islands	Indonesia	Technical Cooperation Project
The Joint Study Project on the Center for Japanese Studies of the University of Indonesia	Indonesia	Research Cooperation
Regional Development Policies for Local Government	Indonesia	Dispatch of Expert Team
The Aquaculture Improvement and Extension Project	Laos	Technical Cooperation Project
Japan-Malaysia Technical Institute: JMTI (Extended)	Malaysia	Technical Cooperation Project
The Project for Strengthening of Food Safety Programme	Malaysia	Technical Cooperation Project

Project Title	Country/Region	Cooperation Scheme
The Project for the Development of Technology related to the Processing of Feed Based on Agro-industrial By-products of Oil Palms Production (Follow-up)	Malaysia	Technical Cooperation Project
Irrigation Technology Centre Project (Phase 2)	Myanmar	Technical Cooperation Project
Disaster Mitigation Support Programme Project	Nepal	Technical Cooperation Project
Community Development and Forest / Watershed Conservation Project (Phase 2)	Nepal	Technical Cooperation Project
The Cebu Socio-economic Empowerment and Development Project	Philippines	Technical Cooperation Project
Promotion of Sericulture on Negros Island	Philippines	Technical Cooperation Project
Responsible Aquaculture Development	Philippines	Technical Cooperation Project
Forest Management	Philippines	Technical Cooperation Project
Technology Development for Electronic Navigational Charts	Philippines	Dispatch of Expert Team
E-Commerce Training Course	Singapore	Technical Cooperation Project
Products Protection Engineering in Logistics	Singapore	Technical Cooperation Project
Digital Television Broadcasting Engineering	Sri Lanka	Technical Cooperation Project
Plant Genetic Resources Conservation and Management	Sri Lanka	Technical Cooperation Project
Quality Improvement of Apparel Products	Sri Lanka	Technical Cooperation Project
The Modernization of Water Management System Project	Thailand	Technical Cooperation Project
Project for Strengthening of National Institute of Health Capabilities for Research and Development on AIDS and Emerging Infectious Diseases	Thailand	Technical Cooperation Project
Pasture Seed Production Development Project In North-East Thailand	Thailand	Technical Cooperation Project
EPI Management and Surveillance Activities of EPI Target Diseases for Lao Health Personnel	Thailand	Technical Cooperation Project
Freshwater Aquaculture	Thailand	Technical Cooperation Project
Strengthening of Food Sanitation	Thailand	Technical Cooperation Project
Advanced Telecommunication Technology	Thailand	Technical Cooperation Project
Dermatology	Thailand	Third-Country Training
The Training Capability Strengthening Project on the Posts and Telecommunications Training Center No.1	Viet Nam	Technical Cooperation Project
Modernization of Industrial Property Administration Project	Viet Nam	Technical Cooperation Project
<b>Latin America</b>		
The Horticulture Development Project	Argentina	Technical Cooperation Project
The Plant Virus Research Project	Argentina	Technical Cooperation Project
The Joint Study on Biological Control of Soil-borne Plant Diseases	Argentina	Research Cooperation
The Artificial Insemination of Cattle	Bolivia	In-Country Training
Brazilian Amazon Forest Research Project (Phase 2)	Brazil	Technical Cooperation Project
The Technological Development Project for Sustainable Agriculture in Eastern Amazonia	Brazil	Technical Cooperation Project
Vegetable Crops Production	Brazil	Technical Cooperation Project
Improvement of Livestock Parasitosis Diagnosis	Brazil	Technical Cooperation Project
Geriatrics	Brazil	Technical Cooperation Project
Course on Domestic Wastewater Treatment Techniques	Brazil	Technical Cooperation Project
Institutional Development of Macro Economic Planning	Brazil	Technical Cooperation Project
Integral Management of Mining Operations (Safeness, Labor Health, Environment and Quality)	Chile	Technical Cooperation Project
Prevention of the Consumption and Control of the Illicit Traffic of Drugs	Chile	Technical Cooperation Project
Medical Education and Training Project	Dominican Republic	Technical Cooperation Project
The Project for the Strengthening of Agricultural Technology Development and Transfer	El Salvador	Technical Cooperation Project
The Project on the Aquaculture Development in Estuary of El Salvador	El Salvador	Technical Cooperation Project
The Agricultural Machinery Test and Evaluation Project	Mexico	Technical Cooperation Project
Reproductive Health—Prevention of Uterine Cervical Cancer	Mexico	Technical Cooperation Project
Mechatronics	Mexico	Technical Cooperation Project
Japan-Paraguay Skill Development Promotion Center (Extended)	Paraguay	Technical Cooperation Project
Mitigation Measures for Natural Disaster Reduction	Peru	Technical Cooperation Project
<b>Europe</b>		
Management Consulting Training Course	Hungary	Technical Cooperation Project
Japanese Management and Productivity Improvement Method	Poland	Technical Cooperation Project
<b>Middle East</b>		
Project for Foreign Trade Training Center	Egypt	Technical Cooperation Project
Livestock Technology	Egypt	Technical Cooperation Project

Project Title	Country/Region	Cooperation Scheme
Rice Milling Processing Technology	Egypt	Technical Cooperation Project
Infectious Disease Control	Egypt	Technical Cooperation Project
The Project of Haraz Agricultural Human Resources Development Center	Iran	Technical Cooperation Project
Medical Equipment Maintenance for Palestine	Jordan	Technical Cooperation Project
The Project for Strengthening of Reproductive Health Education	Tunisia	Technical Cooperation Project
The Tuberculosis Control Project (Phase 3)	Yemen	Technical Cooperation Project

#### Africa

The Infectious Diseases Project at the Noguchi Memorial Institute for Medical Research	Ghana	Technical Cooperation Project
Laboratory Support for Polio Eradication: LAST Polio Project	Ethiopia	Technical Cooperation Project
Promotion of Sustainable Community Based Small-holder Irrigation	Kenya	Dispatch of Expert Team
Project for the Global Improvement for the Mahajanga University Hospital Center	Madagascar	Dispatch of Expert Team
Lobi Horticultural Appropriate Technology Extension Project	Malawi	Dispatch of JOCV Team
The Project on Aquaculture and Technical Development of Malawian Indigenous Species	Malawi	Technical Cooperation Project
High-level Technician (BTS) Training Project at the Senegal-Japan Vocational Training Center	Senegal	Technical Cooperation Project
Sokoine University of Agriculture Centre for Sustainable Rural Development : SCSRD	Tanzania	Technical Cooperation Project
Ethics Training for Public Servants	Tanzania	Technical Cooperation Project
Nakawa Vocational Training Institute Project (Extended)	Uganda	Technical Cooperation Project
Technical and Vocational Training Improvement Project (Aftercare)	Zambia	Technical Cooperation Project

**Table 2-4** Project-level Ex-post Evaluation (Total 25 Projects)

#### Asia

The Project on the Research and Training Center on New Technology for Housing	China	Project-type Technical Cooperation
The Pilot Scheme for Technological Development on the River Information System Project	China	Project-type Technical Cooperation
The Clinical Medical Education Project for the China-Japan Medical Education Center	China	Project-type Technical Cooperation
The Project to Enhance Education and Training of Industrial Safety and Health	Indonesia	Project-type Technical Cooperation
The National Tuberculosis Control Project (Phase 2)	Nepal	Project-type Technical Cooperation
Training Services Enhancement Project for Rural Life Improvement	Philippines	Project-type Technical Cooperation
Quality Improvement of Textile and Clothing Products	Sri Lanka	Project-type Technical Cooperation
Project to Enhance the Capacity of the Faculty of Engineering at Thammasat University	Thailand	Project-type Technical Cooperation
Testing and Inspection Technology Upgrading for Textile and Garment Products	Thailand	Project-type Technical Cooperation
The Productivity Development Project	Thailand	Project-type Technical Cooperation
Training Center for Sewage Works	Thailand	Project-type Technical Cooperation
The Industrial Property Information Center	Thailand	Project-type Technical Cooperation

#### Latin America

Population Statistics Project	Argentina	Project-type Technical Cooperation
The Industrial Energy Conservation Project	Argentina	Project-type Technical Cooperation
The Maternal and Child Health Improvement Project in Northeast Brazil	Brazil	Project-type Technical Cooperation
Brazilian Institute of Quality and Productivity Project	Brazil	Project-type Technical Cooperation
The Project for Development of Small Scale Fisheries	Jamaica	Grant Aid (Basic Design Study)
The Project on the Improvement of Techniques for the Production of Vegetables in Morelos State	Mexico	Project-type Technical Cooperation
The Telecommunications Training Center	Paraguay	Project-type Technical Cooperation
The Rural Development Project in the Region South of Pilar	Paraguay	Project-type Technical Cooperation

#### Middle East

The Higher Institute of Maritime Studies Project	Morocco	Project-type Technical Cooperation
The Project on Improvement of the Technical Education of Electronics in the College of Technology in Riyadh	Saudi Arabia	Project-type Technical Cooperation

#### Africa

Jomo Kenyatta University of Agriculture and Technology (Undergraduate Program): JKUAT	Kenya	Project-type Technical Cooperation
Community Health Sciences Project	Malawi	Project-type Technical Cooperation
The Project for Construction of Pediatric Facilities of Mpiro Central Hospital Community Health Sciences Project	Zimbabwe	Grant Aid (Basic Design Study)

## Example of Ex-ante Evaluation

### I Outline of Project

- Country: Ethiopia
- Project title: The Project on Strengthening Technology Development, Verification, Transfer and Adoption through Farmers Research Groups (FRG)
- Sector: Agriculture
- Cooperation scheme: Technical Cooperation Project
- Division in charge: Rural Development Department, Group 2 (Field Crop Based Farming Area)
- Total cost (Japanese side): 470 million yen
- Period of cooperation: April 2004 to April 2009 (five years)
- Partner country's implementing agency: Ethiopian Agricultural Research Organization (EARO), Melkassa Agricultural Research Center, (MARC), Oromia Agricultural Research Institute (OARI), Adami Tulu Agricultural Research Center (ATARC)
- Supporting organization in Japan: Ministry of Agriculture, Forestry and Fisheries, Tokyo University of Agriculture, Tochigi Prefectural Agricultural Experiment Station



Harvesting by a farmer

#### 1. Outline of Cooperation

This project directly targets farmers in farmers research groups (FRG) (1,000 households participating in 25 FRGs) in East Shoa Zone, Oromia State, Ethiopia. The primary focus of the activity is to strengthen the system in which agricultural techniques developed and improved at the agricultural research centers based on the needs of farmers are verified and disseminated to general farmers by FRG farmers. The activity aims to improve agricultural productivity and farmers' livelihood, which will in turn lead to food security and poverty reduction in the rural area.

#### 2. Necessity and Positioning of Cooperation

##### (1) Current Situation and Problems

Due to excessive cultivation and grazing as well as land devastation and frequent droughts caused by forest destruction, agricultural productivity in Ethiopia is extremely unstable and people often suffer from hunger. The mortality rate is high.

In Ethiopia, 52.3 % of the gross domestic product (GDP) is agriculture, and 85% of the workforce is involved in agriculture. Although the contribution of the agricultural sector to the Ethiopian economy is extremely high, the average annual growth from 1992 to 2002 is as low as 2.8%, whereas that of industry is 6.1% and that of service is 8.3 %. As a result, Ethiopia has been facing a food shortage crisis for many years. To counter this situation, it is very important that small-scale farmers who produce 97% of the total agricultural products adopt improved techniques to increase agricultural productivity.

In order to develop, with the participation of farmers, techniques that can be adopted by farmers, the Ethiopian Agricultural Research Organization (EARO) introduced farmers research groups (FRG) in the late 1990s. However, current FRG activities focus on dissemination of techniques mainly by means of demonstration under a top down approach. Needs rooted in the livelihoods of the farmers cannot be raised and the original purpose has not been achieved yet. In addition, networks among researchers, disseminators, and FRG farmers as well as peripheral farmers are insufficient, and effective diffusion activities have not been implemented, so the technical level of farmers remains low. Therefore improvement of the FRG system, establishment of a technique development system with participation of farmers, and strengthening of a proper technique diffusion system are urgent matters.

##### (2) Positioning Within the National Policies of the Government in the Partner Country

In 1996, the Ethiopian government formulated a food security program to improve and maintain food production. One of the main issues in the program is the development and utilization of new techniques. The Sustainable Development and Poverty Reduction Program issued in 2002 as the Poverty Reduction Strategy Paper (PRSP) specifies poverty reduction as the primary issue of development, and states that food security at the individual household level is the most effective and practical method.

##### (3) Positioning Within Japan's Foreign Aid Policy and JICA Country Program

The JICA Country Program of fiscal 2002 set four priority fields, one of which is agricultural development (food security). This program specifies a second five-year plan in Ethiopia and support for PRSP as priority plans, and states that it is important to secure food in rural areas for poverty reduction given the fact that about half the population in rural areas cannot secure sufficient food.

#### 3. Framework of Cooperation

##### (1) Objectives of Cooperation (Outcomes)

- 1) Objective to be Achieved at the End of Cooperation (project purpose)

The FRG system with participation of farmers is established as the core of research and diffusion.

### [Indicators]

- The number of FRGs acting autonomously becomes 25 in the East Shoa Zone, and the size of participating farmers reaches 1,000 households.
- The productivity and production volume of agricultural and livestock products of farmers participating in the FRGs of the project (the production volumes of meat and unit crop, etc. verified and disseminated by each FRG) improves by 15 %.
- The number of farmers with improved techniques increases around the FRG participant farmers of the project.

### 2) Objectives Expected to be Achieved After the End of Cooperation (overall goal)

- (a) The improved FRG system is applied in other research centers.
- (b) In East Shoa Zone, the agricultural and livestock production volume and livelihoods of the recipient farming households of the FRG activities improve.

### [Indicators]

- (a) The FRG activities supported by research centers throughout the country improve and the number increases compared to that at the time of the base-line study.
- (b-1) In the FRG activity area in East Shoa Zone, the production volume of agricultural and livestock products verified and disseminated by FRGs improve by 15%.
- (b-2) The number of improved livestock, food stock, school enrollment rate increase in the farm households of the FRG activity area.

### (2) Outputs and Activities

Output 1: The guidelines of the FRG system as the research and diffusion methods are formulated.

### [Activities]

Analysis of the conventional FRG activities; improvement of the FRG system; pilot operation and review of the improved FRG system; formulation of the FRG guidelines; holding of seminars and workshops

### [Indicators]

Completion of the FRG guidelines

Output 2: Agricultural techniques (various crop cultivation methods, livestock raising methods, etc.) are improved in line with the needs and the capacity of farmers.

### [Activities]

Analysis of conventional techniques; market research; training for researchers; verification tests (inside and outside the research centers); holding of seminars and workshops

### [Indicators]

The number of improved techniques; farmers' evaluation of techniques

Output 3: Diffusion activities inside the FRG system are improved.

### [Activities]

Deployment of the FRG activities (examination meeting, installation of exhibition farm, study meeting for peripheral farmers from FRG participating farmers, etc.); training for disseminators; holding of seminars and workshops

### [Indicators]

The number of implementations of various training programs such as farming field study meetings; satisfaction of disseminators; FRG and peripheral farmers

### (3) Inputs

#### Japanese side

Long-term experts: 3 experts (chief advisor/system establishment/rural socio-economy, operation adjustment/cultivation/human development, agriculture diffusion/appropriate techniques)

Short-term experts: 2 or 3 experts per year as necessary (livestock techniques, market research, living improvement/agricultural products processing, etc.)

Equipment provision: vehicles, OA devices, material and equipment in support of FRG activities (agricultural machine, equipment for weather forecasting, etc.)

Counterparts training: about 3 trainees per year (provided in Japan or in a third country as necessary)

Local operation expenditure: daily cost, localization cost (verification cost, training cost, system maintenance cost, etc.)

#### Ethiopian side

Facility: provision of a project office and offices for experts

Assignment of counterparts: assignment of counterparts to Japanese experts and their assistants

Treatment of required budgets: administration expense and maintenance and control of equipment

### (4) External Factors

#### 1) Important Assumptions for Achieving the Overall Goal

For the improved FRG system to be utilized in other agricultural research centers, the Oromia Agricultural Development and Agricultural Planning Office and the EARO must take the initiative in aggressively distributing the guidelines and holding seminars and workshops.

Also, to raise the production volume of the agricultural and livestock industry and the livelihood of the beneficiary households of the FRG activities, continuous policy and budgetary supports from the government are essential.

#### 2) Important Assumptions for Achieving the Project Goal

The policies of the research-diffusion-farmers collaboration strategy (REFL) formulated by EARO will not be changed.

As the project area frequently suffers from droughts, countermeasures for mitigating damage from droughts (introduction of small-scale irrigation and drought-resistant variety, etc.) have to be examined. However, in the wake of a serious drought, the degree of the achievement of the goal may be affected.



Lastly, political stability of the government is a condition. In this regard, since the establishment of the new constitution in 1994, except for a border dispute with Eritrea in 1998, democratization has been progressing and there are no factors that could lead to political instability at the moment.

## II Results of Evaluation

### 1. Summary of Evaluation Results

#### (1) Relevance

The significance and relevance in the project implemented by Japan is high on the following grounds: (a) it contributes food self-sufficiency and poverty reduction that are the priority issues in Ethiopia, (b) development of techniques useful to farmers meets the needs of both researchers and farmers, (c) it is consistent with agriculture development and food security, which are priority fields in the JICA Country Program, (d) agricultural productivity can be improved through collaboration with the ongoing JICA's Development Study, Capacity Building Programs for Community-based Irrigation Development in Central Oromia Region of Ethiopia.

#### (2) Effectiveness

The Melkassa Agricultural Research Center (MARC) and the Adami Tulu Agricultural Research Center (ATARC) that are the implementing agencies already have basic policies for implementation related to the promotion of the FRG activities. In past FRG activities, problems were clearly identified when a new variety introduced without sufficient analysis of farmers' needs was not adopted by the farmers. Therefore, achievement of the project purpose can be expected by strengthening participatory agricultural techniques, development methods, and the diffusion system of proper techniques.

In the Melkassa Agricultural Research Center, staff members in charge of the FRG activities are secured and they have the basic abilities to carry out tests and research.

#### (3) Efficiency

Large-scale facility construction and equipment provision are not included in the project plan. Since this cooperation mainly provides human development and system building to improve the support system for farmers and strengthen farmers' organization, instruction by long-term experts is essential. The number of long-term experts is set at three according to the minimum necessity.

All the long-term experts are expected to perform effective surveys and field activities in the target rural area as they have already had experience as JOCVs (Japan Overseas Cooperation Volunteers) or JICA experts in Africa.

If the FRG method and the implementation system are established as a result of the activities, it will be a model to be utilized in research centers across the country.

Accordingly, the efficiency of the inputs for achieving the outcomes of this project is assessed to be high.

#### (4) Impact

The impacts of this project are anticipated as follows.

The utilization of the FRG system across the country as the overall goal of the project is expected to be realized by promoting and strengthening the liaison with both the MARC and ATARC and related agencies such as the Ministry of Agriculture by way of the joint adjustment committee.

It is expected to contribute to improvements in agricultural productivity in the area when the farmers in the East Shoa Zone widely adopt useful agricultural techniques that have been verified and disseminated in the project.

Any negative impacts on the natural environment, gender, and disparity between rich and poor are not expected.

#### (5) Sustainability

Since the federal government and the state government accept the FRG activities as important strategies to be introduced into agricultural research, the possibility that the outcome of the project continues and expands is extremely high. MARC and ATARC are supported by the World Bank and the International Fund for Agricultural Development (IFAD) to improve human and physical capacities. In particular MARC, the core of the project, is very active in research activities and has the intention of expanding diffusion and verification activities, so it is anticipated that they have the capabilities for implementing and continuing the project. In contrast, ATRAC has lower organizational capability compared to MARC and its sustainability is of concern. Therefore, the project places emphasis on developing ATRAC's organizational capability during the implementation period, and on strengthening the liaison between those research centers so that ATRAC can attain support from MARC through the liaison even after the project ends.

Both research centers are implementing the FRG activities already, and they have the financial basis to sustain the activities at the moment; however, in order to sustain the expanded scale of activities under this project, JICA will work on the related agencies to secure the budgets.

### 2. Consideration for Poverty, Gender, Environment, etc.

Ethiopia is one of the five poorest countries in the world, and the GNP per capita is about 100 dollars. This is only 25% or less of the average in Sub-Saharan Africa, and about 42% of the total population is under the food poverty line (2,100 kcal per day). Critical food shortages frequently occur; more than 200,000 victims were generated by the huge famine of 1973 and 1974, and eight million people suffered from hunger in 2000. This project contributes to poverty reduction through agricultural development.

### 3. Lessons Learned from Past Experience

The Project for Strengthening of Agricultural Technology Development and Transfer in the Republic of El Salvador is

an example of Japan's research and diffusion liaison-type project. The researchers and disseminators directly acted in farms and carried out research, technique development, and diffusion at the same time. As a result, the technique was not only developed in line with the needs of farmers, but also verified and diffused through the demonstration at farms efficiently.

In past rural development cooperation, techniques were sometimes introduced without understanding the difference in farmers' needs due to differences in land ownership and size of farms, and as a result, the beneficiaries were limited.

## Example of Mid-term Evaluation

### I Outline of Project

- Country: Dominican Republic
- Project title: The Technology Improvement Project for Irrigated Agriculture
- Sector: Agriculture
- Cooperation scheme: Technical Cooperation Project
- Division in charge: Agricultural Technology Division, Agricultural Development Cooperation Department
- Total cost (at the time of evaluation): 311 million yen
- Period of cooperation: March 1, 2001 to February 28, 2006
- Partner country's implementing organization: The National Water Resources Institute (INDRHI), Secretaria de Estado de Agricultura (SEA)
- Supporting organization in Japan: Ministry of Agriculture, Forestry and Fisheries

### 1. Background of Cooperation

The government of the Dominican Republic (hereinafter referred to as "Dominica") specifies greater agricultural production as a priority policy issue in order to respond to continuous economic development and increasing domestic demand for food as the result of increasing population. A vital policy related to irrigation farming that is provided in the national social economic development strategy promotes rehabilitation, operation, and maintenance of the existing irrigation system and improvements in the water control system by transferring the system to farmers.

