

# Part 2

## Project-level Evaluation



# Overview of Evaluations of Individual Projects in Fiscal 2004

JICA evaluated the following individual projects in fiscal 2004, using a consistent evaluation system from the ex-ante to ex-post stages (Table 2-1 to 2-4). This chapter presents some cases of evaluation results as examples of ex-ante, mid-term, terminal, and ex-post evaluations. 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.

The objectives of evaluations at each stage are shown below.

■ **Ex-ante evaluation:** The ex-ante evaluation is carried out prior to the implementation of a project to check conformity with Japan's aid policy, JICA Country Program, and needs of the partner country, as well as to clarify the project content and expected cooperation effects for the purpose of evaluating the relevance of the project comprehensively. Evaluation indicators of a project set at the ex-ante stage will be used to measure the progress and effect of cooperation in subsequent monitoring and evaluations at stages from mid-term to ex-post evaluations.

■ **Mid-term evaluation:** The mid-term evaluation is conducted

at the middle point of a project to evaluate it for smooth operation leading to outcome. It aims to clarify the achievements and implementing process and examine whether plans of the project are appropriate, focusing on relevance, efficiency, and so on. Results of the mid-term evaluation are utilized to revise the original plan or improve the operation structure.

■ **Terminal evaluation:** The terminal evaluation is conducted to examine whether the project will achieve the outcome as planned prior to the termination of a project. It comprehensively analyzes the achievement level of the project purpose, efficiency, and prospective sustainability of a project. Based on the result, it is decided whether to complete the project and whether follow-up such as extension of cooperation is necessary or not.

■ **Project-level ex-post evaluation:** The ex-post evaluation is conducted a few years after completion of a project to verify impact of the project on the recipient side and sustainability of the cooperation effect. Results of ex-post evaluation serve as lessons learned for effective and efficient project implementation in formulating and implementing new projects and/or programs in the future.

**Table 2-1 Ex-ante Evaluation (Total 117 Projects)**

Project Title	Country/Area	Cooperation Scheme
<b>Asia</b>		
Participatory Rural Development Project	Bangladesh	Technical Cooperation Project
Project for Sustainable Arsenic Mitigation under the Integrated Local Government System	Bangladesh	Technical Cooperation Project
Strengthening Primary Teacher Training in Science and Mathematics	Bangladesh	Technical Cooperation Project
The Agriculture Research and Extension Support Project in Lhuntse and Mongar	Bhutan	Technical Cooperation Project
National Tuberculosis Control Project (Phase 2)	Cambodia	Technical Cooperation Project
The Capacity Building for the Forestry Sector (Phase 2)	Cambodia	Technical Cooperation Project
Freshwater Aquaculture Improvement and Extension Project (PROTECO)	Cambodia	Technical Cooperation Project
Cambodia-Japan Cooperation Center	Cambodia	Technical Cooperation Project
The Master Plan Study on Rural Electrification by Renewable Energy	Cambodia	Development Study
Master Plan Study for the Sustainable Development of Siem Reap/Angkor Town	Cambodia	Development Study
Study on Comprehensive Agricultural Development of Prek Thnot River Basin	Cambodia	Development Study
Economic Legal Infrastructure Development Project (Corporate Related Laws)	China	Technical Cooperation Project
Sino-Japan Forestry Ecology Training Center Project	China	Technical Cooperation Project
The Study on the Improvement of the Water Rights Systems	China	Development Study
Xining-Centered Qinghai Province Comprehensive Tourism Development Study	China	Development Study
Augmentation of Water Supply and Sanitation for Goa State	India	Development Study
The Project for Institutional Support for Food Security	Indonesia	Technical Cooperation Project
The Empowerment of Water Users Association Project	Indonesia	Technical Cooperation Project
Regional Educational Development and Improvement Program	Indonesia	Technical Cooperation Project
The Study on Countermeasures for Sedimentation in Wonogiri Multipurpose Dam Reservoir	Indonesia	Development Study
Detailed Design Study of the Urgent Rehabilitation Project of the Tanjung Priok Port	Indonesia	Development Study

Project Title	Country/Area	Cooperation Scheme
IT Human Resource Development (National IT Center)	Kyrgyzstan	Technical Cooperation Project
The Project for Capacity Building in PIP Management	Laos	Technical Cooperation Project
The Project on Electric Power Technical Standard Establishment	Laos	Technical Cooperation Project
The Aquaculture Improvement and Extension Project (Phase 2)	Laos	Technical Cooperation Project
Comprehensive Traffic Safety Plan in Vientiane Municipality	Laos	Development Study
Development of Human Capacity for Weather Forecasting and Data Analysis	Mongolia	Technical Cooperation Project
The Study on Solid Waste Management Plan for Ulaanbaatar Municipality	Mongolia	Development Study
Technical Cooperation Project for the Eradication on Opium Poppy Cultivation and Poverty Reduction in Kokang Special Region No.1	Myanmar	Technical Cooperation Project
Strengthening Child-centered Approach in Myanmar Education	Myanmar	Technical Cooperation Project
Community-oriented Reproductive Health Project	Myanmar	Technical Cooperation Project
Improvement of Public Administration for Local Governments in Punjab	Pakistan	Technical Cooperation Project
Development Study on Improvement of Management Information Systems in Health Sector	Pakistan	Development Study
Information Technology