Under such policies, the INDRHI worked to improve the capabilities of technicians involved in the operation and maintenance of the irrigation system and strengthen the function of the water control group of beneficiary farmers as part of activities to raise irrigation efficiency in areas where irrigation systems had already been introduced. Due to insufficient INDRHI budgets and inexperience of technicians, satisfactory results were not achieved. In response, the Dominican government requested the Japanese government to provide a technical cooperation project for the purpose of improving the

Therefore, in the base-line study of this project, land ownership of farmers and sizes of farms are investigated as well.

Also, production increases for a single farm product sometimes caused a decrease in the market price, so the trends of the market need to be considered when introducing a farm product.

### 4. Future Evaluation Plan

Mid-term evaluation is scheduled to be implemented around October 2006, terminal evaluation around October 2008, and ex-post evaluation within five years after the end of cooperation.



Testing to establish optimal water control methods (The Technology Improvement Project for Irrigated Agriculture in the Dominican Republic)

technicians' water control and operation and maintenance skills of the irrigation systems, as well as strengthening the water control group of beneficiary farmers. The implementing agency on the Dominican side is the INDRHI, and the cooperation agency is the SEA and the Lincoln Irrigation Cooperation Association. The main site of the project is the INDRHI headquarters, and the sub site is the El Centro Nacional de Capacitación Arrocerá (CENACA) in Bonaó City. The period of cooperation is five years, which began on March 1, 2001.

### 2. Framework of Cooperation

#### (1) Overall Goal

To improve water control, system operation and maintenance, as well as cultivation skills of the irrigation association in the irrigation area, and to transfer the irrigation system smoothly

#### (2) Project Purpose

To improve techniques and knowledge related to water control, system operation and maintenance, and cultivation of the irrigation association, INDRHI and SEA

#### (3) Outputs

Output 1: To find out problems in the model area, and to demonstrate technical improvement plans related to water control, system operation and maintenance, and cultivation at the verification farm

Output 2: To develop training program and teaching material related to water control, system operation and maintenance, and cultivation

Output 3: To cultivate instructors in the components mentioned above

Output 4: To establish and implement training methods

Output 5: To improve training participants' knowledge of water control, system operation and maintenance, and cultivation through these training programs

#### (4) Inputs (at the time of evaluation)

##### Japanese side

- Dispatch of long-term experts: 6 experts
- Dispatch of short-term experts: 3 experts
- Trainees received: 11 people
- Equipment provision

##### Dominican side

- Assignment of counterparts: 14 people
- Land and facility provision
- Project office room (headquarters of INDRHI), office and lodging facility of CENACA, community hall and equipment warehouse of the verification farm
- Local cost burden
- Others

## II Evaluation Team

### Members of evaluation team

Team leader/Supervisor: Takahiro Morita,

Deputy Director, Agricultural Technology Division, Agricultural Development Cooperation Department, JICA

Irrigation agriculture technique: Eisaku Nomura,

Study Planning Specialist, West-Kanto Land Improvement Study Management Office, Kanto Regional Agricultural Administration Office, Ministry of Agriculture Forestry and Fisheries

Cultivation: Yasuhiro Ichihashi,

Agricultural Machine Section Chief, Agricultural Production Section, Production Management and Distribution Department, Chugoku-Shikoku Regional Agricultural Administration Office, Ministry of Agriculture Forestry and Fisheries

Evaluation analysis: Atau Kishinami,

Permanent Expert, International Development Associates, Ltd.

Interpreter: Atsuko Yoshikawa,

Training Coordinator, Japan International Cooperation Center

Period of evaluation: September 8, 2003, to September 26, 2003

Type of evaluation: Mid-term evaluation

## III Results of Evaluation

### 1. Achievement Level

The counterparts have provided training three times since June 2003 with 79 participants (The first training was intended for INDRHI and technicians from the irrigation association, 32 participants; the second training for SEA technicians, 25 participants; the third training for executives of the irrigation association, 22 participants). Major achievements in each area of cooperation are shown below.

#### (1) Water Control

- The observation facility was arranged and observation

continued in order to study the actual situation of water intake at each trunk water channel, branch water channel, and model farm based on the results of the drain line study for present condition in the model irrigation area.

- Proper water control methods were established and instruction was given at the model farm based on the field study results regarding water control at the farm level.
- Training materials were created, and the training was provided for INDRHI, the irrigation association, SEA technicians, and executives of the irrigation association.

#### (2) System Operation and Maintenance

- Field study of the organization structure of the irrigation association, water control conditions, system operation and maintenance conditions, organizational management conditions in the model irrigation area was carried out as well as a hearing investigation to identify problems.
- A seminar on measures for environmental conservation by the irrigation association and local community was held.
- A field survey on the Hima left bank area was conducted, and an improvement plan for system operation and maintenance was examined and implemented.
- A verification farm of about 34 ha was set up in the Hima left bank area based on the examination with related personnel.
- A manual for system operation and maintenance was formulated.
- Training materials were created and training was provided.

#### (3) Cultivation

- The current situation of rice cultivation was studied in the model irrigation area and its peripheral area.
- Production cost was calculated.
- Proper water control method inside the farm was examined.
- Low cost cultivation method was examined.
- Improvement of crop yields by adopting a variety of short transplant growing periods and direct seeding in no-tilling drained paddy field was examined.
- Introduction of mechanized seeding in no-tilling field cultivation was examined.
- A manual for pest control was formulated.
- Training materials were created and training was provided.

### 2. Summary of Evaluation Results

#### (1) Relevance

The relevance is very high.

The 10-year Strategy and Mid-term Development Plan for Agricultural and Livestock Sector formulated by the SEA in 2000 sets out the following four primary policies.

- Induce growth and competitive power
- Improve fairness of rural society
- Reorganize the system of agricultural and livestock industries

d. Promote sustainability in the agricultural environment

In response to these policies, the INDRHI aims to improve water use efficiency and productivity of irrigation agriculture through the rehabilitation and strengthening of operation and maintenance of the existing irrigation system and water control transfer to users. Additionally, in the national assembly, the Water Law (Ley de Aguas), including the legal security of water rights and a change from the traditional water rights to the permitted water rights, is under examination, and the irrigation system control transfer to project beneficiaries is expected to be promoted. This project provides human development necessary for the primary policies in each component of water control, irrigation organization, system operation and maintenance, and cultivation, and is consistent with the policies of INDRHI and SEA.

**(2) Effectiveness**

The effectiveness is high.

Training has been provided three times by the counterparts since June 2003 with 79 participants (The first training was intended for INDRHI and technicians from the irrigation association, 32 participants; the second training for SEA technicians, 25 participants; the third training for executives of the irrigation association, 22 participants). From the questionnaires given to the 79 participants, about 90% respond with high satisfaction regarding the contents of the training, and say that the training program was effective. By the end of the project, training is scheduled to be provided for INDRHI and the irrigation association technicians nine times (190 people), for SEA technicians seven times (150 people), for executives of the irrigation association six times (85 people), and for Nucleo six times (85 people). A follow-up study of the participants will be implemented to find out the situation surrounding technique diffusion. If training proceeds as smoothly as it has been, the project purpose will be achieved.

**(3) Efficiency**

Inputs from the Japanese and the Dominican side have been implemented mostly as planned in terms of quality, quantity, and timing, and the achievement of outcomes in the Project Design Matrix (PDM) has flowed mostly as planned. At the mid-term evaluation stage, outputs other than the fifth criterion have been achieved to some extent. The establishment of a monitoring method in the fifth criterion is being prepared, and there seem to be no problems. Overall, although some equipment for provision was changed and arrangement of the verification farm was delayed due to bad weather, the activities of the project were not greatly affected and the achievements of outputs were judged to be the results of the inputs. However, while the number of counterparts is secured, some are not paid for their work after 2:30 p.m. so improvements in the working conditions are expected.

**(4) Impacts**

The impacts are positive.

At the verification farm, water control, support from the irrigation association, system repair and operation, and cultivation have been implemented under the instruction of the project, and according to the questionnaires, the crop size has increased and the amount of the chemicals and fertilizer has decreased. Setting up the verification farm includes lining branch water channels, averaging farms, separating irrigation canals, and maintaining farm roads. These methods had an influence on the contents of the Programme for the Management of Irrigation Systems by Water Users (PRO-MASIR), which is implemented by a loan from the Inter-American Development Bank (IDB). The maintenance of farm roads and others, which had not been planned in this area were incorporated into the project, resulting in road maintenance on the periphery of the model area. Additionally, the irrigation association for which training was not originally planned asked the project for technical support, thus showing a positive impact of the project.

**(5) Sustainability**

The overall sustainability is about medium level.

1) Organizational Aspect

The organizational sustainability is about medium level.

Both INDRHI and SEA fully understand the importance of the project. However, there are two working systems in INDRHI, and some counterparts are not paid for overtime after 2:30 p.m., which causes problems in the implementation of training. In addition, it is essential to clarify the management system of the implementing agency after the completion of cooperation.

2) Technical Aspect

Technical sustainability is relatively high.

The training materials are made in line with actual situations based on techniques verified at the farms. As the counterparts have already implemented training three times, they enjoy positive evaluations from the participants and are gaining confidence as instructors. To allow the counterparts to continue with their work and carry out continuous technical development, the working and pay systems must be reviewed, as mentioned above.

3) Financial Aspect

The financial sustainability is about medium level.

Although both INDRHI and SEA fully understand the importance of securing budgets for the project, in order to maintain financial sustainability, measures such as (a) reduction of cost for texts, (b) cost burden on training participants, and (c) securing multi financial resources must be taken.

**3. Contributing Factors**

**(1) Factors regarding Planning**

Compared to assistance carried out by IDB or the World Bank related to the irrigation system transfer, this project stresses training activities (human development) in the intel-

lectual infrastructure, such as instructors and training materials based at training facilities. The effects are expected to continue through technology transfer by trained personnel at each work place.

## (2) Factors regarding the Implementation Process

Based on hearings conducted with the experts, the confidential relationship built between the project and the farmers through development of teaching materials by the counterparts, as well as arrangement and management of the verification farm, were all effective in securing the effects of the cooperation. In particular, regarding the management of the verification farm, production activities on the expense of farmers after the basic system arrangement by the project was specified in the contract with the farmers. This agreement is considered to be very effective in verifying and demonstrating techniques that can be diffused to local areas.

## 4. Inhibiting Factors

### (1) Factors regarding Planning

N/A

### (2) Factors regarding the Implementation Process

As mentioned above, because of the two working systems, some counterparts cannot receive training or cannot participate in local training. Also the project director is supposed to formulate the annual activity plan, and examine the progress and important issues as chairperson of the joint adjustment committee; however, it is hard to say that he has been functioning effectively so far. In addition, it rained more than usual from January to March 2003, and the completion of the verification farm was delayed for about one month. Accordingly, the experiment of direct seeding in drained paddy fields that was planned in February was not performed.

## 5. Conclusion

In general, the project is judged to be progressing smoothly in accordance with the PDM and the activity plan. The relevance, effectiveness, and efficiency are high, generating positive impacts, and it is almost certain that the project purpose will be achieved by the completion of the project. However, sustainability can only be judged as medium level at the moment, and to raise sustainability for the future, it is necessary to (a) secure appropriate budgets on the Dominican side, (b) improve the working system of the counterparts, and (c) activate the project implementation system.

## 6. Recommendations

The following were recommended by the joint evaluation team.

### (1) Securing Sustainability

#### a. Appropriate Budgets

Since all expenditures for training are borne by INDRHI

and SEA after the completion of cooperation, it is necessary to increase the burden on the Dominican side gradually. At the same time, it is necessary to examine (a) cost reduction for texts, (b) cost burden on training participants, and (c) more diversified financial resources.

#### b. Improvement of Working System

Some counterparts of INDRHI and SEA are not paid for work after 2:30 p.m., which inhibits the smooth implementation of training.

#### c. Reactivation of the Project Implementation System

In line with the reorganization of INDRHI, the project director position was changed from engineering assistant secretary to the assistant secretary in charge of project implementation. The involvement of the project director on the Dominican side was previously low, so it was recommended to reactivate the project implementation system in a new organization.

## (2) Promoting Collaboration with Other Donors

At present, IDB and the World Bank provide cooperation related to the establishment of an irrigation association and the rehabilitation of irrigation systems, and the Japan Bank for International Cooperation (JBIC) provides cooperation related to the rehabilitation of irrigation systems. Since this is the only project to provide cooperation in human development at the base of a training facility, INDRHI is expected to take the initiative in promoting collaboration with other donors as training proceeds full scale in the future.

## (3) Preparation for Future Planning after the Completion of Cooperation

As the Dominican side should be able to continue training after the completion of cooperation, it is recommended that the Dominican side formulates a future plan after the completion of cooperation, including concrete budgets and personnel assignment by means of terminal evaluation study.

## 7. Lessons Learned

Related to similar projects, it is necessary to discuss financial resources more thoroughly, including charging for training from the planning stage of a project, in order to maintain financial sustainability. When PDM was developed, the setting of indicators was not sufficiently clear so more concrete ones were set after consultation during the mid-term evaluation. For the consistent management of a project using a PDM, sufficient consideration is required when setting indicators and outline of the project in the PDM.

## 8. Follow-up Situation

To follow-up and monitor training effectively, a training effect assessment study is scheduled every year for this project. In this evaluation study, more concrete indicators of the project purpose were attempted, and it is necessary to formulate the study design of the training effect evaluation study.

## Example of Terminal Evaluation

### I Outline of Project

- Country: The Philippines
- Project title: The Cebu Socio-economic Empowerment and Development Project
- Sector: Rural development
- Cooperation scheme: Project-type technical cooperation
- Division in charge: First Technical Cooperation Division, Social Development Cooperation Department
- Total cost (at the time of evaluation): 967 million yen
- Period of cooperation: March 1, 1999 to February 29, 2004
- Partner country's implementing organization: Provincial government of Cebu

#### 1. Background of Cooperation

In the Philippines, a decentralization law was enacted in 1991 and authorities and functions related to rural development have been widely transferred from the central government to local governments. Targeting the central Visayas region that is reportedly the poorest in the country (according to the poverty line set in the country family budget survey in 1994, this area had the lowest annual income of 6,409 pesos in the entire country, whereas the national average was 8,969 pesos), the Central Visayas Regional Development Plan (from 1993 to 1998) was created. However, due to insufficient capacity for embodying the plan, in cooperation with JICA, the Philippines formulated the Cebu Province Comprehensive Development Plan in 1993 with the development goals of healthy and sustainable economic growth, balanced growth, and social development and poverty reduction. Then the government of the Philippines made a request to Japan for project-type technical cooperation aimed at revitalizing the local areas of Cebu Province.

Japan dispatched a project formation study team (July 1 to 16, 1996), a project formulation advisor (October 1, to November 1, 1997), an preliminary study team (September 8 to 25, 1997), and a project design team (January 19 to 29, 1999), and held repeated discussions. Following sign-up and exchange of the records of discussion (R/D) on January 25, 1999, this project-type technical cooperation was started with a five year-plan starting on March 1, 1999.

#### 2. Framework of Cooperation

##### (1) Overall Goal

To encourage decentralization and promote social and economic development in the local areas of Cebu Province

##### (2) Project Purpose

To strengthen the rural development administration and to establish a rural development mechanism that utilizes development resources continuously and effectively together with the community and NGOs



Fishermen working in a seaweed cultivation project (The Cebu Socio-economic Empowerment and Development Project in the Philippines)

### (3) Outputs

- Output 1: To strengthen the planning and coordinating functions of the planning and development department of the provincial government
- Output 2: To develop the administrative methods and procedures for implementing development activities at the town level
- Output 3: To accumulate experiences and know-how of implementation of regional development activities
- Output 4: To establish a knowledge management bank (KMB) in order to share information such as methods, procedures, know-how, and experiences of development activities

### (4) Inputs (including plans partially fixed at the time of evaluation)

#### Japanese side

- Dispatch of long-term experts: 7 people
- Dispatch of short-term experts: 13 people
- Trainees received: 31 people
- Equipment provision
- Administration costs, etc.

#### Philippines side

- Counterparts: 12 people
- Local cost burden

### II Evaluation Team

#### Members of evaluation team

Team leader/Supervisor: Yumiko Tanaka,  
JICA senior advisor

Rural development mechanism: Yoshiaki Nishikawa,  
Professor, Department of Economics, Kurume University

Evaluation planning: Hiroyuki Yakushi,  
First Technical Cooperation Division, Social Development Cooperation Department,  
JICA

Project effect analysis: Michiyuki Kemmotsu,  
Overseas Operation Department, Chuo Kaihatsu Corporation

Period of evaluation: October 5, 2003 to October 16, 2003  
(from September 29 to October 16 for consultant members)

Type of evaluation: Terminal evaluation

### III Results of Evaluation

Achieving decentralization has two aspects: national

authority is transferred and dispersed to local governments in principle and local residents are given the mechanism for improving their actual livelihoods to realize human security in the area (local administration).

The significance of this project is that the implementation of decentralization is promoted by the provincial government, which is the counterpart situated at the median level, from these two different directions through the micro projects.

In the approach to this project, the provincial government provided a place for these two directions to join. In addition, through the organic involvement of the median-level administration (local administration's substantive participation in rural development), the poverty group who could not achieve development only with resources existing in the individual area secured access to regional resources encompassing the entire province, thus paving the way to achieving human security in the area.

### 1. Achievement Level

From the following viewpoints, a rural development mechanism has basically been established in the north part of Cebu Province.

- In this project, 67 regional development activities were identified, formulated, and implemented together with the counterpart, the Planning and Development Department of Cebu Province (PPDO). As result, The PPDO gained the capability to provide places and opportunities for the activities of rural development activities with stakeholders, including towns and communities, as an adjustment organization of rural development (platform function).
- At the stage of formation and implementation of rural development activities, the implementing bodies, such as town governments, and the local resources, such as the provincial governments, central government ministries, NGOs, and universities, created a social network and partnership for working together on the activities.
- During the implementations of the activities, sustainability and dissemination were considered and the outcome has started to emerge.
- The effectiveness of the approach in this project was properly recognized and each actor recognized its own role to play.

### 2. Summary of Evaluation Results

#### (1) Relevance

This project is consistent with the basic policy of the Philippines, namely, transfer of development activities to local administrations specified in the Decentralization Law (1991), thus strengthening local governments' capacities to realize the transfer, and promoting participatory activities. This project is also consistent with "disparity correction" in Japan's Country Assistance Program for the Philippines and "consideration for the capacity building of administrative officers

(especially local areas) and support for vocational training for the poverty group" in the fields of human development and institution building. Thus, the project purpose and overall goals of this project are consistent with the policies of both two countries and the relevance of this project is high.

#### (2) Effectiveness

Achievements of the outcomes are shown below. The outputs created so far (or those being undertaken at the moment that are expected to be created by the end of the project) are all expected to contribute to achieving the project purpose effectively. The effectiveness of the project is secured.

Output 1: Planning and adjusting capabilities (data analysis, consultation, monitoring, evaluation, etc.) of the PPDO have been strengthened.

Output 2: The Administrative methods and procedures for implementing development activities at the town level have been developed.

Output 3: The experiences and know-how of implementation of rural development activities have been accumulated in the local governments and the counterparts.

Output 4: The KMB is being built, and the methods and procedures of development activities are shared at the province, town, and barangay levels through information sharing media such as videos and newspapers.

#### (3) Efficiency

Inputs have been implemented mostly as planned, and effectively utilized to achieve the outputs.

#### (4) Impacts

The NEDA (National Economic and Development Authority) Regional Office No. 7 has positively evaluated the approaches of this project and suggested that the approach and mechanism be applied to the Decentralization Planning Structure Project (DPSP) in Visayas, which is scheduled to take place from 2003 to 2006, thus showing a willingness to apply them in other states as well.

It is too early to determine when the indicators of the overall goal will be achieved; however a mechanism of sustainable rural development has been established and ownership of the rural area is rising through the implementation of as many as 67 regional development activities within the period of cooperation. If this mechanism is sustained and strengthened and the activities continue, the possibility of achieving the overall goal is high.

Also, global issues such as poverty, gender, environment, and community participation are consciously considered in this project. Some positive impacts such as changes in thinking in the provincial government, town government, and community have begun appearing. No negative impacts have appeared.

#### (5) Sustainability

The counterparts and planning and development advisors

of the town's autonomous body properly understand the effectiveness of the rural development mechanism, the concepts of the platform and social network are consolidated, and the established mechanism is expected to be maintained. The governor and mayors have positively evaluated the 67 regional development activities implemented in this project and some of them are already allocated with regular budgets. Their political commitment will further promote sustainability. Though rural development activities will be implemented with the budgets of towns and the provincial government in the future, it can sufficiently be accommodated within budgets at the province and town levels.

### 3. Contributing Factors

#### (1) Factors regarding Planning

The activity plans of this project include utilizing local resources effectively to establish a rural development mechanism in identifying, formulating, and actually implementing many rural development activities, as well as strengthening the capabilities of the counterparts in the process and consequently building collaborative linkage among numerous different organizations. They were extremely effective in achieving the project purpose such as capacity building of the counterparts, changes in the thinking of the governor, mayors, and residents, and establishment of a mechanism.

#### (2) Factors regarding the Implementation Process

- Inputs from Japan and the Philippines were appropriate in both quality and quantity, and were generally well timed.
- The teamwork and trusting relationship formed between experts and counterparts played a vital role in this project, which aims to promote technical transfer while proceeding with operations such as identification, formulation, and implementation of activities.

### 4. Inhibiting Factors

#### (1) Factors regarding Planning

Setting of inputs up to achieving the project purpose and outputs of the activities were relatively appropriate from the beginning, and the effectiveness increased after the improvement of the PDM at mid-term evaluation. However, clear indicators to determine whether the overall goal and project purpose were achieved were not clearly set.

#### (2) Factors regarding the Implementation Process

This project features building collaborative linkages among numerous multi-level organizations in the partner country while carrying out technical transfer to the counterparts. This type of project has a few precedents and the methods have not yet been established. It was thus difficult to develop PDM and a plan of operations by the time of the mid-term evaluation. For these reasons, tests and faults were repeated at the early stage of project operation, which led to effective implementation of the second half of the project on the contrary.

### 5. Conclusion

The project purpose has been mostly achieved, and there are no particular problems with regard to the five evaluation criteria. Consideration is also given to global issues. To apply the approach that was successful in this project to the south part of Cebu Province in the future, capacity building of the counterparts and town governments needs to be further upgraded and the initiative of the PPDO should be demonstrated.

### 6. Recommendations

#### (1) Tasks Prior to Termination of the Project

The following activities must be carried out for better and more secure outputs from this project.

[Activities]

Completion of the KMB, KMB training for main users including the MPDC, completion of population census analysis, smooth reintegration of the Project Management Office (PMO) function to PPDO and preparation necessary for reorganization, follow-up on rural development activities (micro), introduction of approaches for the establishment of a rural development mechanism achieved in this project, creation of videos and holding seminars related to the cases of rural development activities.

#### (2) Tasks after Termination of the Project

After termination of the project, the activities will be operated using the approaches implemented in this project with the development budgets of the province and town. The provincial government has indicated its intention to apply the outputs of the project to the south area, and is examining the establishment of a more effective implementation system including reorganization of the PPDO. The NEDA Regional Office No. 7 also indicated its intention to apply the mechanism established in this project to other provinces as a good practice. For that purpose, the Cebu provincial government requested an advisory-type dispatch of follow-up experts from the evaluation study team.

### 7. Lessons Learned

#### (1) Effectiveness of Local Government-level Approach

The approach implemented in this project to promote decentralization through a local government (province level) as the direct implementing body was effective. The conventional bilateral aid involves the central government as an implementing body and subsequent diffusion is left to the government of the partner country. However, in establishing a rural development mechanism achieved in this project, local governments including the province and towns played important roles.

#### (2) Effectiveness of Rural Development Mechanism in Decentralization

To improve the developing capacity of a local government that has no knowledge of development utilizing local



resources effectively, establishment of a rural development mechanism led by median level actors such as the provincial and town governments proved to be very effective in putting into practice the Decentralization Law enacted at the macro level (central government).

### (3) Change in Recognition at the Town and Community Levels in Establishing the Process of a Rural Development Mechanism

It is significant that the administration organizations at the town and community levels had the chance to recognize the importance of local information, budgets, organized human networks, and accessible development resources through the establishment process of a rural development mechanism with a positive attitude, unlike the conventional passive approach.

### (4) Importance of Implementation

In this project as many as 67 projects were actually implemented, and in the process, the counterparts and the town officials in charge of development started by actually visiting the field and considering “what we want to do and what we can do.” In the beginning, the project did not proceed as planned; however, these processes greatly contributed to improving the developing capacity of the counterparts and establishing a rural development mechanism.

### (5) From Expert Initiative to Counterpart Initiative

As the developing and adjusting capacity of the counterparts was not high at the beginning of the project, the experts led the formulation of activities. However by dividing 16 towns into three phases, the initiative was gradually transferred to the counterparts, and in the third phase the counterparts came to adjust activities, including town consultations, on their own. As a result, the ownership of the counterparts increased, contributing to greater sustainability of the rural development mechanism. This was an effective approach.

### (6) Development and Implementation of Various Development Methods

In the rural development activities implemented with the provincial and town administrations and the communities in

this project, various effective methods were developed and implemented in terms of effective use of resources, securing sustainability, and dissemination promotion. They can be utilized in similar projects. The information related to these methods will be recorded and updated in the KMB to make it possible to share them in the future.

Example: introduction of revolving funds (livestock, vegetable utilization), town linkage projects (rural roads development, training center), dissemination from farmer to farmer (sloping ground agriculture)

### (7) Integration of Rural Development Policy and Plan (institutionalization)

The rural development activities implemented in this project have been integrated in rural development policies and plans in various forms.

Reflection on the Annual Investment Plan of the provincial and town administration, installation of a new department to maintain and operate the KMB (inside the PPDO), allocating regular budgets to the provincial journal “Sugbo,” concluding of the Memorandum of Agreement (MoA) between provincial and town administrations, and among town administrations in accordance to the Decentralization Law, newly allocating regular budgets for 20 artificial insemination specialists, normalization of quarter term monitoring report meetings, making regulations for marine resource control (municipalities of Bogo and Medellin), etc.

### (8) Flexibility of PDM

The rural development mechanism implemented in this project was successfully established owing to flexible application of the PDM created at the beginning of the project. Although it is used as the basis in a practical project like this one, flexibility is essential to change if needed while checking the effectiveness of the activities to achieve the goal.

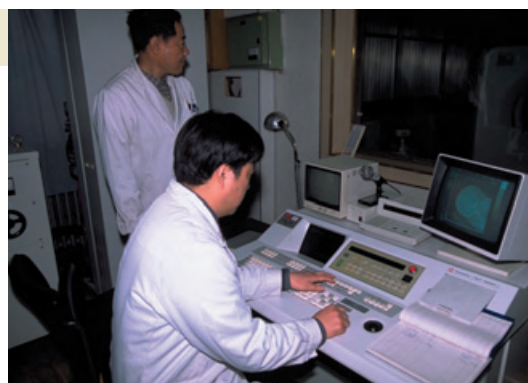
### (9) Preparation for Termination of the Project

In the case of a project whose purpose is consolidating an approach, a phase-out strategy to terminate the project on the Japanese side must be examined for smooth consolidation at least by the mid-term point of the cooperation period.

## Example of Project-level Ex-post Evaluation

### I Outline of Project

- Country: China
- Project title: The Clinical Medical Education Project for the China-Japan Medical Education Center
- Sector: Medical education
- Cooperation scheme: Technical Cooperation Project
- Division in charge: First Medical Cooperation Division, Medical Cooperation Department
- Total cost: 612 million yen
- Period of cooperation: April 26, 1995 to April 25, 2000



Learning how to operate a medical device (The Clinical Medical Education Project for the China-Japan Medical Education Center)

- Partner country's implementing organization: China Medical University (CMU)
- Supporting organization in Japan: Ministry of Health, Labor and Welfare
- Related cooperation project: China-Japan Medical Education Center (November 1989 to November 1994)

## 1. Background of Cooperation

From November 1989 to November 1994, a technical cooperation project aimed at basic medical education, the China-Japan Medical Education Center (SJMEC), was implemented in CMU. Although the project achieved a considerable amount, clinical medicine education was not included, and CMU requested the Japanese government for another technical cooperation project focused on clinical medicine education. Adequacy and necessity of the request was confirmed after the examination. The Clinical Medicine Education Project for the China-Japan Medical Education Center was conducted from April 1995.

## 2. Framework of Cooperation

The project's objective was to contribute to the development of medical education in China by consolidating relevant systems of the clinical medicine education in Japanese at SJMEC.

### (1) Overall Goal

To improve medical technology and quality of research in China through the development of medical education

### (2) Project Purpose

To cultivate competent clinical medicine doctors at SJMEC as a central base of clinical medicine education in Japanese, in China

### (3) Outputs

Output 1: To improve the quality of clinical training in the sixth-grade Japanese language class at SJMEC.

Output 2: To establish an appropriate evaluation method for clinical training in the sixth-grade Japanese language class at SJMEC

Output 3: To establish a medical-internship education system in SJMEC

Output 4: To introduce new medical technologies to education programs for the sixth-grade students of the Japanese language class and interns in SJMEC

Output 5: To cultivate personnel resources capable of educating sixth-grade students of the Japanese language class and interns in SJMEC

### (4) Inputs

#### Japanese side

- Dispatch of long-term experts: 4 people
- Dispatch of short-term experts: 51 people
- Trainees received: 22 people
- Equipment provision

Local operating cost

#### Chinese side

- Counterparts: 43 people
- Land and facility
- Local cost burden

## II Evaluation Team

### Members of evaluation team

Chief evaluator: Meng Weiliang (JP Ruihua EnvironTech Co.)

Assistant: Tian Song (JP Ruihua EnvironTech Co.)

Period of evaluation: November 20, 2003 to January 20, 2004

Type of evaluation: ex-post evaluation by overseas office

## III Results of Evaluation

### 1. Summary of Evaluation Results

#### (1) Impacts

The number of papers presented at domestic medical conventions and published in medical journals was set as the key performance indicator of the overall goal of the project. According to the results of a questionnaire survey, five counterparts (doctors) participated in 11 medical conventions and no papers were published during the project. After the completion of the project, they performed better, participating in 20 medical conventions and publishing nine papers (The questionnaire was supposed to be sent to 22 doctors who attended a special training program in Japan during the project, but since 12 doctors among them are currently studying in Japan, it was sent to 10 doctors, and five responded).

Since the completion of the project, the counterparts have pursued their studies on the basis of past achievements in the project and utilized them in the education field. The 12 doctors are continuing the same study as that of the project under the same academic supervisors in Japan. All the supervisory doctors remaining in China have become pivotal figures in their respective departments, and two have obtained research grants (190,000 RMB and 220,000 RMB respectively) from the National Nature Scientific Fund.

As for unanticipated impacts, an advanced laboratory management system was introduced from Japan, and at the same time the supervisory doctors have familiarized themselves with the latest medical technologies

#### (2) Sustainability

##### 1) Organizational Aspects

SJMEC, formerly an independent institution set up in parallel with CMU, was dissolved after the completion of the project, and CMU incorporated their functions. The clinical medicine education in Japanese (CMEJ) is under the management of the International Exchange Center, Education Administration Department and Students Affairs Department in CMU. As a result, the organization management work of CMU has been sustained on the basis of clinical medicine education in Japanese.

## 2) Financial Aspects

As noted above, CMU is responsible for the management of CMEJ and the development of the personnel resources of supervisory doctors for the Japanese class. Consequently, financial security is dependent upon the extent of support from CMU. In November 2003, the Liaoning Education Agency dispatched an examination team to investigate the quality of CMEJ, and gave its highest mark to overall education including the Japanese class. It proved that CMU has provided continuous financial support to CMEJ. It is not possible to provide actual statistics of the allocated budget put in CMEJ by CMU, because the Japanese class students have the same educational curriculum and clinical training programs as other students.

## 3) Technical Aspects

From the aspects of the language skills and expert knowledge of teachers of CMEJ, the quality of educational materials in Japanese, and the environment of medical education in Japanese, the Liaoning Education Agency has changed the Japanese class in CMU from a six-year course to a seven-year course, which includes a Master's degree program. It is an endorsement of the quality of CMEJ from the government as well as the sustainable impact of the project on CMEJ. Medical technologies continue their remarkable development today, and CMEJ materials have been updated in accordance with the National Education Outline.

## 4) Effects

The counterparts obtained sufficient knowledge and skills regarding clinical medicine from the project, and they have been able to continue their research activities on their own. When the project was completed, most of them were lecturers, and since then, while continuing their research in their respective areas, they have been teaching in the CMEJ class. Based upon the results of the achievement, some obtained Master's degrees, as well as PH.D and post PH.D titles. Seven have been promoted to professional or assistant professor status from the assistant teacher and lecturer levels. Two are in directors' positions. These results, in addition to award-winning status from the National Scientific Fund, reflect the sustainability of the project's effects.

It has had an impact, with its status, on the core of CMEJ. In order to evaluate one of the project effects as the center of CMEJ, a questionnaire survey targeting the former Japanese class students was conducted. Most are now lecturers, the same position as the entry-level counterparts of the project. All the students were able to pass the National Physician Certification Examination during the project, and the graduates from 1996, 1997, and 1998 have since become lecturers. The recruited number of CMEJ students has increased continuously since the completion of the project, reaching 60 in 2003 from 50 at the completion of the project. These facts prove the relatively high sustainability of the project's effect as the center of CMEJ.

## 2. Contributing Factors

### (1) Factors regarding Planning

As a commitment of the Chinese government, detailed provision with respect to required skills for clinicians and assistant clinicians was included in the National Physician Qualification Examination, thus contributing to the evolution of CMEJ.

### (2) Factors regarding the Implementation Process

CMEJ was the top priority project of CMU before the JICA project started. It helped conduct the project smoothly and facilitated its sustainable development after the completion of the project. The SJMEC's integration into CMU resulted in its receiving continuous technical and financial support from CMU.

## 3. Inhibiting Factors

N/A

## 4. Conclusion

After the completion of the project, SMJEC also terminated its role as an independent educational institute, and all the functions, including personnel and education systems, were integrated into CMU. Judging from the subsequent progress of CMEJ, it is obvious that the project significantly enhanced the quality of CMEJ as well as the abilities and skills of supervisory doctors. The textbook compiled for the project has been revised continuously, and the facilities of clinical medicine education helped to improve the overall quality of the clinical training and the affiliated hospital. All of these facts prove that CMEJ offers considerable sustainability in terms of organization, personnel, technology, and finance.

In the three years since the completion of the project, the counterparts have worked on further research based on their achievement during the project, and have used their knowledge in actual clinical training.

## 5. Recommendations

The CMU should put more effort into public relations with respect to the achievements of the project in order to disseminate their findings throughout the health industry so that other medical institutions can also benefit from it. The counterparts should understand advanced management technology in addition to learning overseas medical technologies (from Japan), and carry out management system reforms accordingly. As technical matters are not the only issue that China faces, management reforms should be strengthened.

## 6. Lessons Learned

When drawing up a plan for a project, it is important to adopt an appropriate cooperation method in order to reconcile the project purpose and the long-term goal of the partner country. The project has perfectly satisfied the demand of the part-

ner country in the medical education area through the enhancement of CMEJ. In addition, careful consideration is necessary with respect to the pros and cons of creating an independent entity for a project. What is most important is not to create an independent entity but rather to provide and develop knowledge and technology, thereby promoting development in a particular area. Creating a new entity is not nec-

essarily the best plan to adopt; the ideal way is to develop and enhance the necessary ability of an existing organization in accordance with its capacity. JICA is able to develop and enhance the ability of an existing entity, while it is outside of their control to keep a new entity developed for the project after its completion. The implementing section in China does not necessarily have the capability, either.

## Chapter 2 Synthesis Study of Evaluations (Project-level ex-post evaluations)

This chapter presents the results of the synthesis study on ex-post evaluations of individual projects which were conducted in fiscal 2002 and 2003. Ex-post evaluation mainly examines whether the effect of assistance is sustained and continues to occur after the termination of cooperation. This study was conducted to derive common features from individual evaluation results and compile generalized lessons for easy feedback. The Office of Evaluation, Planning and Coordination Department, an evaluation section of JICA, conducted this study with the participation of external consultants.

### 2-1 Objective, Target and Evaluation Methods

#### (1) Objective

Chapter 1 of Part 2, “Synthesis Study of Evaluation Results,” in the Annual Evaluation Report 2003 comprehensively analyzed primary evaluation results based on terminal evaluation reports of JICA’s Technical Cooperation Projects (hereinafter referred to as “project”). This synthesis study analyzed the project effects at the termination of cooperation between the partner countries and Japan, identified factors that promoted and impeded realization of the effects, and derived lessons for effective and efficient cooperation in the future.

This year, primary evaluation results of the ex-post evaluation reports are comprehensively analyzed using the same synthesis analysis method as last year. This analysis sheds light on general trends of the effects that were realized in a certain period after the project termination, as well as promoting and impeding factors. Furthermore, lessons are derived based on the results of this analysis for future implementation of projects with sustainable effects.

#### (2) Members of the Study

Satoko Miwa,

Director, Office of Evaluation, Planning and Coordination Department, JICA

Kazuaki Sato,

Deputy Director, Office of Evaluation, Planning and Coordination Department, JICA

Toru Kobayakawa,

Evaluation Planning and Coordination Team, Office of Evaluation, Planning and Coordination Department, JICA

Nahoko Yano,

Senior Consultant, Research and Consulting Division, the Japan Research Institute, Limited

Kentaro Sakamoto,

Consultant, Research and Consulting Division, the Japan Research Institute, Limited

#### (3) Projects Subject to the Study

This study targeted 43 ex-post evaluations on individual projects that were conducted by JICA in fiscal 2002 and 2003 (24 evaluations for fiscal 2002 and 19 for fiscal 2003 whose reports were publicized as of April 2004: see Table 2-5 Projects Subject to the Study). Project-level ex-post evaluation was introduced in fiscal 2002 on a trial basis. In principle, JICA overseas offices conduct ex-post evaluation on Technical Cooperation Projects three years after the termination of cooperation using local consultants. Focusing on impact and sustainability of the DAC Five Evaluation Criteria, this evaluation examines whether the effects of the projects are sustained and expanded even after termination of cooperation.

Breakdowns of projects by region and by sector are shown in Figures 2-1 and 2-2, respectively. Since project-level ex-post evaluation has been introduced on a step-by-step basis, these breakdowns are not necessarily consistent with the general trends of JICA projects. Thirty-three projects subject to the study are in Asia, which accounts for 77% of those implemented in the whole area, whereas the number of projects in the Middle East and Africa is limited in this study.

#### (4) Methods of the Synthesis Study

The analysis in this study set the following three questions.

ner country in the medical education area through the enhancement of CMEJ. In addition, careful consideration is necessary with respect to the pros and cons of creating an independent entity for a project. What is most important is not to create an independent entity but rather to provide and develop knowledge and technology, thereby promoting development in a particular area. Creating a new entity is not nec-

essarily the best plan to adopt; the ideal way is to develop and enhance the necessary ability of an existing organization in accordance with its capacity. JICA is able to develop and enhance the ability of an existing entity, while it is outside of their control to keep a new entity developed for the project after its completion. The implementing section in China does not necessarily have the capability, either.

## Chapter 2 Synthesis Study of Evaluations (Project-level ex-post evaluations)

This chapter presents the results of the synthesis study on ex-post evaluations of individual projects which were conducted in fiscal 2002 and 2003. Ex-post evaluation mainly examines whether the effect of assistance is sustained and continues to occur after the termination of cooperation. This study was conducted to derive common features from individual evaluation results and compile generalized lessons for easy feedback. The Office of Evaluation, Planning and Coordination Department, an evaluation section of JICA, conducted this study with the participation of external consultants.

### 2-1 Objective, Target and Evaluation Methods

#### (1) Objective

Chapter 1 of Part 2, “Synthesis Study of Evaluation Results,” in the Annual Evaluation Report 2003 comprehensively analyzed primary evaluation results based on terminal evaluation reports of JICA’s Technical Cooperation Projects (hereinafter referred to as “project”). This synthesis study analyzed the project effects at the termination of cooperation between the partner countries and Japan, identified factors that promoted and impeded realization of the effects, and derived lessons for effective and efficient cooperation in the future.

This year, primary evaluation results of the ex-post evaluation reports are comprehensively analyzed using the same synthesis analysis method as last year. This analysis sheds light on general trends of the effects that were realized in a certain period after the project termination, as well as promoting and impeding factors. Furthermore, lessons are derived based on the results of this analysis for future implementation of projects with sustainable effects.

#### (2) Members of the Study

Satoko Miwa,

Director, Office of Evaluation, Planning and Coordination Department, JICA

Kazuaki Sato,

Deputy Director, Office of Evaluation, Planning and Coordination Department, JICA

Toru Kobayakawa,

Evaluation Planning and Coordination Team, Office of Evaluation, Planning and Coordination Department, JICA

Nahoko Yano,

Senior Consultant, Research and Consulting Division, the Japan Research Institute, Limited

Kentaro Sakamoto,

Consultant, Research and Consulting Division, the Japan Research Institute, Limited

#### (3) Projects Subject to the Study

This study targeted 43 ex-post evaluations on individual projects that were conducted by JICA in fiscal 2002 and 2003 (24 evaluations for fiscal 2002 and 19 for fiscal 2003 whose reports were publicized as of April 2004: see Table 2-5 Projects Subject to the Study). Project-level ex-post evaluation was introduced in fiscal 2002 on a trial basis. In principle, JICA overseas offices conduct ex-post evaluation on Technical Cooperation Projects three years after the termination of cooperation using local consultants. Focusing on impact and sustainability of the DAC Five Evaluation Criteria, this evaluation examines whether the effects of the projects are sustained and expanded even after termination of cooperation.

Breakdowns of projects by region and by sector are shown in Figures 2-1 and 2-2, respectively. Since project-level ex-post evaluation has been introduced on a step-by-step basis, these breakdowns are not necessarily consistent with the general trends of JICA projects. Thirty-three projects subject to the study are in Asia, which accounts for 77% of those implemented in the whole area, whereas the number of projects in the Middle East and Africa is limited in this study.

#### (4) Methods of the Synthesis Study

The analysis in this study set the following three questions.

- Has the impact of a project emerged after termination? Is sustainability secured?
  - What are the major factors that promoted or impeded to the occurrence of effects?
  - What are the major lessons learned that should be considered at the planning and implementation stages of a project for sustainable effects after the termination of cooperation?
- The procedure of analysis and evaluation is described in

detail below.

### 1) Understanding General Trend

In terms of impact and sustainability, criteria used for ex-post evaluation, in the DAC Five Evaluation Criteria, projects were rated on a scale of one to four (details of the criteria for rating are described subsequently at the analysis section). The rating aimed to grasp the general trend seen in primary

**Table 2-5** Projects Subject to the Study

FY	Country	Project Name	
2002	Bangladesh	A Pilot Project on Prevention and Control of Rheumatic Fever and Rheumatic Heart Diseases	
	China	The Research Center for Water Pollution and Water Re-use	
	China	The Laboratory Animal Science and Technology Training Center Project	
	China	The Computer Software Technology Training Center of SSTC	
	China	The Forestry Development Project in Fujian Province (Follow-up)	
	Indonesia	The Veterinary Drug Control Project	
	Indonesia	The Fundamental Technology Transfer Project for Production of Live Attenuate Measles and Poliomyelitis Vaccines	
	Indonesia	The CEVEST Vocational Training Development Project	
	Indonesia	The Modernization of Perumka's Education and Training System in Jabotabek	
	Nepal	The Medical Education Project	
	Nepal	The Project for Natural Water Fisheries Development (Follow-up)	
	Pakistan	The Geoscience Laboratory in the Geological Survey	
	Philippines	The National Center for Transportation Studies	
	Philippines	The National Construction Productivity Development Project	
	Philippines	The Diversified Crops Irrigation Engineering Project (Phase 2)	
	Philippines	Philippine Software Development Institute	
	Thailand	The National Computer Software Training Center	
	Thailand	The Training in the Distribution Automation System	
	Thailand	The Chiang Mai University Plant Biotechnology Research Project	
	Thailand	The Research Project on the Quality Development of Fishery Products	
	Thailand	Development of Mechatronics Engineering Course at Bachelor Degree Level in Pathumwan Technical College	
	Thailand	The Project for Development of Agricultural Research (Phase 2) in Northeast Thailand	
	Egypt	The Cairo University Pediatric Hospital	
	Kenya	The NYS Engineering Institute	
	2003	China	The Project on Research and Training Center on New Technology for Housing
		China	The Pilot Scheme for Technological Development on River Information System Project
		China	The Clinical Medical Education Project for the China-Japan Medical Education Center
Indonesia		The Project to Enhance Education and Training of Industrial Safety and Health	
Nepal		The National Tuberculosis Control Project (Phase 2)	
Philippines		The Training Services Enhancement Project for Rural Life Improvement	
Thailand		The Project to Enhance the Capacity of the Faculty of the Engineering at Thammasat University	
Thailand		The Testing and Inspection Technology Upgrading for Textile and Garment Products	
Thailand		The Productivity Development Project	
Thailand		The Training Center for Sewage Works	
Thailand		The Industrial Property Information Center	
Morocco		The Higher Institute of Maritime Studies Project	
Saudi Arabia		The Project on Improvement of the Technical Education of Electronics in the College of Technology in Riyadh	
Kenya		Jomo Kenyatta University of Agriculture and Technology (Undergraduate Program): JKUAT	
Argentina		Population Statistics Project	
Argentina		The Industrial Energy Conservation Project	
Brazil		Brazilian Institute of Quality and Productivity Project	
Mexico		The Project on the Improvement of Techniques for the Production of Vegetables in Morelos State	
Paraguay		The Rural Development Project in the Region South of Pilar	

\*Summaries of results of these evaluations are available on the JICA website.

evaluation results of the target projects. Impact was comprehensively examined from the standpoint of how much the overall goal was achieved and whether there was any other effects (i.e., ripple effects). Sustainability was also comprehensively examined mainly focusing on sustainability of the project effects, as well as sustainability from technical, organizational, and financial aspects.

It is to be noted that at least three members (two JICA staff members and one external consultant) of the above-mentioned study team read one evaluation report for the classification of primary evaluation results in order to reflect viewpoints of more than one person and avoid evaluators' biased interpretation as much as possible.

## 2) Analysis of Promoting and Impeding Factors

In addition to the rating described above in 1), factors that promoted or impeded the effects were identified and classified based on primary evaluation results. Then, for each classification of factors, the frequency and specific cases were surveyed and reported.

Since ex-post evaluation mainly concerns the period after termination of cooperation, the promoting and impeding factors reported generally are attributed to situations in the partner countries. And this synthesis study basically deals with the promoting and impeding factors that were identified after the termination of cooperation. However, given the objective of this study to draw lessons for better planning and implementation, factors in the planning and implementation stages that were considered to have a close relationship with the factors that emerged after the termination were also analyzed.

## 3) Deriving Lessons

Based on the results of the above analysis, lessons that should be kept in mind for more effective and efficient cooperation were summarized. Although it is the partner country that independently takes responsibility for managing the project after the cooperation period, lessons derived here are not directed toward partner countries but rather toward JICA from

the standpoint of what JICA needs to keep in mind at the planning and implementation stages in order to secure a high level of impact and sustainability even after the termination of cooperation.

## (5) Limitation in Analysis and Evaluation

### 1) Quality of Primary Evaluation

In the course of the analysis on primary evaluation results, some variations in ways of value judgment and description were observed. However, since it is difficult to verify whether the judgment given in the primary evaluation is appropriate from the reports alone, the analysis was made based on the judgment in the primary evaluation. Accordingly, the rating of evaluation results on impact and sustainability and the frequency survey on promoting and impeding factors are reported simply to show the picture of general trends. The actual emphasis of this study is placed on the analysis of factors based on specific cases for drawing lessons.

In addition, in order to prove the credibility of factor analysis concrete cases from primary evaluation reports are introduced. However, as described before, due to the variance in analysis and description of primary evaluation, it is still conceivable that problems were not identified precisely. Therefore, it should be noted that some projects were picked up as problematic cases not necessarily because of the magnitude of the problem. Instead, they are more likely to be projects with well-made primary evaluation that identified and analyzed the problems clearly.

### 2) Timing of Evaluation

As was mentioned before, ex-post evaluation is implemented basically after three years since the cooperation termination. Consequently, the degree of the effects toward the overall goal of the project at the time of evaluation varies from project to project. This is because each project assumes a different timeframe for the accomplishment of the overall goal. Also, in some cases, an unexpected situational change influences the occurrence of effects temporarily, generating

Figure 2-1 Breakdown by Region of the Projects Subject to the Study

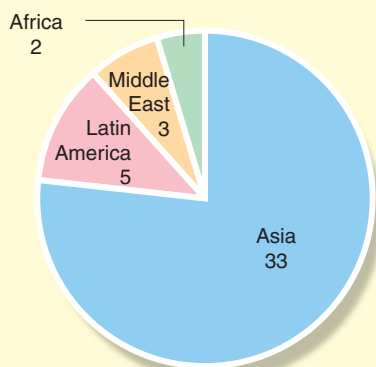
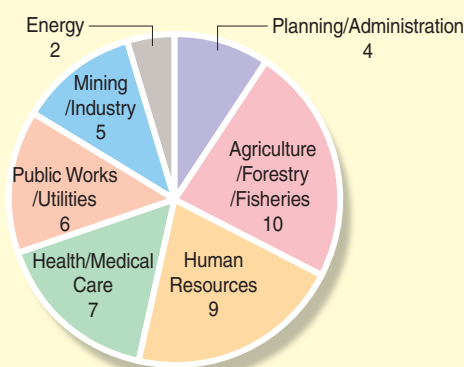


Figure 2-2 Breakdown by Sector of the Projects Subject to the Study



differences in the occurrence. Therefore, it should be noted that the evaluation results shown here are snapshots of the conditions of the target projects at the time of their ex-post evaluations.

## 2-2 Trends of Impact and Sustainability in Primary Evaluation Results

### (1) Impact

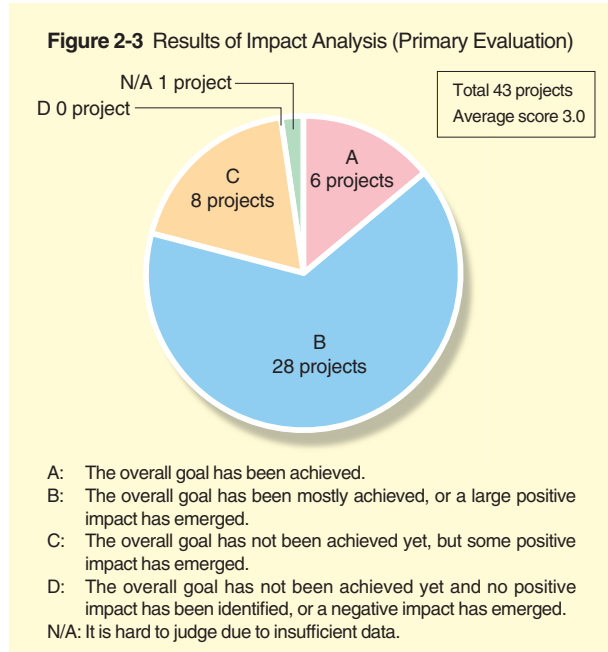
#### 1) General Trend

Impact is examined to find whether the overall goal was accomplished as expected through cooperation and whether there are any unexpected ripple effects. From these two perspectives, primary evaluation results on a scale of 4 grades from A to D were given in the analysis. The result is shown in Figure 2-3. The average score was 3.0 with 4 points given for A, 3 for B, 2 for C, and 1 for D.

#### 2) Achievement of Overall Goal

Projects that were graded A (the overall goal has been achieved) and B (the overall goal has been mostly achieved, or a large positive impact has emerged) constituted nearly 80 % of the results. The projects graded A had considerable positive impacts on end beneficiaries such as local communities. One of those projects is the Project for Natural Water Fisheries Development in Nepal, which aimed to improve the local residents' nutritional intake by promoting aquaculture in the central highland area, such as Pokara in Nepal. The cooperation project resulted in positive effects, specifically, a fourfold increase in fishery production within the targeted area and double the local fish consumption over the past 10 years. Another case is the Pilot Scheme for Technological Development on River Information System Project in China, where water disasters wreak enormous damage every year. The project provided assistance to establish an automatic water disaster prevention system and train flood forecasters. An on-line flood forecasting system was developed and operated in the model area. Also upgraded were capabilities for detailed and fast data acquisition including water level and flow volume as well as for a very precise flood forecasting using a computer. As a result, China was able to provide appropriate flood information and forecasts during the massive flood season from June to September in 1998, thus contributing to a reduction in disaster-related damage and loss caused by floods across the country.

Projects graded B can be roughly classified into those that were on the verge of partly accomplishing the overall goal (from the viewpoint of preset indicators) and expected to accomplish their goal in the near future, and those that have begun to realize the effects of the overall goal level but still require a certain period of time to realize the conditions of overall achievement because the project set the final goal



sometime in the distant future. The Industrial Property Information Center in Thailand is an example of the former, where goals were partly achieved. This project, with the overall goal of improving the center's administration capacity for industrial property rights, established an industrial property information system and transferred technology for operation and management of the system. The speed of patent application process and the degree of user satisfaction were set as indicators to measure the achievement of the overall goal. As far as user satisfaction is concerned, some users said that further improvement of the service was still needed. However, there were good results with regards to the speed of patent application process, and furthermore, the numbers of both patent applications and permissions were increasing. Therefore, the primary evaluation stated that effects had steadily been generated for the achievement of overall goals. An example of the latter situation, where the effects of the overall goal have been realized but a certain period of time was still needed to accomplish the goal, is the Chiang Mai University Plant Biotechnology Research Project in Thailand. This project aimed to improve agricultural productivity in the Northern part of Thailand by improving biotechnology research skills at Chiang Mai University and making the research results more widely available. For some agricultural products, technology for the production of good seedlings was transferred, and this technology spread to the level of farmers, thus demonstrating positive impacts, such as an increase in productivity and a reduction of production costs. Nevertheless, the evaluation results show that a certain period of time is still needed until the technology for other agricultural products spread to farmers.

Projects that are rated C, (the overall goal has not been achieved yet, but some positive impact has emerged) in many



cases experienced changes in the managing system of the counterpart body and social needs for activities in partner countries due to accidental factors that occurred after the termination of cooperation. For example, in the Testing and Inspection Technology Upgrading for Textile and Garment Products in Thailand, there was an organizational change in the implementing organization (i.e., an organization that undertakes the project on the partner country's side; also called a "counterpart organization") after the cooperation was completed, and functions for testing and inspection were transferred to a private institute. At that time transfer of human resources for the counterparts, who were government officials, did not proceed efficiently, thus resulting in a decline in the technical level of testing and inspection in the new entity. Consequently, they temporarily lost the clients' credibility and demand for testing and inspection services decreased. However, it is to be noted that the newly appointed head of the institute has already taken initiatives to improve its testing and inspection systems by dealing with budgetary affairs, securing capable employees, and gaining technical support from the counterpart officials to whom the technology was originally transferred.

### 3) Other Ripple Effects

In addition to achievement of overall goals, various ripple effects as a result of the projects in terms of policy, society, economy, organizations and institutions were reported in the ex-post evaluations.

#### a. Effects on Policy

The project's effects on policy are observed in many cases in which counterparts utilize acquired technology and knowledge in the government of the partner countries by taking part in the process of drafting laws and standards as well as attending various governmental commissions, thus indirectly contributing to better policy formulation. For example, in the National Center for Transportation Studies in the Philippines, whose overall goal was to develop human resources in the transportation sector and improve research activities, people trained in the center were appointed to important posts at governmental institutes and as a result, the knowledge and skills acquired from the training were applied in formulating and improving transportation policies, thus demonstrating ripple effects at the policy formulation level in the transportation sector of the Philippines.

#### b. Effects on Society

Regarding the projects' effects on society, many evaluations refer to changes at the end beneficiary level such as service users and local communities. One example is the Pilot Project on Prevention and Control of Rheumatic Fever and Rheumatic Heart Diseases in Bangladesh, which provided

assistance to early diagnosis and treatment for the prevention of rheumatic fever and rheumatic heart diseases. The Rheumatic Heart Disease Reduction Center, which was a counterpart organization of the project, examined and treated out-patients at a low price or free of charge, thus promoting its use by the poor. Another exemplary project that had a positive impact from the standpoint of social equity by paying attention to the poor was the Medical Education Project in Nepal.

#### c. Effects on the Economic Front

Ripple effects on the economic front included an economic impact at the regional level, an increase in financial revenues in the government, an increase in revenue in implementing organizations (self-generating income, governmental subsidies, etc.), and an income increase at the end beneficiary level. Among these projects was the Research Project on the Quality Development of Fishery Products in Nepal (page 93), whose overall goal to improve the nutritional condition among local residents was achieved with the promotion of aquaculture in the target area. In addition to achievement of the overall goal, considerably increased productivity brought about ripple effects such as increased income of local residents and improved employment.

#### d. Effects on Organizations and Institutions

As ripple effects on organizations and institutions, many evaluations mentioned the expanded position and role of the implementing organization, and strengthened institutions as a result of closer collaboration with related organizations. A case of a project that showed ripple effects on institutions was the National Construction Productivity Development Project in the Philippines. This project provided assistance to develop and disseminate work performance standards so that construction practices that stress quality, construction schedules, and safety can be efficiently undertaken in response to the increase in construction demand in the Philippines. As a result of encouraging positive participation of the construction industry during the project, a cooperative relationship was built



An expert giving technical guidance while examining inpatients (The Pilot Project on Prevention and Control of Rheumatic Fever and Rheumatic Heart Diseases in Bangladesh)



Concerned parties discussing measures for disseminating work performance standards (The National Construction Productivity Development Project in the Philippines)

between the implementing organization (Construction Manpower Development Foundation) and the industry. After the termination of cooperation an accreditation and certification system for product managers and engineers was officially introduced through the cooperative relationship.

## (2) Sustainability

### 1) General Trend

Sustainability is a criterion for asking whether the effects of a project have continued since the termination of cooperation. The analysis on sustainability involves the three aspects of technology, organization, and finance. As in the analysis on impact, sustainability was evaluated using 4 ratings levels (A to D) based on the primary evaluation results. The average score of sustainability was 3.2 when calculated in the same way as impact. Figure 2-4 shows the results.

### 2) Sustainability of Effects

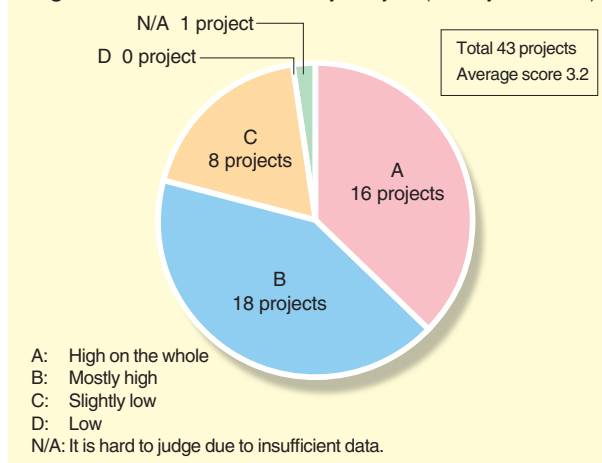
The projects whose sustainability was rated A, or high on the whole, gained generally favorable results in each of three aspects: technology, organization, and finance. In the projects whose effects continue, the technical skills of the implementing organization is sustained and strengthened even after the termination of cooperation. In addition, the organizational authorities and management skills are also sustained and strengthened, and sufficient revenue is secured to sustain and expand the activities in many cases. In particular, those projects that are financially sustainable have a strong tendency to have a high level of sustainability in overall cooperation effects. In most cases, these projects receive a stable budget with policy support, or gain sufficient self-generating revenue resulting from the great need for the services\* provided by the implementing organization. An example is the Fundamental Technology Transfer Project for Production of Live Attenuate Measles and Poliomyelitis Vaccines in Indonesia, which aimed to attenuate measles and poliomyelitis (the leading cause of death for infants under five). In order to increase the self-sufficiency ratio of both vaccines, which had been dependent on imports, the project transferred fundamental tech-

nologies for the production and quality control of those vaccines to the implementing organization (a public biological production company). Consequently, a system to supply all the vaccines needed domestically was appropriately put in place. In addition, since the quality of these vaccines was certified as meeting international standards, such as those developed by WHO and ISO, they were eventually exported to other countries in Asia, Africa, and Latin America. Since revenues from sales have been maintained at a certain level with reputations at home and overseas, and the organization can afford to improve the technical skills, human development and facility maintenance, sustainability has been acknowledged for the time being.

Although projects whose sustainability were rated B, or mostly high, did not come to expand and develop effects due to constraints such as insufficient budgets and human resources, the project activities continued after the termination of cooperation, with a certain level of effects emerging continuously in most cases. The Veterinary Drug Control Project in Indonesia provided cooperation in quality control technology of domestically supplied veterinary drugs to prevent veterinary infectious diseases and promote livestock farming. Subsequently, as the implementing organization faced constraints in terms of budgets and human resources, part of the veterinary drug control activities became unstable. However, most of the other activities continued and the overall effect of supplying good drugs have been sustained.

Among the projects whose cooperative effects were rated C, or slightly low, in many cases the implementing organization experienced trouble in continuing smooth operations due to reorganization and personnel reallocation in the partner's government; or governmental support for the activities in the partner organization declined because of economical stagnation or other external factors. The Testing and Inspection Technology Upgrading for Textile and Garment Products in Thailand previously referred to in the section of Impact (page

**Figure 2-4** Results of Sustainability Analysis (Primary Evaluation)



\* Examples are training, education, medical care, etc. In principle, service demanders pay for the use.

94), is an example of the former case, and the NYS Engineering Institute in Kenya is one of the latter cases.

The NYS Engineering Institute in Kenya is a project that cooperated with a skills training program for youth in the poverty and low income areas, which was implemented by the NYS Engineering Institute from the standpoint of contributing to social and economic development through human resources development. Operations and management systems of the institute were improved and the teaching skills of instructors were upgraded so that the skills training program could be operated by themselves. However, due to a stagnant domestic economy that lasted more than a decade, the budgets from the government became chronically insufficient, thus leading to the suspension of some activities, such as procurement of books and reference literature for revising teaching materials. However, for the past few years, the Kenyan government has allocated a preferential budget to the NYS Engineering Institute with the amount rising every year. Therefore, improvement in financial conditions is expected to help increase sustainability in the future.

### 3) Other Sustainability

Below is the result of a more detailed analysis on sustainability in each project from the technical, organizational, and financial aspects. The sustainability of each of these aspects influences one another, which leads to the sustainability of the overall effects of the cooperation projects.

#### a. Technical Aspects

Sustainability from the technical aspect is generally a question of whether or not the technology transferred through the project has been sustained and developed. Sustainability from the technical aspect was evaluated positively on the whole, compared to sustainability from the other two aspects, and transferred technology has been sustained or developed in about 80 % of the 43 target projects, according to the evaluation reports. Among the projects evaluated positively on sustainability, there are cases where even after the termination of cooperation the implementing organization was working on an upgrade of the service, such as establishment of new training courses, by independently utilizing the transferred techniques; cases where the acquired knowledge and techniques were disseminated to staff that had not directly received technical training during the cooperation; and cases where they independently improved their technical skills by exchanging information with the institutes concerned and attending external training and seminars. For example, the Laboratory Animal Science and Technology Training Center Project in China strengthened the function of the Laboratory Animal Research Institute, an implementing organization, for the purpose of improving techniques for breeding and managing laboratory animals to perform proper animal testing.

Subsequently, this institute exchanged information and carried out joint research using not only the network formed with Japanese experts during the cooperation, but also the cooperative relationship with related organizations in China and overseas research institutes. Sustaining and improving their technical levels through these activities enabled them to continue developing new training curriculum and materials even after termination of cooperation.

Finally, among projects rated at low technical sustainability, there is a case where self-reliant efforts to improve technical skills such as participation in external training and the purchase of materials and equipment were limited due to a lack of budget. In another case, resignation of the counterparts who received technological transfer after the termination of cooperation made it difficult to inherit and propagate the technology within the organization. The NYS Engineering Institute in Kenya, which was mentioned previously, is one example of this budgetary shortfall.

#### b. Organizational Aspects

Organizational and institutional sustainability relates to whether or not the organizational system of the implementing organization, its position within the policy framework, and the institutions related to its activities are stable enough to sustain and develop activities initiated or enhanced by a project. Projects that were found to have no organizational problems for continuing the activities comprised 70 % of the targeted 43 projects. Among them, projects specially valued as having superior organizational sustainability included one where the role of the organization within the national policy was strengthened and one where the counterparts who received technical transfer took root in the implementing organization as core players and engaged in disseminating the techniques.

For example, in the Laboratory Animal Science and Technology Training Center Project in China, which was previously mentioned, in light of the improvements made in research skills at the Laboratory Animal Research Institute, the central government, and Beijing City all acknowledged the implementing organization as the leading institute in the laboratory animal field. As the institute's recognition improved along with its promoted position within the policy, it continuously secured stable support from the government, including allocation of budget. In contrast, in the Project on Research and Training Center on New Technology for Housing in China, despite the fact that the implementing organization was privatized and the allocation of governmental budget terminated, many counterparts remained and sustained the efficient management system of the organization. As a result, they carved out a way to increase self-generating income by charging for providing training programs and renting out their facility. Thanks to financial stabilization, this project achieved

not only organizational sustainability but also high sustainability in overall effects of the project resulting from training housing engineers.

On the other hand, the projects whose organizational and institutional sustainability were evaluated as being low included one with an unclear role for the implementing organization within the policy framework and insufficient budget; one with unstable organization management due to organizational reforms such as privatization; and one with a lack of human resources due to similar reasons. One example is the Project to Enhance Education and Training of Industrial Safety and Health in Indonesia, which assisted in the enhancement of education and training of both laborers and employers in industrial health and safety. After termination of cooperation, problems of human resources and financing hit the counterpart training center because of the organizational reform of the governing ministry. It is reported that the fact that the center's legal position was not established made it difficult to secure human resources and financing. The center has continued its activities with self-generating income by charging for training and the use of the facility, and has started working to establish a legal position in order to secure sustainability.

### c. Financial Aspect

Financial sustainability asks whether the financial condition of the implementing organization is healthy and whether sufficient income is secured in order to sustain and develop the project effects. The projects that were evaluated as having sufficient financial conditions to sustain and develop the outcomes of the project comprised about 70% of the 43 projects. Projects that gained especially good evaluation results were classified into two types, those that enjoyed allocation of sufficient budgets because they are backed up by the government's support, and those that gained sufficient self-generating income by developing a source of demands in the market despite insufficient allocation of the governmental budget. One example of a project with sufficient budget is the Higher Institute of Maritime Studies Project in the Kingdom of Morocco. This project aimed to achieve an improved level of education and training for sailors in order to contribute to the development of Morocco's maritime sector. Morocco is a country surrounded by the sea and greater importance is attached to maritime transportation in international trade. Therefore, the maritime sector is strategically important, and the government allocates sufficient and flexible budget for the Higher Institute of Maritime Studies. The Pilot Scheme for Technological Development on River Information System Project in China, as already mentioned in the section for achievement of overall goals (page 93), is another example of a project that enjoyed sufficient budget from the government based on its importance. As for those projects with sufficient self-generating income, most of them are gaining income by



First domestically produced vaccines (The Fundamental Technology Transfer Project for Production of Live Attenuate Measles and Poliomyelitis Vaccines in Indonesia)

charging for provision of services such as training, as in the aforementioned Project on Research and Training Center on New Technology for Housing in China. Another example is the Fundamental Technology Transfer Project for Production of Live Attenuate Measles and Poliomyelitis Vaccines in Indonesia (page 95) that secures its own strong financial basis by commercializing high quality vaccines for sale at home and abroad.

On the other hand, among projects with low financial sustainability there are two types, those where sufficient budgets are not allocated because national finances are in difficult conditions, and those where self-generating income is not gained because market demands for project activities stagnated due to external factors such as an economic crisis. One example of a project that lacked a sufficient budget is the National Tuberculosis Control Project (Phase 2) in Nepal. This project, whose purpose was to contribute to the improvement of public health and welfare, strengthened institutional capacity for tuberculosis control activities including testing, monitoring, and the distribution of anti-tuberculosis medicine. The project was highly effective in promoting tuberculosis control in Nepal in cooperation with other donors. However, due to the armed conflict with anti-government forces, the government was obliged to cut back on funding in order to concentrate on maintaining security, thus suppressing the level of public health funding in the national finances. Consequently, although tuberculosis control is considered important and is a priority in the governmental budget, it cannot help but be partly dependent on foreign donors, and financial sustainability remains limited.

## 2-3 Analysis of the Promoting and Impeding Factors

As shown in the above section, the occurrence of impact and sustainability varies from project to project and there are a number of factors behind it. These factors can be largely divid-

ed into two types, those that promote the occurrence of the project effect (promoting factors) and those that impede it (impeding factors).

This study, which targets ex-post evaluations undertaken basically three years after the termination of cooperation, analyzed what kind of promoting and impeding factors were involved in the occurrence of project effects during the period between the termination of cooperation and ex-post evaluation. However, some of these factors are believed to have resulted from the planning and implementation stages of the project, even though they emerged after the termination. Therefore these factors will also be analyzed in order to identify factors that need to be taken into consideration during the planning and implementation stages for realizing high impact and sustainability.

## (1) Promoting and Impeding Factors

### 1) General Trend

Promoting and impeding factors that emerged after the termination of cooperation were extracted from the primary evaluation reports and classified into major categories. The results are shown in Figures 2-5 and 2-6. As some evaluations referred to multiple factors in a single project, the numbers in the figures are the total number of references made in the evaluation reports. In addition, some reports of the primary evaluation do not precisely describe promoting and impeding factors or failed to indicate them exhaustively. This analysis included only those factors that were found to be reasonable. Therefore, it should be noted that the number of references in the figures merely indicate the tendencies of promoting and impeding factors.

Among promoting factors classified, more frequently found is the effective organizational management of the implementing organization in terms of activities, budget, human resources, etc. (found in 22 projects); policy support obtained from the government (22 projects); social demand for the activities of the implementing organization (21 projects); and good collaboration and cooperative relationships among related organizations (12 projects). Also there are a certain

number of projects where unexpected external factors, including natural phenomena and domestic and overseas situational changes, worked as promoting factors (six projects).

On the other hand, the leading impeding factors were staff resignations and stagnation of activities due to management problems in the implementing organization (19 projects); negative impact from the government's policy changes such as reorganization (16 projects); and unexpected external factors, such as economic crises and stagnation leading to fewer effects of the project (13 projects). The decline of social demand for the activities of the implementing organization (eight projects) and inadequate collaboration among related organizations (seven projects) were also found.

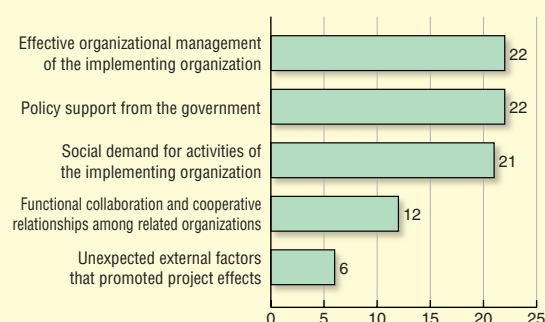
## 2) Major Promoting and Impeding Factors

### a. Organizational Management in the Implementing Organization

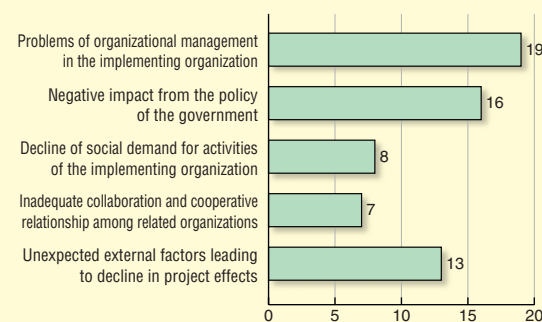
- **Proper management in the implementing organization, a main recipient of technical transfer, such as in human resources and finances even after the termination of cooperation tends to encourage staff satisfaction and motivation to work, dissemination of transferred techniques within the organization, and efforts to secure financial resources, which lead to more project effects.**

Since many of the implementing organizations belong to the public sector, they cannot necessarily make their own decisions about their entire management structures, including human resources and finance. However, outflow of human resources, personnel relocation, a lack of management strategies including marketing and public relations, and unstable budgetary allocation are impeding factors common to many projects. Therefore, in order to secure the continuity of activities as well as to sustain and expand project effects, it is crucial to come up with various devices for organizational management even if only limited discretion is given to implementing organizations. For example, the Project to Enhance the Capacity of the Faculty of Engineering at Thammasat University in Thailand introduced an incentive system for research activities and provided researchers who completed

**Figure 2-5** Promoting Factors that Emerged after the Termination of Cooperation



**Figure 2-6** Impeding Factors that Emerged after the Termination of Cooperation



papers with assistance of 10,000-17,000 bhat (about 30,000-50,000 Japanese yen) monthly, depending on the qualities. In addition, a system to commend excellent papers was introduced to provide incentives for researchers.

The Population Statistics Project in the Argentine Republic established an information system and trained staff in charge of operation of the system in order to equip them with population statistics information that will be the basis for policy making in social welfare and public health. Since the National Institute of Statistics and Census, the implementing organization in the project, had high organizational management capacity, most of the trained staff members stayed in the organization and provided training to the newly employed staff, which translates as secondary technical transfer, thus contributing to expansion of the project effects.

In addition, the results of this analysis show that organizational management is crucial in implementing training courses in the field of information technology (IT) where technology advances rapidly and public needs change remarkably. For example, in the National Computer Software Training Center in Thailand, which runs training courses for IT professionals, the organizational management system of the implementing organization was weak and the organizational strategy was not necessarily sufficient. It is reported that in particular the center lost human resources due to dissatisfaction with the personnel policy, including the pay system. Furthermore, inadequate advertising activities and market research for recruiting trainees, and insufficient self-evaluation of the training activities, for instance with respect to instructors' performance, apparently caused a decline in the number of trainees.

● **In many cases where the implementing organization continues to be properly managed after the termination of cooperation, the organization originally had a strong organizational basis, high organizational management capacity, and quality human resources even before the cooperation begins.**

Among promoting factors reported were the counterparts' original excellent technical skills and desire to work, a high percentage of quality staff, and the organization's original positive name recognition and trust from the public. For example, in the Fundamental Technology Transfer Project for Production of Live Attenuate Measles and Poliomyelitis Vaccines in Indonesia (page 95), the fact that the implementing organization had excellent organizational management capacity and competent staff was reported as a factor that led to the development of project effects. It was reported that technical transfer was undertaken quite efficiently, given that the internal staff training system in the organization had been already well equipped.

● **If not only new techniques but also organizational man-**

**agement know-how are transferred when necessary in the project implementation stage, impact and sustainability of the effects tend to be promoted.**

If the management capacity of the implementing organization is not sufficient, it is important to include managerial aspects such as personnel and finance in the scope of technical assistance. In addition, it is useful to include market research and sales promotion in the scope if self-generating income needs to be secured. In the Geosciences Laboratory in the Geological Survey in Pakistan, mineral exploration techniques were originally at the core of technical transfer. However, a wide range of management know-how, such as the principles of punctuality and putting things in order, budget allocation methods, the practical use of IT, and personnel allocation (like the ratio of researchers) were additionally introduced by Japanese experts. It is reported that these transfers of know-how changed counterparts' consciousness and contributed to enhanced organizational management.

b. Policy of Governing Organization

● **If there exists a regulatory authority exercising jurisdiction over the implementing organization, in some cases their policy decision making becomes the promoting factor for sustainability of the project effects. In concrete terms, the authority's securing sufficient budget allocation, strengthening the position of the implementing organization, and implementing policies relevant to the project activities are considered to be these factors.**

Most of the implementing organizations are public and many implement activities based on the policy framework set by the government\*. In this case, in order to expand effects of the project and secure their sustainability, policy support including the stable allocation of the budget from jurisdictional authorities is important. For example, as mentioned in the section of financial sustainability (page 97), in both the Higher Institute of Maritime Studies Project in the Kingdom of Morocco and the Pilot Scheme for Technological Development on River Information System Project in China, the fact that the governments allocated sufficient budgets based on the strategic priorities of the implementing organizations' activities was an important promoting factor.

There are also cases where organizational sustainability was enhanced by strengthening and authorizing the position of the implementing organization. For example, as mentioned in the discussion on sustainability, in the Laboratory Animal Science and Technology Training Center Project in China (page 96), once the research skills of the implementing organization, the Laboratory Animal Research Institute, improved, the central government and the city of Beijing approved the institute as the leading institute in the laboratory animal field. The position of the organization in the policies was enhanced

\* There is a certain number of projects that set up governmental ministries as implementing organizations.

and the organization strengthened its reputation as a training institute.

There are other cases where the effects of projects were multiplied due to formulation and implementation of policy that was closely related to the activities of the implementing organizations. For example, in the Project on Research and Training Center on New Technology for Housing in China technical assistance was provided to promote research development and education for engineers, aiming to improve skills in planning, designing, and managing construction so that good quality collective housing be built in China. After the termination of cooperation the Chinese government officially issued Code for Design of Residential Buildings for the Elderly as the national standard based on the research results of the center, thus demonstrating the project effects at the level of end beneficiaries. In addition, the introduction of the standard increased the number of applicants for related training programs and consequently boosted the demand for the center's activities. This is a case where implementing the relevant policy in accordance with the project purposes increased the expected role of the implementing organization and thus pushed forward the emergence of impacts.

Meanwhile, there are projects where the governing authority's policy impedes the emergence of effects and has a negative impact on it. However, many of these policies do not mean a change in policy priorities, but rather stem from reorganizations of the entire government, such as privatization, or from unavoidable fluctuations of budget allocations. The Project to Enhance Education and Training of Industrial Safety and Health in Indonesia, which was previously mentioned in the section of organizational sustainability (page 97), is an example where reorganization impeded the project effects.

In the same context, in some countries, especially Indonesia, the Philippines, Thailand and Pakistan, the governments' policy to curb new hires made it difficult to retain sufficient personnel for expanding activities or securing sustainability.

● **It is necessary to collect sufficient information about pol-**



Training building of the Higher Institute of Maritime Studies (The Higher Institute of Maritime Studies Project in the Kingdom of Morocco)

**icy frameworks at the project planning stage to analyze if stable policy support is available after the termination of cooperation.**

Though some projects gain stable policy supports from the governments based on the fact that the project turned out to be successful in generating impacts, in most cases the possibility of having stable policy supports can be predicted to some extent during the planning stage of cooperation. Especially in those cases where the policy framework is prioritized according to the social demands and the ownership of its implementation is high, the possibility that governmental support continues is high. For example, in the previously mentioned Higher Institute of Maritime Studies Project in the Kingdom of Morocco, as the international treaty to regulate sailors' qualifications came into effect, it was necessary to secure the training content in line with the new treaty in Morocco. If the compliance with the treaty was not confirmed and, for example, a qualification was judged as not fulfilling the security standards in the inspections at foreign harbors, various penalties including vetoing entry to the port could be applied. As a result, observance of the treaty was a priority of the government of Morocco. Also, as the execution of the treaty will be periodically checked by the International Maritime Organization even after ratification, the project gains continuous governmental support in the aspect of running budgetary measures after the termination of cooperation.

● **In order to gain stable governmental support, it is important to proactively reach out to and work on the governing authorities during the project implementation stage, in addition to the above-mentioned ex-ante analysis at the planning stage.**

It has already been stated that receiving continuous policy support from the governing authority is an important factor that contributes to the promotion of the project effects. In order to gain such support, an approach to the policy level during the implementation stage could be effective. An example of this is the National Tuberculosis Control Project (Phase 2) in Nepal, which directly approached the national tuberculosis control program, transferred techniques and carried out enlightenment activities not only for researchers but also for government officers in charge of policy-making. Consequently, in addition to improved policy implementation capacity, deepened understandings of the government over tuberculosis from not only the policy aspects but the sociocultural aspects have led to keeping the priority level of the tuberculosis control high among the national agenda.

c. Demand for the Activities of the Implementing Organization

● **In cases where the organization carries out activities to provide a certain public service, high demand at the end beneficiary level not only ensures overall impact of the**

**project, but also leads to sufficient self-generating income, thus contributing to sustainability.**

Although many of the implementing organizations are public, some of them carry out activities that directly serve society (e.g., by providing training programs etc.) from which they gain revenues. Continuous high demand for this kind of service notably leads to an increase in self-generating income and contribute to the promotion of sustainability\*. For example, the Productivity Development Project in Thailand worked to improve capacities related to consulting skills and human resources development at the Thailand Productivity Institute, the implementing organization, for the purpose of improving productivity and strengthening competitiveness of small and medium-sized enterprises in Thailand. In this institute, where the governmental subsidy and its self-generating income are the main financial resources, consultation skills improved and the human resources development program succeeded, resulting in an increased use of their services by private firms. Though the governmental subsidy is decreasing, the institute has gained more self-generating income from private firms to cover the loss and high financial sustainability has been secured.

On the other hand, in some projects the implementing organization could not sufficiently meet changing end-users' needs and as a result demand for the implementing organizations' services declined, which impeded the further occurrence of effects. For example, the Philippine Software Development Institute developed an IT training program and established an operation system for the purpose of educating IT professionals. However, it was reported that the number of trainees was in decline and training facilities needed to be updated promptly in response to the changing needs of trainees following technical advance.

**● In order to secure demand for the activities of the implementing organizations, it is important to understand the needs at the end beneficiary level and consider the provision of easy-to-use and easily acceptable services in the planning and implementation stages of projects.**

By paying attention to end beneficiary level needs in the planning and implementing stage, activities that identify potential demand and continued support toward the services of the implementing organization will be secured. For example, in three of the target projects, the fact that the implementing organizations were in locations accessible to the target groups helped increase their demand. Locations of the implementing organizations in an industrial area that is accessible to private firms in the CEVEST Vocational Training Development Project in Indonesia, in a government office quarter accessible to government officials in the National Computer Software Training Center in Thailand, and at the heart of the city that is



Box packing at a tomato pilot farm (The Project on the Improvement of Techniques for the Production of Vegetables in Morelos State in Mexico)

accessible to students in the Industrial Polytechnic Expansion Plan in Thailand, all were believed to have lead to attracting trainees afterwards.

The Project on the Improvement of Techniques for the Production of Vegetables in Morelos State in Mexico aimed to improve existing techniques, and verify and disseminate new ones by developing capacity for vegetable production at the experimental station of a research institute, which was the implementing organization. As a result, the project had a large impact such as in the successful dissemination to farmers of improved techniques of some varieties. In addition, as a ripple effect of the project, the attitudes of researchers at the experimental station changed and they became conscious of the needs of farmers and the market. In other words, as a result of the researchers' deep understanding of the project's basic policy, that is, development of "proper and practical" vegetable production techniques, researchers came to pay attention to the farmers' needs and market trends in undertaking research and development. Consequently, communication between researchers from the experimental station and farmers became close, and farmers' interest in vegetable production techniques increased, thus demonstrating factors that promoted the development and propagation of improved techniques.

However, since the experimental station was required to become more financially independent after the termination of cooperation, the governmental budget began to decrease, which made it necessary to secure stable financial resources. Therefore, the experimental station began activities to gain self-generating income by providing technical services to farmers and selling seedlings. However, as researchers had no experience in such sales activities, there still remains room for improving the sales revenue. As shown in the examples of projects in the IT sector, it is important not only to pay attention to the changes in needs even after the termination of cooperation, but also to have sufficient management capacity to provide services in line with these needs so that the organization could gain self-generating income. Therefore the orga-

\*In 29 out of 43 target projects, the implementing organizations gain some self-generating income other than the governmental budget. However, in many cases, self-generating income by itself is not sufficient for the entire operation of the organization, and there are only four projects identified to be financially independent.





Hydration of mangos using an indigenous technique (The Project for Development of Agricultural Research in Northeast Thailand)

nizational management capacity previously discussed in this section are still relevant here as well.

#### d. Collaborative Relationships among Related Organizations

- **Technical sustainability is secured and higher level of impacts emerge by maintaining and improving technical skills through joint activities and information exchange with related organizations after the termination of cooperation.**

In some projects, there are multiple organizations whose functions and activities are closely related to those of the implementing organization. In many cases, the implementing organization can sustain and improve its technical level by sharing information with the organizations concerned; or it can generate a higher level of impacts and ripple effects through collaborations with those organizations. For example, the Project for Development of Agricultural Research (Phase 2) in Northeast Thailand aimed to enhance agricultural development research activities in order to establish sustainable agriculture suitable to the northeastern region of Thailand. The project involved not only the research center, the implementing organization, but also related organizations such as ministries concerned and the agricultural department of a local university. As a result, the collaborative relationship among those organizations was established and sustained even after the termination of cooperation. Under this collaborative relationship, the research activities became activated and those research outputs were shared through a series of seminars and trainings. In addition to the collaborative relationship among concerned organizations in the partner country, there are examples of a sustained network between the implementing organization and Japanese support organizations even after the termination of cooperation, which contributed to securing technical sustainability of the project.

Also in the National Construction Productivity Development Project in the Philippines, which was referred to as an example of having institutional ripple effects (page 95), a certification system for construction project managers was introduced under an official agreement with the construction industry thanks to the collaborative relationship between the implementing organization and the industry.

On the other hand, there were cases in which problems

regarding insufficient collaboration among concerned organizations impeded the occurrence of effects. The Research Project on the Quality Development of Fishery Products in Thailand transferred inspection and analysis techniques for quality control in the processing stage to the Fish Inspection and Quality Control Division, Department of Fisheries, for the purpose of solving the problem of toxic residues from additives and chemicals added during the processing of fishery products. This cooperation generated large impacts such as the introduction of a certification standard for quality control and improved inspection techniques. However, it was reported that even if residue levels over the limits were detected, the division of the department cannot take concrete actions because any actions related to hygiene were not within its jurisdiction. It was pointed out that the division could have developed a collaborative relationship with the Ministry of Health in order to further secure quality control from the standpoint of consumer protection.

- **For establishing collaborative relationships that will be sustained even after the termination of cooperation, it is crucial to involve all the organizations concerned into the project activities since the planning and implementing stages.**

Though there are cases where the implementing organizations independently form collaboration relationships with the organizations concerned, establishing and strengthening such relationships in both the project planning and implementing stages leads to even more secured collaboration. For example, under both of the projects mentioned as cases where the collaboration relationships continued after the termination of cooperation, the Project for Development of Agricultural Research (Phase 2) in Northeast Thailand and the National Construction Productivity Development Project in the Philippines, activities for facilitating collaborations among the organizations concerned were originally included in the scope of the projects. The Rural Development Project in the Region South of Pilar in the Republic of Paraguay can be cited along with these as an example of forming collaborations among the related organizations with a clarified division of roles in the form of an agreement. This project worked to strengthen organizational systems and technical skills by improving sewage systems and innovating soil and cultivation techniques for sustainable agricultural development in the target area. During the project, the agreement that stipulates the divisions of roles and necessary expenditures was made between the implementing organization (the Ministry of Agriculture and Livestock) and the organizations concerned, such as the provincial office and the city office, for securing smooth collaborative relationships.

#### e. External Factors

- **Unexpected external factors such as natural phenomena**

**and domestic and overseas institutional changes can promote the occurrence of effects.**

There are various external factors including unexpected natural phenomena, political and economic factors. For example, the above mentioned Research Project on the Quality Development of Fishery Products in Thailand (page 102) carried out activities in view of promoting the export of products by improving the quality control techniques of fisheries and processed products. As quality standards were simultaneously tightened in importing countries, especially the EU, the importance of quality control in the sectors concerned, including the fishery industry and the processing industries, became more apparent and countermeasures were strengthened.

Though external factors worked as promoting factors in the case shown above, in some cases they act as impeding factors against project effects. As in the previously mentioned NYS Engineering Institute in Kenya (page 96), the support and demand for the implementing organization's activities declined due to the unavoidable economic stagnation of the whole country. Another example is the Modernization of Perumka's Education and Training System in Jabotabek in Indonesia, where external factors impeded the realization of high level impact. This project provided theoretical and practical training in the operation and maintenance of railway systems to the staff of the public railway cooperative, and as a result, the technical level of the staff increased. However, various social issues surrounding the railway system, including an excess of demand, obsolete vehicles, free rides, and illegal

residents along the railway, became impeding factors in the realization of safe and efficient railway systems.

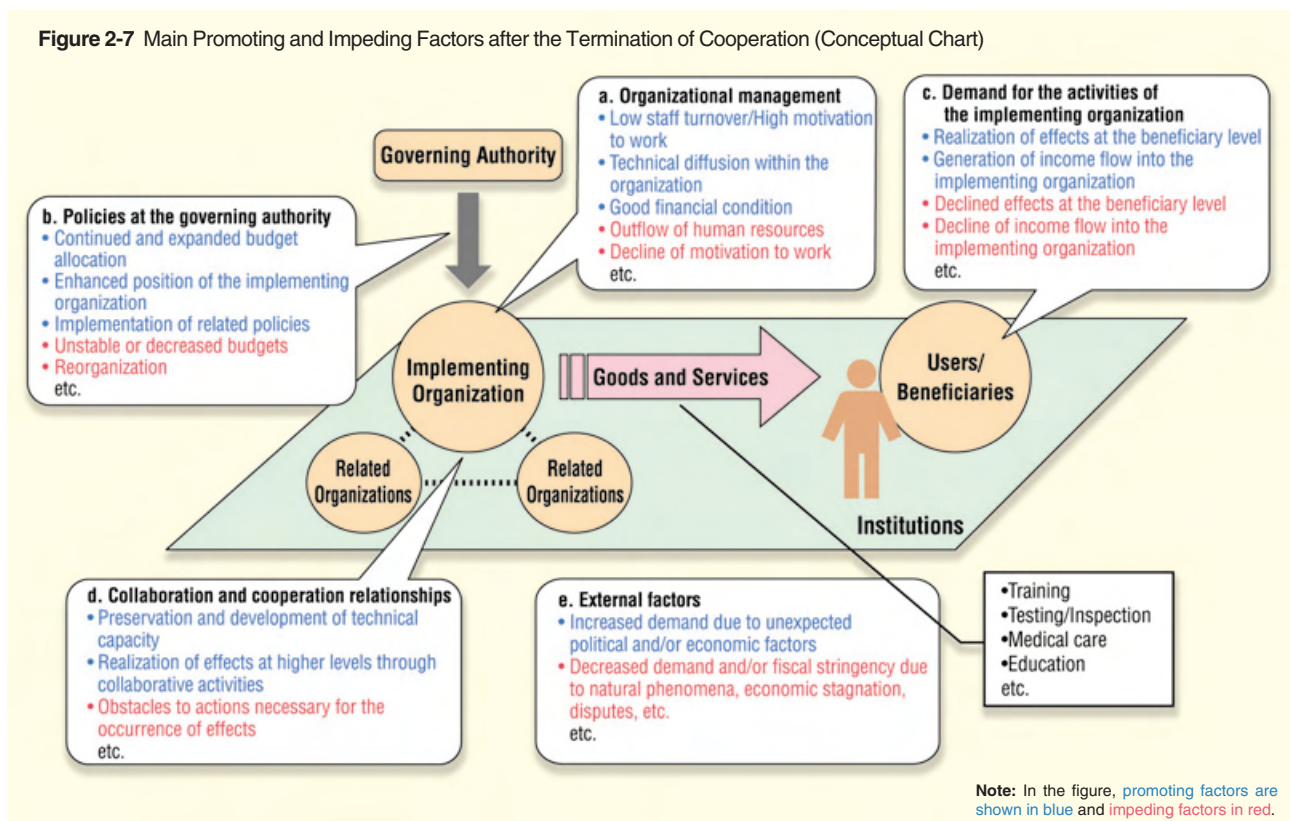
## 2-4 Lessons Learned from Evaluation Results

This section reports important lessons for the realization of impact and sustainability at a high level after the termination of cooperation based on the results of the analysis of promoting and impeding factors in the previous section. As explained in the previous section some promoting and impeding factors after the termination of cooperation are closely related to actions taken in the project planning and implementation stages. In this sense, lessons that can be applied to other projects are extracted from the viewpoint of what need to be taken into consideration during the planning and implementing stages to reduce impeding factors and draw out promoting factors after the cooperation period ends.

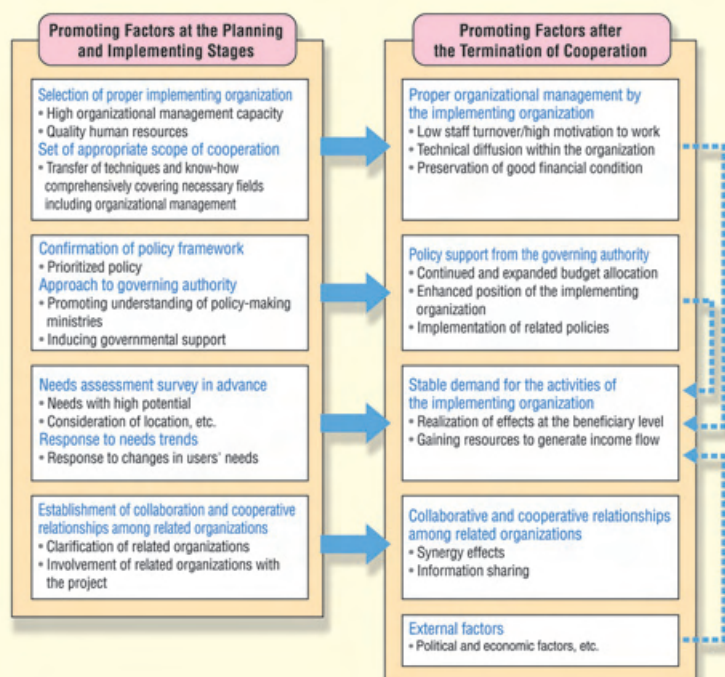
Figure 2-7 illustrates the main promoting and impeding factors after the termination of cooperation. With regard to the promoting factors, Figure 2-8 shows the relationships between factors in the planning and implementing stages and those after termination.

Based on these relationships, points of concern in the planning and implementing stages are presented below as lessons learned in order to sustain and develop effects after the termination of cooperation.

**Figure 2-7** Main Promoting and Impeding Factors after the Termination of Cooperation (Conceptual Chart)



**Figure 2-8** Relationships between Promoting Factors at the Planning and Implementing Stages and those after the Termination of Cooperation



## (1) Lessons at the Planning and Implementing Stages

### 1) Considering the Management Capacity of the Implementing Organization

● **In the project planning stage it is desirable to choose an appropriate implementing organization from the viewpoint of not only its organizational functions but also its management capacity. In cases where the management capacity is weak or unknown, technical transfer including know-how for organizational management in the implementing stage needs to be considered.**

- a. In order to promote the retention of counterpart personnel and encourage their motivation to work while facilitating technical diffusion within the organization, it is important to carefully choose a target implementing organization in the project planning stage and confirm not only if the organization has an appropriate function and jurisdiction, but also if the organizational management including financial aspects is in good condition. In cases where the implementing organizations have excellent organizational bases and cultures, the probability that impact and sustainability are secured is expected to be high owing to their probable stable management after the termination of cooperation.
- b. If the choice of an implementing organization with weak organizational management capacity is unavoidable, or a new organization has to be established as an implementing partner, it is necessary to consider whether to include not only the transfer of core techniques but also the transfer of management know-how such as personnel and financial

management into the scope of the cooperation where necessary. In addition, if the implementing organization intends to generate income by charging for its service, it would be effective to include the transfer of necessary knowledge and techniques for market-related activities, such as market research, public relations, and sales promotion, in the cooperation scope. It is desirable to make the cooperation scope comprehensive so that the implementing organization can smoothly carry out activities after the termination of cooperation.

### 2) Gaining Policy Support from the Governing Authority

● **The feasibility and priority of the policy framework relevant to the project implementation should be vigorously analyzed at the planning stage. In addition, during the implementation stage reaching out to the governing authority for its understanding and support on the project is effective for the continuation and expansion of project effects.**

- a. In the planning stage, ample information should be gathered and analyzed in terms of whether there is a policy framework that is consistent with the project's overall goal and purpose, whether the policy implementation is required according to social needs, whether the policy has a high priority level and the priority has been backed up by the government's actual commitment, whether the budget allocation to the targeted sector/sub-sector has been sufficient, and whether the position of the implementing organization tends to be strengthened.
- b. Furthermore, during the implementation stage, it is important to see whether there are any changes in the policy framework identified at the planning stage as well as to strengthen relationships with the governing authority for fostering its understanding of the project. This would be an effective measure to gain stable policy support in organizational, institutional, and budgetary terms. In some cases cooperation encompassing an improvement in the policy implementation capacity of government officials can make the policy support more effective.

### 3) Securing Demand for the Activities of the Implementing Organization

● **A needs assessment survey at the planning stage is essential to see whether a high demand from potential users is expected for the activities of the implementing organization. In addition, it is important to pay attention to**

**demand trends during the implementation stage and enhance the implementing organization's capacity so that it can respond to changes in demand by itself even after the cooperation period.**

- a. If a project provides a service directly to users such as private firms or students, it is vital to set target sectors and/or areas with great potential demand based on substantial market research and examination of geographical conditions in the planning stage.
- b. It is important to pay attention to needs trends during the project implementation period and develop the implementing organization's capability for flexibly responding to changing needs and for continuously providing the high quality service needed by consumers. To that end, technical assistance should be provided so that the implementing organization can upgrade its technical level through its own organizational management. Especially in cases where the implementing organization generates income, it is important to establish an organizational management that brings about a positive cycle by the time the cooperation period ends. In particular, such a cycle leads to upgrading technical levels, accommodating users' demand, securing financial soundness with increasing income flows, and making investment for further technical improvement.

#### **4) Establishing Collaborative and Cooperative Relationships among Related Organizations**

● **Establishing collaborative and cooperative relationships with related organizations in addition to the governing authority with a clear division of roles can bring about even greater impacts including the accomplishment of the overall goal. This is also effective in ensuring technical sustainability.**

- a. In the project planning stage, it is crucial to conduct a stakeholder analysis in order to find out what kind of stakeholders will be involved in the project implementation. Based on the result of the analysis, it is desirable to design a project involving the necessary stakeholders, with clear division of roles, for maximizing the effects of cooperation.
- b. In the implementation stage, it is important to establish collaborative and cooperative relationships among the stakeholders, based on an understanding of who will take essential roles to sustain and develop the project effects. Especially with regard to collaboration, which is indispensable for the occurrence of effects, collaborative and cooperative relationships may well be established in a form of an agreement to clarify the division of roles. In addition, in a case where there are multiple organizations with similar functions, such as research and development, cooperative relationships may be established during the cooperation period. This will lead to securing technical sustainability through information sharing after the termination

of cooperation.

#### **5) Preparing for External Factors**

● **Adopting the above mentioned measures 1) to 4) sufficiently and eliminating vulnerabilities in the implementing organization's activities serve to mitigate the negative impacts of external factors.**

Among external factors that occur after the termination of cooperation, there are many incidents beyond the control of a project, including natural disasters and political and economic factors. Regarding these incidents, in practice it is difficult to forecast their occurrence, and therefore, it is impossible to examine proper countermeasures in advance. However, taking the measures mentioned above in 1) to 4) and eliminating vulnerability of the organization will be effective in easing the negative effects possibly caused by common external factors such as reorganizations and policy changes. Including risk management methods in the scope of technical assistance may be another effective preventive measure.

#### **(2) Lessons for Ex-post Evaluation**

The lessons learned regarding impact and sustainability of individual projects have already been presented. The following is the summary of lessons regarding the quality of the primary evaluations drawn through this study, which should be applied to improve future ex-post evaluations.

##### **1) Improving the Way to Set an Overall Goal**

In some projects, it was difficult to evaluate the extent of achievement of the overall goal because of unclear description of the goal or unclear indicators to measure it, that is, "what kind of" changes are aimed at "whom" and "by when" is not clearly defined. In addition, for some projects, since the level of overall goals was too high and factors external to project activities were substantial, there were cases where achievement of the goals was heavily dependent upon how those factors emerged, or where the occurrence of effects was necessary to be sustained for a long time to achieve the goals.

Since an ex-post evaluation is carried out about three years after the termination of cooperation, it is often the case that projects have not yet achieved their overall goals at the time of ex-post evaluation. However, in terms of ensuring accountability, it should be confirmed that at least some effects have been demonstrated continuously towards the achievement of the overall goal at the time of ex-post evaluation. To this end, it is vital to set clear logic models of the project with appropriate indicators.

##### **2) Enhancing Quality of Primary Evaluation**

The objectives of project-level ex-post evaluation are to ensure accountability as to whether project effects have emerged continuously, and to proactively make use of evalu-

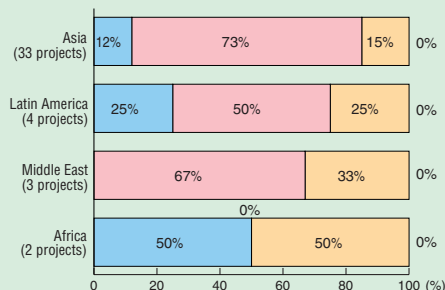
ation results in subsequent projects, especially under the initiative of JICA overseas offices, which take charge of the identification and formulation of new projects. Ex-post evaluation is undertaken mainly by JICA overseas offices, using local human resources such as consultants. However, their familiarity with JICA projects and evaluation methods, as well as expertise in general evaluation skills, varies greatly from country to country. Consequently, in some primary evaluations, the evaluation methods for impact and sustainability were not fully understood, and others failed to extract pro-

moting and impeding factors appropriately. A need for future improvements in quality was frequently observed. Fostering human resources for evaluation in developing countries is a primary task for facilitating developing countries' ownership to conduct cooperation projects, and thus JICA has implemented evaluation training for nurturing these human resources. JICA has to work positively and continuously on this issue by providing opportunities such as evaluation training and joint evaluations.

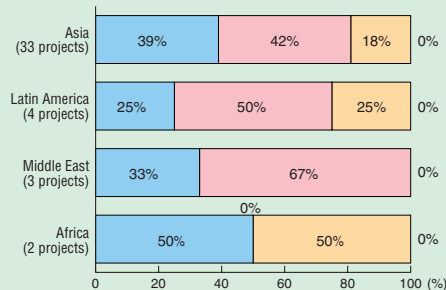
## Box 16 Regional Trends in Impact and Sustainability

In order to examine whether there are regional disparities in the occurrence of impact and sustainability, a trend analysis was conducted by classifying evaluation results by region based on the grades made in the previous section 2-2 (page 93). However, as was mentioned in the beginning of this chapter, the number of projects in regions other than Asia is very limited and it is therefore difficult to estimate a general trend for each region based on this result alone. Therefore it should be noted that the result is nothing more than a reference. Characteristics assumed from the target projects are shown below.

### • Impact



### • Sustainability



#### <Impact>

- A: The overall goal has been achieved.
- B: The overall goal has been mostly achieved, or a large positive impact has emerged.
- C: The overall goal has not been achieved yet, but some positive impact has emerged.
- D: The overall goal has not been achieved yet and no positive impact has been identified, or a negative impact has emerged.

#### <Sustainability>

- A: High on the whole
- B: Mostly high
- C: Slightly low
- D: Low

**(1)** Among 33 projects in Asia, those in Southeast Asia amount to 21 in total, the most. Particularly in this area, compared to other areas, the Asian economic crisis in 1997 tends to have had negative impacts on the occurrence of impact. In the projects that referred to the Asian economic crisis as an impeding factor, activities of the implementing organization were temporarily stagnated due to lack of financial resources, which possibly resulted in limited occurrence of effects at the time of evaluation. Also many countries promote downsizing of the whole public sector as part of their domestic policies, and some implementing organizations became unstable due to reorganization such as privatization, or others ran short of personnel because they cut back on civil servant recruitment. These became impeding factors especially in securing organizational sustainability. Nevertheless, sustainability of project effects on the whole is more or less at the same level as sustainability in other areas.

**(2)** In the five projects implemented in South Asia, the lack of support from governing authorities was pointed out as an impeding factor in general, and there were cases where it had a particularly negative impact on financial sustainability. There seems to be a severe situation in the whole national finance behind the lack of budget. On the other hand, however, the transferred techniques were continuously utilized and impact and sustainability as overall project effects were at the average level of the entire region.

**(3)** As for East Asia (China), seven projects were among the targeted projects. Activities and effects tend to be sustained and developed on the whole. Many projects demonstrated policy support from the governing authorities as promoting factors, which were characterized by the stable allocation of budget from the government and the secure consistency of policies. Meanwhile, the occurrence of impact is at the same level as it is in other regions. In the proj-

ects aimed at spreading effects to the national level, a certain time period is needed for the achievement of the goal because the land mass is vast.

**(4)** In other regions, regional common characteristics could not be found because there were not enough projects. However, in both Latin America and the Middle East, impact and sustainability positively occurred in general, and from the technical aspect especially the transferred techniques were applied and modified when necessary. This implies their high level of understanding of those techniques, which in many cases are promoting factors for the occurrence of effects at the end beneficiary level. As for the projects in Africa, it is difficult to generalize regionally based on these evaluation results because the two projects targeted are both in Kenya. In one of these, the Jomo Kenyatta University of Agriculture and Technology, favorable evaluation results were obtained.

# Part 3

## Thematic Evaluation



## Part 3 Thematic Evaluation

Part 3 introduces JICA's program-level ex-post evaluations whose reports were completed in fiscal 2003. The program-level ex-post evaluations are supervised by JICA's Office of Evaluation, Planning and Coordination Department. When conducting evaluations, it is important to apply thematic approaches that JICA has made efforts to strengthen, to develop practical methods of evaluation that accurately correspond to the various characteristics of projects, and to use external organizations. Based on this concept, JICA selects the topics to be evaluated.

At the beginning of Part 3, the program-level evaluations conducted by JICA in fiscal 2002 and 2003 are introduced. Chapter 1 presents the results of specific evaluations: "Synthesis Study on Evaluations: Science and Mathematics Education Projects," which was carried out to strengthen the thematic approach; another synthesis evaluation study, "Information Technology (IT)-related Human Resources Development and the Utilization of IT in Various Fields"; "Poverty Reduction and Community Development," which examined a new approach under the cooperation themes of poverty and regional development; and "Environment" and "Water and Poverty in Africa," which incorporated external views on vital themes by contracting evaluations out to external organizations. Furthermore, the results of developing eval-

uation methods for NGO-JICA Collaboration Programs are briefly introduced.

When selecting topics for program evaluation, JICA prioritizes the enhancement of thematic approach. The synthesis study of evaluations introduced in fiscal 2001 has been conducted to extract generalized lessons for practical feedback by extracting tendencies and problems commonly associated with specific issues or by analyzing characteristics of cooperation type and good practices through comparison of several projects. This responds to the fact that some lessons learned from individual projects are not applicable to the feedback since they are neither conceptualized nor generalized. The synthesis study is conducted for the purpose of extracting the effective lessons and analyzing the individual projects by literature reviews of their evaluation results and conducting field surveys for specified issues or sectors. JICA has been reviewing and improving the methods of the synthesis study on a yearly basis. For instance, the topics in 2002 and 2003 were selected from the sectors or issues in which the Thematic Guidelines have been developed by the Thematic Task Forces

**Table 3-1** Thematic Evaluations (Fiscal 2002-2003)\*

FY of evaluation	Title of Evaluation	Evaluation Body	Target Country/Region
2002	Country-program Evaluation	External organization	Senegal
2002	Environment—Environment Center Approach: Development and Social Capacity for Environmental Management in Developing Countries and Japan's Environmental Cooperation	External organization	Indonesia, Thailand, Mexico, China
2002	Agriculture and Rural Development (Phase 1)	JICA	—
2002	Water and Poverty in Africa	External organization	Zambia, Zimbabwe
2002	Disaster Relief	JICA	Turkey, Taiwan
2002	NGO-JICA Collaboration Program	JICA	Myanmar
2003	Poverty Reduction/Community Development	JICA	Indonesia, Sri Lanka, Tanzania, Nepal, Philippines, Bangladesh
2003	Science and Mathematics Education Projects	JICA	Indonesia, Philippines, Egypt, Ghana, Cambodia, Kenya, South Africa, Honduras
2003	Information Technology (IT)-related Human Resources Development and the Utilization of IT in Various Fields	JICA	Jordan, Thailand, Philippines, Viet Nam, Poland, Malaysia, China
2003	Agriculture and Rural Development (Case Study)	External organization	El Salvador, Tanzania
2003	NGO-JICA Collaboration Program	JICA	Bangladesh, Kenya

\*Reports for those evaluations were completed in fiscal 2003.

in JICA. Thematic Task Forces were established to accumulate knowledge relevant to a specific sector or issue within JICA and to contribute to the improvement of programs. Moreover, in order to promote feedback, members of Thematic Task Forces were encouraged to participate in the synthesis study from the beginning. This is aimed at incorporating the perspective from the user side of the study results. The two synthesis studies were completed recently: Science and Mathematics Education Projects and Information Technology.

In addition, Poverty Reduction and Community Development evaluates the projects based on poverty reduction, which has been regarded as the most important aspect of development assistance in recent years. This evaluation looked at projects that approached various parties concerned with JICA's community development program in a multi-level approach, such as central and local governments, local residents, universities, and NGOs, and then examined whether the multi-level approach was effective. Water and Poverty in Africa focused on cooperation in the water field. Cooperation in the water field has been regarded as being important by Japan as part of its measures for poverty alleviation that aim to fulfill basic human needs, and improve lives and livelihoods in African countries.

Some program-level evaluations are contracted out to external organizations every year to ensure objectivity of the evaluations. JICA expends its efforts not only to secure objectivity but also to improve the quality of evaluations using the experience of external academics. For example, Water and



Poverty in Africa mentioned above was contracted out to a private consulting firm, and Thematic Evaluation in Environment—Environment Center Approach: Development and Social Capacity for Environmental Management in Developing Countries and Japan's Environmental Cooperation, was contracted out to the Japan Society for International Development.

As introduced in Part 1, evaluation methods for collaborative programs between NGOs and JICA are continuously examined at the NGO-JICA Evaluation Subcommittee, which was established in fiscal 2001. In fiscal 2003, the subcommittee proposed the method for evaluating grassroots type projects that directly benefit the local community and extracted points of concern based on the evaluation results..



# Chapter 1 Science and Mathematics Education Projects

## 1-1 Outline of Evaluation Study

### (1) Background and Objectives

As part of the effort towards improvements in the quality of basic education, JICA had so far implemented 12 technical cooperation projects in the primary and secondary science and mathematics education sector at the end of April 2004. However, a systematic evaluation of the education projects had not been conducted yet, thus the review and classification of past and ongoing education projects were strongly required. Within this context, JICA conducted a synthesis evaluation study on technical cooperation projects in primary and secondary science and mathematics education with the following two objectives.

- Review and classify the past and ongoing 12 projects by JICA on primary and secondary science and mathematics education
- Analyze project planning and modification processes as well as the components of cooperation to isolate contributing and inhibiting factors of the projects and to draw lessons learned for the improvement of future project formulation and implementation processes

### (2) Evaluation Study Period and Team

#### 1) Evaluation Study Period

July 2003 to February 2004 (Field studies were conducted

in Kenya and the Philippines for 35 days from November 8, 2003 to December 12, 2003.)

#### 2) Evaluation Study Team

The evaluation study was organized and supervised by the then Office of Evaluation and Post Project Monitoring, Planning and Evaluation Department of JICA (currently the Office of Evaluation, Planning, and Coordination Department). The Evaluation Study Committee was established as an advisory committee, consisting of JICA educational task team representatives and external evaluation advisors. Based on the strategies discussed and finalized at the Evaluation Study Committee, one of the external advisors, JICA, and consultants (Global Link Management) undertook the actual study and compiled reports.

#### Evaluation advisors

Kazuo Kuroda

Associate Professor, Graduate School of Asia-Pacific Studies, Waseda University

Takashi Hamano

Associate Professor, Center for the Study of International Cooperation in Education, Hiroshima University

#### (3) Projects Subject to the Study

Twelve JICA projects were selected for the evaluation study (Table 3-2). Out of the 12 projects, field studies were

Table 3-2 Projects Subject to the Study

Region	Country	Project Title	Abbreviation	Project Period
Asia	Philippines	The Package Cooperation for the Development of Elementary and Secondary Science and Mathematics Education	Package Cooperation	1994.6-1999.5
		Strengthening of Continuing School Based Training Program for Elementary and Secondary Science and Mathematics Teachers	SBTP	2002.4-2005.4
	Indonesia	The Project for Development of Science and Mathematics Teaching for Primary and Secondary Education	IMSTEP	1998.10-2003.9
	Cambodia	Secondary School Teacher Training Project in Science and Mathematics	STEPSAM	2000.8-2004.9
Middle East/Africa	Egypt	Development of Creativity Lessons for Primary Education	DCL (Mini-Project)	1997.12-2000.11
		Improvement of Science and Mathematics Education in Primary Schools in Egypt	ISME	2003.4-2006.3
	Kenya	Strengthening of Mathematics and Science in Secondary Education (Phase 1)	SMASSE I	1998.7-2003.6
		Strengthening of Mathematics and Science in Secondary Education (Phase 2)	SMASSE II	2003.7-2008.6
	South Africa	Mpumalanga Secondary Science Initiative (Phase 1)	MSSI I	1999.11-2003.6
		Mpumalanga Secondary Science Initiative (Phase 2)	MSSI II	2003.4-2006.4
Ghana	Improvement of Educational Achievement in Science, Technology and Mathematics in Basic Education	STM	2000.3-2005.2	
Latin America	Honduras	Improvement of Teaching Methods in Mathematics	PROMETAM	2003.4-2006.3

conducted on two projects each in Kenya and the Philippines so that lessons common in projects could be extracted.

## 1-2 Framework of the Study

### (1) Evaluation Questions

The evaluation questions of the evaluation study were designated in line with the above-mentioned objectives as follows:

#### a. Summary and classification of projects

Under what social and educational situation was each project implemented? What elements or criteria could be used to classify the projects?

#### b. Contributing and inhibiting factors

What were the contributing and inhibiting factors affecting the impacts of primary and secondary science and mathematics education projects?

#### c. Lessons learned

What lessons were learned and extracted from these primary and secondary science and mathematics projects?

### (2) Evaluation Methods

Based on the three evaluation questions, the projects were classified according to the approaches taken and were then analyzed using logic models. Document reviews, questionnaire surveys, and interviews with domestic stakeholders were conducted in Japan. Document collection, questionnaire surveys and interviews with local stakeholders, and site visits were also conducted during the field studies.

## 1-3 Summary and Classification of Projects

### (1) Classification of Projects by Characteristics

The first project in the primary and secondary science and mathematics education sector was the Package Cooperation launched in the Philippines in 1994. Since then, a series of projects in the sector were implemented in succession. The efforts expanded notably from the late 1990s to 2000s, resulting in seven projects in Africa, four in Asia, and one in Latin America. Table 3-3 shows the results of classification of the 12 projects according to their major characteristics.

### (2) Classification of Projects by Approach

Activities in the projects could be divided into typical 11 groups including development of teaching materials, training for in-service teachers, monitoring, and evaluation. It was revealed that all 12 projects include teacher training as a core component. Accordingly, this evaluation made the classification of projects by approach based on two criteria: beneficiaries of training and teacher training system. As a result, the 12 projects in primary and secondary science and mathematics education were classified into the four types shown in Table 3-4.

### (3) Five Factors Determining the Success of the Projects

The projects were cross-examined based on the above summary and classification, and contributing and inhibiting factors that influence the effects of each project were extracted.

**Table 3-3** Classification of the 12 Projects

<b>Duration of projects</b>	One seven-year project, four five-year projects, and seven three-year projects: the number of three-year projects has been on the increase.
<b>Cooperation modality</b>	Five Project-type Technical Cooperation Projects including the Package Cooperation, two projects in the form of dispatch of expert team, and five Technical Cooperation Projects
<b>Primary or Secondary Education</b>	Three projects are at the primary education level, five at the secondary education level, and four at both primary and secondary education levels.
<b>Science or Mathematics</b>	One project focuses on mathematics and the remaining 11 projects on both science and mathematics.
<b>PRESET or INSET</b>	Ten projects conducted training for teachers in-service (INSET) and two projects conducted both INSET and training for pre-service teachers (PRESET).

**Table 3-4** Project Classification by Teacher Training Approach

<b>Type 1</b>	Approach of INSET by cascade system. The experts and counterparts of the projects directly train teacher trainers using their expertise in the subjects.	Philippines: Package Cooperation Kenya: SMASSE I Kenya: SMASSE II South Africa: MSS I
<b>Type 2</b>	In this type, teachers are provided with direct training in a cluster (a group of schools in an area) or through in-school training for teachers (cluster system). The experts and counterparts of the projects support the training and offer advice on management, but do not provide direct guidance on the content of the subjects.	Philippines: SBTP Ghana: STM South Africa: MSS II
<b>Type 3</b>	The approach of the development and dissemination of teaching guides. The projects classified as Type 3 simultaneously provide in-service teachers with training in using the guides.	Egypt: DCL(Mini-Project) Egypt: ISME Honduras: PROMETAM
<b>Type 4</b>	This is the approach of training for university faculty, in which trained university trainers conduct direct training or offer lessons for in-service teachers and university students.	Indonesia: IMSTEP Cambodia: STEPSAM

The following are five elements that were considered factors determining the success of primary and secondary science and mathematics projects. (Table 3-5).

The five elements discussed here are considered important factors determining the success of primary and secondary science and mathematics projects. In the following chapters, analysis is performed on these important five factors. Four cases targeting for the field studies are to be introduced in its course, followed by the eight other projects. Then a synthesis study will be conducted in order to draw common lessons from the projects.

## 1-4 Results of the Synthesis Study of the Projects and Lessons Learned

This section reports the results of the field studies of representative projects of the primary and secondary science and mathematics projects conducted by JICA in the past. As mentioned earlier, all 12 projects examined in the evaluation study were conducted focusing on teacher training. Thus, projects emphasizing the training of in-service teachers in two countries were chosen for field study.

### (1) Overview of Projects for Case Study and Evaluation Results

#### 1) The Package Cooperation for the Development of Elementary and Secondary Science and Mathematics Education in the Philippines (Package Cooperation)

Table 3-6 shows the overview of the Package Cooperation for the Development of Elementary and Secondary Science and Mathematics Education in the Philippines.

**Table 3-6** The Package Cooperation for the Development of Elementary and Secondary Science and Mathematics Education in the Philippines

<b>Project period</b>	June 1, 1994 - May 31, 1999 June 1, 1999 - March 31, 2001 (Follow-up period)
<b>Project purpose</b>	To establish INSET system for science and mathematics teachers in elementary and secondary schools
<b>Target group</b>	Elementary and secondary science and mathematics teachers
<b>Target areas</b>	Nation-wide; however, Districts 5, 6 and 11 were selected as model districts.
<b>Teacher training approach</b>	Type 1

#### ■ Background of Cooperation

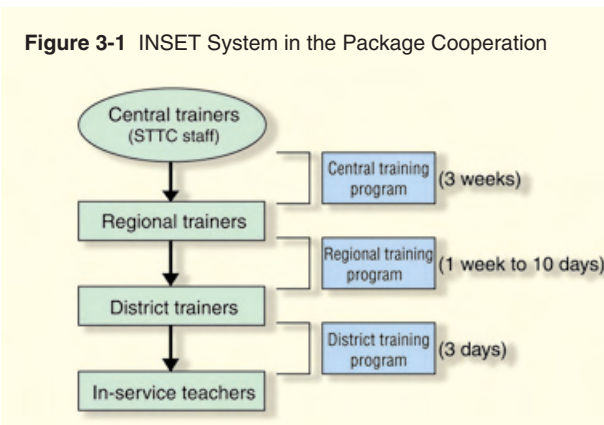
The then National Development Plan of the Philippines (1993-1998), under which this cooperation project (hereinafter referred as the “Package Cooperation”) was originally planned, specified two priority issues in the area of education: to improve enrollment and completion rates in elementary and secondary education, and to upgrade the quality of science and mathematics education. Thus, there was a great need for a systematic framework for in-service teachers. And this project was formulated to establish a training system for in-service teachers and through the training to improve teachers’ skills in teaching science and mathematics classes that incorporate experiments and practice.

#### ■ Classification and Structure of Cooperation

The Package Cooperation adopted the cascade-system training (Figure 3-1). In this system, one staff member of the Science Teacher Training Center, one supervisor of the Department of Education, and two in-service teachers designate central trainers to begin with. The central trainers conducted the central training program for regional trainers at the

**Table 3-5** Five Elements Determining Success of Primary and Secondary Science and Mathematics Projects

<b>1) Planning</b>	One of the important factors lies at the planning stage of a project, which is not just confined to the primary and secondary science and mathematics sector. In-depth needs analysis, the construction of logic keeping cause-and-effect in mind, and the selection of inputs are factors that are especially significant in influencing the efficiency of projects.
<b>2) Means to expand outcomes</b>	The teacher training system employed under the primary and secondary science and mathematics projects are classified into two groups: cascade and cluster (training within school district) systems. Whether a project is being implemented considering different characteristics of these systems or not influences the impact.
<b>3) Collaboration</b>	In recent years, many projects include collaboration with Japan Overseas Cooperation Volunteers, other ODA schemes, local universities, and other donors. The collaboration with related agencies inside and outside the project is a factor that especially influences efficiency.
<b>4) Institutionalization</b>	Governmental support for the projects leads to securing financing at both the central and local levels. Governmental assistance such as establishment of funds and authorization of training on weekdays particularly affects sustainability.
<b>5) Monitoring and evaluation</b>	How to monitor and evaluate the reality of teacher training and the capability of teachers and students is a universal issue in the primary and secondary science and mathematics projects. A timely modification of project planning through monitoring and evaluation greatly contributes to the achievement of project purposes.



training center. The regional trainers who had received training at the center provided the regional training program to district trainers in each area. This was followed by the provision of the district training program by the district trainers to the elementary and secondary science and mathematics teachers in the district.

The three-step cascade system was expected to improve the abilities of elementary and secondary science and mathematics teachers in the region as well as improve elementary and secondary students' competency in science and mathematics. Discretion in planning and budget control of programs other than the central program was given to each area. Therefore, the actual training for the central training took three weeks, but the area and district training periods were one week and three days, respectively.

■ Evaluation Results

The terminal evaluation of this project reports that no significant impact on teachers was apparent, although some impacts showed up at the central level. In terms of sustainability, the training system did not continue. As a result, it did not alter the status quo of the Philippines' teacher training system in which training is provided only when budgets are secured. Nevertheless, certain outcomes were identified. For example, some of the materials developed during the Package Cooperation were revised and published after the completion of cooperation, and are presently being used at the Science Teacher Training Center.

A considerable number of lessons learned from the Package Cooperation have become important assets to Japan's subsequent projects in science and mathematics education. The SMASSE in Kenya and the SBTP in the Philippines, which will be introduced in the next section, make the most of the lessons learned from the project.

**2) Strengthening of Continuing School Based Training Program for Elementary and Secondary Science and Mathematics Teachers in the Republic of the Philippines (SBTP)**

The summary of the project is shown in Table 3-7.

**Table 3-7** Strengthening of Continuing School Based Training Program for Elementary and Secondary Science and Mathematics Teachers in the Republic of the Philippines

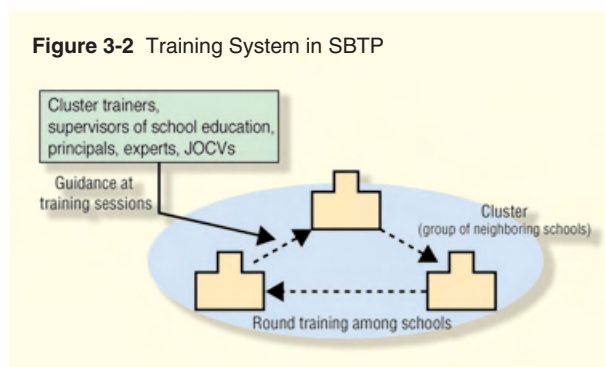
<b>Project period</b>	April 10, 2002 - April 9, 2005
<b>Project purpose</b>	To promote student-centered teaching methods through improving teaching methods and deepening understanding of the study contents of the subjects
<b>Target group</b>	Elementary and secondary science and mathematics teachers
<b>Target areas</b>	Districts 5, 6, 7, and 11 (District 11 was added during the operation guidance study)
<b>Teacher training approach</b>	Type 2

■ Background of the Project

The Package Cooperation in the Philippines aimed to establish a sustainable teacher training system; however, it failed to achieve the objective within the project period. Therefore, the task of establishing a teacher training system remained. The Philippines specified reinforcement of science and mathematics education as a priority in basic education in the mid-term plan (1999-2004), part of the Medium-term National Development Plan by 2025, showing a continued high priority on science and mathematics education even after the completion of the Package Cooperation. With this as a background, after the implementation of the two-year follow-up activities of the Package Cooperation, Japan launched the Strengthening of Continuing School Based Training Program for Elementary and Secondary Science and Mathematics Teachers in the Republic of the Philippines (SBTP) in 2002, following a one-year interval. The objective of the project is to promote student-centered teaching in science and mathematics education. The project was designed to improve the ability of teachers from both aspects of improvement in teaching methods and the understanding of content of the subjects by making the most of the lessons learned from the Package Cooperation.

■ Classification and Structure of Cooperation

The training method in SBTP differs greatly from that in the Package Cooperation (Figure 3-2). The SBTP provides in-service science and mathematics teachers with monthly training in a group of neighboring schools called a cluster. Fostering teachers who are willing to keep learning is the central concept of the training. Mock lessons are used just as in the actual class setting, rather than having a third party provide



the teachers with new techniques and knowledge. This helps teachers improve themselves as a group. In cooperation with supervisors of school education, experts and JOCVs dispatched from Japan visit the monthly training sessions in rotation to support the sessions to keep a certain level of quality. Other activities for strengthening support for the school system include the organization of school principals' meetings and the implementation of advocacy programs for regional administrators, PTA executives and parents.

#### ■ Evaluation Results

After discussions with counterparts and in-depth needs surveys, the SBTP was appropriately formulated. As a result of switching from the large-scale cascade system in the Package Cooperation to the cluster system implemented by school districts, favorable results have been achieved despite low inputs, showing high efficiency and sustainability. Impact on teachers has emerged; however, cause-and-effect linkage with the project has yet to be discerned. The project is scheduled to be completed in 2005, as its coverage has been expanded and its sustainability has been secured to some extent. Currently, efforts are being made to improve particularly the quality of education.

### 3) Strengthening of Mathematics and Science in Secondary Education in Kenya (SMASSE), Phase 1 and Phase 2

Summary of the above projects is shown in Table 3-8.

**Table 3-8** Strengthening of Mathematics and Science in Secondary Education in Kenya (SMASSE)

	Phase 1	Phase 2
<b>Project period</b>	July 1, 1998 - June 30, 2003	July 1, 2003 - June 30, 2008
<b>Project purpose</b>	To strengthen secondary mathematics and science education through INSET in the pilot districts	To improve the ability of district trainers. To implement ASEI/PDSI at teacher training organizations and secondary schools in target countries
<b>Target group</b>	Mathematics and science teachers in secondary schools	Mathematics and science teachers in secondary schools
<b>Target areas</b>	Nine districts (Kajiado, Kishii-South, (later Gucha), Kishii-Central, Makueni, Maragua, Muranga, Kakamega, Butere/Mumuas, Lugari) Six districts were added in 2001.	71 districts excluding nine districts targeted in Phase 1. Achievements are transmitted to Ghana, Burundi, Lesotho, Malawi, Mozambique, Rwanda, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe
<b>Teacher training Approach</b>	Type 1	Type 1

#### ■ Background of the Projects

When Phase 1 of the project was formulated, Kenya's nationally standardized test results were notably poor in mathematics and science, and there was no sustained training system for in-service teachers. Japan's cooperation in the area of mathematics and science education had a comparative

advantage in Kenya as well, and it was decided that cooperation in elementary education was not feasible as there were too many elementary schools. For these reasons, it was concluded that support should be given to mathematics and science education in secondary schools; thus, SMASSE (Phase 1) was launched.

#### ■ Classification and Structure of Cooperation

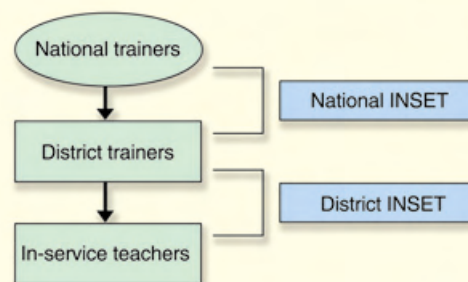
Teacher training in SMASSE falls into the in-service teacher training approach of the cascade system (Type 1) (Figure 3-3). Phase 1 set up a model in which district trainers who have previously received training at the central level were to provide training to in-service teachers for improving their teaching skills and students' academic performance in science and mathematics. National trainers conducted training (National INSET) for district trainers, and then the trained district trainers conducted training (District INSET) to in-service teachers at each district INSET center. In principle, all the mathematics and science teachers in secondary school of the target area participated in the District INSET. Workshops for school inspectors and principals were also held to gain their understanding and support for the training program. Both National and District INSET were to be carried out once a year for two weeks during the school holidays in either April or August, with fixed themes for training. They were scheduled to roll over four times during the project period.

Cooperation in Phase 2 was constructed based on a similar concept and approach to Phase 1, but inputs from the Kenyan side in terms of human resources and budget increased as the target area was expanded. Moreover, in order to extend activities to reach neighboring countries in Africa, the Centre for Mathematics, Science and Technology Education in Africa (CEMASTE) was established as a permanent training facility.

#### ■ Evaluation Results

Phase 1 of the project was planned and revised where necessary after discussions with counterparts and appropriate needs surveys. In particular, according to the results of the mid-term evaluation, training at the cluster level was found to be economically inefficient and diminishing the effectiveness of the training program, and, therefore, it was decided to be discontinued. A dual-stage cascade system with National

**Figure 3-3** INSET System in SMASSE



INSET and District INSET was then adopted, which enabled the organization of effective training activities. Moreover, contents of the cooperation were satisfactorily effective, and it was completed almost successfully. Some impacts have occurred; in Makueni District, for example, teachers' teaching skills and students' interest in mathematics and science has improved, although this varies among areas and schools. An initiative of the partner country is very positive, and related governmental agencies provide support. Currently, the project went into Phase 2, and the outcomes of the 15 districts have been extended to encompass 71 districts throughout the country. At the same time, efforts have been made to further increase the quality of the training and to stimulate the incentives of training participants.

## (2) Summary of Other Projects

The analyzed projects that are not included in the case studies are listed in Table 3-9. The analysis of each project has been summarized and described in the following section (3).

## (3) Lessons Learned and Recommendations

We have already discussed the five important factors that are thought to influence the success of technical cooperation projects in primary and secondary science and mathematics education. Here, attempts are made to draw common lessons

from the projects in relation to these five important factors. Major elements of those lessons learned are described in this summary.

### 1) Lessons Learned about Planning

The evaluation study confirmed that contributing and inhibiting factors of projects are deeply associated with the planning process in many cases. This section shows analytical results on whether the achievement of objectives has been thoroughly thought out at the time the projects were formulated and how input elements have influenced the achievement of the objectives. Although the following lessons have been drawn from the primary and secondary science and mathematics education projects subject to the evaluation study, these lessons can be applied to projects other than those in the educational sector.

- **In the planning stage, it is necessary to construct a logic model and formulate a logical framework (PDM) after sufficient deliberation on cause-and-effect linkages.**

The analysis of all the projects using a logic model (visual representation of the cause-and-effect linkages between project inputs and the goals) in the evaluation study found that nearly half of the projects need to be reconsidered in terms of logical construction, particularly from the project

**Table 3-9** Other Projects

Country	Project title (Abbreviation)	Project overview
Indonesia	The Project for Development of Science and Mathematics Teaching for Primary and Secondary Education (IMSTEP)	This project aimed to improve training for both prospective and in-service teachers, targeting three local universities designated for primary and secondary science and mathematics education (Type 4). The project was implemented in combination with other Japanese cooperation schemes such as Grant Aid and Development Studies.
Cambodia	Secondary School Teacher Training Project in Science and Mathematics (STEPSAM)	This project aimed to improve training for both prospective and in-service teachers mainly at the Higher Teachers' Training School (Type 4). In addition, it included activities in support of formulating medium and long-term plans for training prospective teachers.
Egypt	Development of Creativity Lessons for Primary Education (Mini-Project)	Based at the National Center for Educational Research and Development of the Ministry of Education of Egypt, this project aimed to improve teaching methods of primary science and mathematics education by developing teachers' guidebooks (Type 3). Individual experts were dispatched in a team.
Egypt	Improvement of Science and Mathematics Education in Primary Schools	This project aimed to build the basis for consolidating the new teaching methods using the guidebooks developed by the Mini-Project described above at model schools and further expanding the methods (Type 3).
South Africa	Mpumalanga Secondary Science Initiative-Phase 1 (MSSI-1)	This project was launched in Mpumalanga Province where there are many former townships (homeland). Targeting in-service training for teachers in Grades 8 and 9 (equivalent to 2nd and 3rd grades in Japan's junior high schools), it aimed at dissemination through the cascade system from the center (Type 1), with in-country training by short-term experts and training in Japan as the core components.
South Africa	Mpumalanga Secondary Science Initiative-Phase 2 (MSSI-2)	This project is a continuation of Phase 1 described above. In this phase, the target was expanded to include teachers for up to Grade 12 (equivalent to Japanese junior and senior high schools). In addition to central training, direct lectures are offered to in-service teachers (Type 2).
Ghana	Science, Technology and Mathematics Education Project (STM)	This project aimed to upgrade the ability of in-service teachers in primary and secondary schools in the target areas (Type 2). Particularly, aid coordination was sought, and the original plan of the project was improved proactively by using the mid-term evaluation.
Honduras	The Improvement of Teaching Methods in Mathematics (PROMETAM)	The high rate of school dropouts and being held back a grade for failing to meet standards have been serious problems in Honduras. Thus, the project aimed to upgrade skills of teachers and improve students' academic performance through the development and dissemination of teachers' guidebooks and students' workbooks (drills) (Type 3). It has produced favorable results in the area of institutionalization; for example, the developed materials have been selected as national textbooks.

purpose to the overall goal. While the logical framework (PDM) employed in projects is generally an effective tool for project management, it sometimes encounters difficulties in precisely describing complicated cause-and-effect linkages of the projects. Constructing a logic model at the planning stage leads not only to a deliberate consideration of the cause-and-effect linkages of projects and but also to uniform understanding of the detailed structure of the project by parties concerned. In particular, since educational projects may involve a complicated cause-and-effect relationship, using a logic model helps pinpoint potential risks of projects (as to which objectives seem hard to achieve).

- **The quality and scale of inputs have a great influence on sustainability and impact. Therefore, planning of project inputs needs careful consideration with comparison to similar projects.**

In the Package Cooperation in the Philippines, in spite of considerably large-scale inputs, the sustainability of the training system began to disappear as soon as the project was terminated. On the other hand, SBTP that followed the Package Cooperation realized a training system without major costs while demonstrating sustainability and geographical expansion. One possible reason for this was that the training system of SBTP was designed with the intention of reducing Japanese inputs and establishing a training system that could be easily managed by local people alone. While large-scale inputs may result in an accelerated expansion of activities in the short-term, the danger of inhibiting long-term sustainability and impact needs to be kept in mind. To calculate the adequate scale of inputs at the planning stage of projects, it may help to identify similar projects inside and outside of JICA and to compare the necessary costs and outputs.

- **While formulation of projects utilizing existing resources is effective in terms of efficiency and sustainability, it is necessary to deliberately consider whether the utilization is in line with the objective of the projects.**

It is effective to formulate a project plan with considerations to the existing resources in the partner country as well as to the outcomes and experiences of past projects. However, a clear overall project plan must first be in place when priority is given to the utilization of existing resources. Without an appropriate project plan, its purpose may be distorted through the mere utilization of resources and implementation of inputs. As a matter of fact, in the Package Cooperation in the Philippines, too much emphasis was placed on the utilization of the Science Teacher Training Center constructed through grant aid and the real purpose of the project, establishment of a training system, was not clearly defined. In the utilization of resources, careful consideration should be made so that the inputs are consistent with project purposes.

## 2) Lessons Learned about Expansion of Outcome

Classifying technical cooperation projects in primary and secondary science and mathematics education was one of the major objectives of this evaluation study. The teacher training systems employed in many projects were classified either as “cascade” (the transmission of lectures from central to local bodies) or “cluster” (direct training to groups of schools). Here, we have analyzed the characteristics of each system and have compiled its results.

- **In teacher training using the cascade system, it is effective to minimize the number of cascade layers and conceptualize what is delivered in the training in simple keywords.**

In teacher training using the cascade system the delivered content has a tendency to diminish in proportion to the number of cascade layers. In the Package Cooperation in the Philippines, training courses were conducted in three stages, namely, national, regional, and district levels. It was observed that the effects of the training were diminished from the national level to the district level due to no allowance for training at the local level. In the training system of SMASSE in Kenya, the three stages established in the initial project plan were reduced to two, a modification that enhanced the effectiveness of the training. In the cascade system, information delivered from one person to another diminishes. Delivery of fundamental concepts, rather than of complicated issues, avoids the diminishing of the content, and thus contributes to its effectiveness. In SMASSE in Kenya, the keyword of “ASEI/PDSI” was contrived to make the concept intended by the project easy to understand. On the other hand, if the keyword itself is presented without an underlying context, the message conveyed may be misunderstood. In the Package Cooperation in the Philippines, the keyword of PWA was adopted, but the keyword was misunderstood as meaning just conducting experiments in class. Unfortunately in this case, the misunderstood concept was disseminated through training. Though it is important to simplify a concept into a keyword in the cascade system, it is necessary to organize the concept carefully and prepare for dissemination, for example, by producing manuals for training.

- **The expansion system such as the cluster (direct) system is suitable to consolidate the outcomes in a geographically limited area. In introducing cluster training, it is necessary to gain understanding and support from stakeholders in the area.**

Teacher training through cluster and school training systems has an advantage in delivering the effects of the training not only to teachers but also to schools and the entire school district (cluster). In STM in Ghana, in response to the high turnover rate of teachers, the support to school training was

strengthened. In SBTP in the Philippines, a training system where schools in the same cluster hold training in turn contributed to establishing a network among teachers in the cluster who teach the same subject. This kind of dissemination system can be especially effective at the primary education level, because primary schools have closer relationships with local areas. In addition, obtaining more understanding from principals and school inspectors promotes the participation of teachers. In cluster and school training systems based in schools and local communities, holding a workshop for principals and school inspectors is important for gaining understanding and support at the school and community levels.

- **Applicability of the training system depends largely on the condition of the educational administration, level of education (primary/secondary), and geography. The training system should be designed with these factors in mind.**

When the two dissemination systems mentioned above are compared, the cascade training system is suitable for spreading skills “fast and wide to a large number of people”; whereas the cluster training system is appropriate for spreading skills “slowly to a small number of people in small areas.” Furthermore, in selecting a teacher training system, cascades or cluster, it is important to consider the following three conditions: educational administration, the level of education, and geography. In terms of educational administration, the cascade system is adequate in a situation where administration capacity at both the central and local levels is high, while the cluster system is adequate where decentralization has been established. At a higher secondary education level, schools are located at a considerable distance and the cascade system is desirable, as it requires less occasion to get together. At the primary education level, on the other hand, education is conducted in close relationship with local communities and, there-

fore, cluster training is recommended, as those concerned can get together more often. From a geographical point of view, in areas where transportation systems are not well developed, it is difficult to continuously conduct cluster training. Thus, a large-scale cascade training held during vacation time is suitable. Conditions to help effectuate each training system are compiled and listed in Table 3-10 below.

### 3) Lessons Learned about Collaboration

Science and mathematics education projects in recent years seek collaboration not only with other ODA schemes such as Japan Overseas Cooperation Volunteers (JOCV), but also with local universities and other donors. The type of collaboration has no small effect on the occurrence of outcomes. In this section, the current state of collaboration between the evaluated projects and related organizations are reviewed and analyzed. The evaluation study chose collaborative partners who were considered particularly significant in the field of educational projects, and examined how collaboration with these partners related to the contributing and inhibiting factors of the projects.

- **Collaboration with local universities or academic institutions is effective in terms of the quality control of training, sustainability, and incentives for teachers. In promoting collaboration, it is necessary to clarify the organizational relationships surrounding each institution.**

Collaboration with local universities helps to spread local knowledge and experiences, control the quality of training, achieve sustainability, and promote participation in training. Under SBTP in the Philippines, propelled by the collaboration with universities, new evaluation theories that have been widely accepted locally are adopted in an attempt to quantitatively assess how lessons have been changed. Under MSSI in South Africa, a university provides a training course on teacher qual-

**Table 3-10** Factors to be Considered When Choosing between Cascade System and Cluster System for a Teacher Training System

	Cascade System	Cluster System
Educational Administration	Since the top-down approach is used, it is better to have educational administrators possessing superior capabilities in the central government at the upper layer of the cascade and in the regional government at the lower layer.	In the case where cluster training is conducted in rural areas, local governments are required to have some level of administrative capability. Thus, it is appropriate to conduct it in a country where a degree of decentralization has been achieved. Also, in order to carry out in-school training sessions, schools have to be equipped with a degree of management ability.
Level of Education	High schools are located at a good distance from each other, which makes it difficult for teachers to often gather in a single location. Therefore, the cascade system is effective at the high school level, (especially in the case where the enrollment rate is low).	Since primary and secondary schools are often deeply rooted in the local community, the needs vary depending on the region. Therefore, it is significant for neighboring schools to form a cluster. When a project targets primary and secondary schools, cluster training is effective, since it enables the teachers of the local schools to congregate in a nearby school.
Geographical Conditions	When access to the other schools is hindered due to underdeveloped infrastructure, etc., as in the case in Kenya, it is difficult to frequently gather at one site. The rate of participation increases if a center with accommodation facilities is built to provide the teachers with opportunities to receive intensive training.	Cluster training is suitable when a transportation network is well developed and access to neighboring schools is relatively easy, thus facilitating day trips and the rotation system, even in an island country such as the Philippines.



ification at a discounted rate and this enhances the motivation to participate in training. In pursuing collaboration with universities, it is essential to clarify responsibilities as well as organizational relationships surrounding concerned institutions in order to avoid the diffusion of ownership. Several cases have been reported in which the involvement of the Ministry of Education, which should assume the leadership, has become less pronounced due to the participation of universities. Moreover, a key contributing factor to future sustainability is to emphasize the concept of reciprocity and equality when collaboration with universities is deployed.

- **Collaboration with Japan Overseas Cooperation Volunteers (JOCV) Program can be a great contributing factor. A precondition for collaborating with the JOCV Program is to formulate a full agreement between experts and volunteers on the direction and activities of the projects.**

Among the projects surveyed under this evaluation study, the JOCV Program was frequently chosen as a partner for collaboration. Collaboration with the JOCV Program took two forms: organized collaboration and flexible collaboration. Under organized collaboration, the JOCV Program was officially designated as a component of the project and a certain level of output was expected from this arrangement. Under flexible collaboration, the JOCV Program was positioned externally to the project but was requested as needed by the project to collaborate through activities such as monitoring. This study revealed that the appropriate collaboration is basically chosen to suit the objectives of each project, while taking advantage of its own strength. However, JOCV posts in science and mathematics education were generally difficult to fill due to a shortage of eligible candidates. To counter this constraint, senior JOCVs and short-term emergency JOCVs were assigned under SBTP in the Philippines to secure a required number of experienced volunteers for achieving the project's outputs. In collaborating with the JOCV Program, it is important to confirm the intention of volunteers and to fulfill two objectives at the same time: civil participation, which is the aim of the JOCV Program, and the achievement of outcomes sought by projects. It is especially important to confirm the intention of JOCVs from the recruitment stage and not to impede activities desired by JOCVs themselves.

- **Collaboration with other donors can be effective if the objective of the collaboration is clearly defined. In addition, donors with past experiences in similar projects can be an important source for information exchange.**

In this evaluation study, two projects, STM in Ghana and PROMETAM in Honduras, were analyzed for lessons learned on collaboration with other donor agencies. Under both of these projects, issues to be addressed by forming collabora-

tions were clear and recognized among donor agencies. The evaluation study, through a questionnaire survey, found that donor collaboration did not take place under other projects due to a lack of recognition for the need or problems to be solved in establishing collaboration. When one ventures to pursue collaboration in such projects, one may end up with mere rhetoric: "a collaboration for a collaboration." In order to avoid seeking unnecessary collaborative relationships, it is crucial to clarify issues to be addressed and to share common recognition of them when collaboration with other donors is sought.

Under SMASSE in Kenya and MSSSI in South Africa, information exchange with other donors took place during the project planning stage and this helped to avoid duplication of cooperation as well as in receiving useful advice. It was observed that information exchange with other donors is especially essential at the planning stage of new projects.

#### **4) Lessons Learned about Institutionalization**

Governmental assistance and institutionalization, such as holding training on weekdays and making it obligatory to participate in training, can have a huge impact. In this section, some common points found in projects that have received institutionalization or administrative support are reviewed, and some points to be considered when seeking institutionalization are analyzed.

- **To gain governmental assistance and achieve institutionalization in promoting teacher training and project outcomes, activities to gain understanding from the partner countries and ingenuity to facilitate institutionalization are, of course, important. Having mentioned that, we believe the most important factor is to gain support from teachers and students, who are the end beneficiaries.**

Institutionalization of the teacher training system is effective not only for future impact or sustainability, but also for the groundwork for further participation of teachers in training. Some efforts in the past were helpful to gain governmental support for each project: for example, efforts to make educational administrators aware of outcomes of the project of SMASSE in Kenya, and ingenuity of SBTP in the Philippines to develop a low-budget training system. On the other hand, the evaluation study revealed that the biggest factor for institutionalization was the strong support for the training from the teachers and students. A training course for fostering "self-realization" of teachers in the culture of "self-help efforts" in the SBTP in the Philippines has gained strong support from teachers, which must have led to the institutionalization of training on weekdays. Furthermore, the PROMETAM in Honduras made a strong appeal to relevant parties by compiling data pertaining to the rate of satisfaction of teachers with

the training, the degree of understanding of subjects, frequency of the use of teaching materials, etc. As the saying goes, “example is better than precept.” This has led to the dissemination of teaching materials throughout the country.

Decisions on institutionalization and governmental support rest in the hands of the local government authorities, and they always place the emphasis on end beneficiaries. A short avenue to institutionalization may be to gain solid support from teachers and students by upgrading the quality of the training.

- **Governmental assistance can be obtained more smoothly for a training system built upon an existing system, rather than for a newly established system.**

Under SBTP in the Philippines, a school training system that was conducted by the Philippine side was strengthened and expanded by Japanese inputs and was established as a cluster system. At present, SBTP is the only training system authorized to be held on weekdays and supported by the government. This could be attributed to the fact that the school training system was already prevalent and recognized by authorities to a certain degree. As this example shows, cooperation and/or assistance for the existing training system facilitates the establishment of a system in the short term and, as a result, sustainability through institutionalization.

- **In countries where effective collaboration among donors is under way, coordination among donors promotes institutionalization.**

If there were no other donor implementing projects in the same sector in the country of the project, the possibility of institutionalization becomes higher in comparison. In Kenya, donor coordination in the education sector was not very advanced and there were no other donors implementing projects in the area of secondary science and mathematics education. Consequently, the importance of SMASSE in Kenya became comparatively high and this led to the institutionalization of the project. In countries where donor coordination is advanced, enhancing the Japanese presence in the framework of donor coordination can promote institutionalization. In the case of Honduras, Japan was recognized among donors as being competitive in mathematics education, and this contributed to the official adoption of materials developed by the project. Therefore, it can be said that the enhancement of donor coordination is a contributing factor for institutionalization in countries where donor coordination in the education sector is already under way.

## 5) Lessons Learned about Monitoring and Evaluation

Education projects, including methods for teacher training as well as for monitoring and evaluation, are modified through



Teachers conducting science experiments in school training (Improvement of Educational Achievement in Science, Technology and Mathematics in Basic Education in Ghana)

trial and error, using the results of monitoring and evaluation. In this section, we reviewed the methods used to evaluate ongoing projects and how the monitoring and evaluation systems had been established.

- **Monitoring results bring about important information useful to the improvement of projects. Mid-term evaluation, if conducted appropriately, contributes considerably to the improvement of project planning.**

Although preliminary studies may be carefully conducted at the planning stages, it is impossible to grasp all the necessary information before the start of the project. Therefore, almost all projects need modification after they start. The quality of modification depends on regular monitoring activities. Under IMSTEP in Indonesia, a pilot activity was introduced in the middle of the project period and this successfully enhanced the project’s effectiveness at the school level. This initiative was evaluated as a tangible output of monitoring activities. A mid-term evaluation is a good opportunity to find potential inhibiting factors that may be overlooked under daily monitoring activities. Under STM in Ghana, the mid-term evaluation revealed that the high turnover rate of teachers could be an inhibiting factor. Based on this evaluation result, the project plan was modified and support for school training was strengthened to generate impacts on entire schools as well as on individual teachers. Although mid-term evaluations tend to be conducted in a more simplified manner than ex-ante and terminal evaluations, it is desirable to enhance the role of mid-term evaluation as it greatly contributes to the efficiency and impact of the projects.

- **Establishing an independent monitoring and evaluation group in a project management system can clearly define the responsibility of evaluation tasks.**

In SMASSE in Kenya, a task force in charge of monitoring and evaluation operations was formed, and a system to conduct periodical monitoring was established. It was an attempt to allocate staff (even though a small number) who

mainly assume evaluation tasks by establishing an evaluation group within the project. This method is also effective as a means of identifying where responsibility for evaluation lies. On the other hand, in MSSSI in South Africa, a reporting obligation was imposed on every layer of the cascade system from top to bottom with the premise that evaluation is the accumulation of monitoring information. In this way, a system was established to provide constant feedback. Both projects established and applied an evaluation system unique to their own respective projects. In many JICA projects not confined to education, JICA often undertakes periodical monitoring for the mid-term and terminal evaluations. However, it must be noted that local entities took initiatives in monitoring and evaluation in the projects in Kenya and South Africa by submitting the results of their own monitoring and evaluation to be used for the JICA's periodical evaluations. Implementation of such monitoring and evaluation would tailor the content of evaluation to correspond with the needs and reality of the projects, which in turn facilitates the achievement of the objectives with more effective feedback.

- **In the evaluation of primary and secondary science and mathematics education projects, an attempt for adopting a method to objectively evaluate the teaching capacity of teachers and the improvement of classes was launched. It is desirable to accumulate evaluation results on the capacity of students and to establish an evaluation method based on such results in the future.**

The evaluation method adopted for primary and secondary science and mathematics education projects in the past mainly focused on interviews and questionnaire surveys targeting teachers who had participated in training. Recent



Students answering questionnaires for monitoring and evaluation (Strengthening of Mathematics and Science in Secondary Education in Kenya)

impact evaluations include comparisons of effects seen on participants before and after training as well as effects seen on training participants and non-participants. In addition, quantitative analyses applying academic theories were also conducted. The evaluation of students, however, has not been conducted in some projects of this evaluation study. The improvement of student capacity depends on local community and individual characteristics to a great extent: thus, it is difficult to establish appropriate indicators to measure the effects. In the mid-term evaluation of STM in Ghana, interviews were conducted not only with students but also with parents in an attempt to perform a multi-aspect evaluation. Although the evaluation results of STM may not be sufficient to find direct cause-and-effect linkages within the project, the accumulation of data will contribute to the development and improvement of a method to evaluate the capacity of students.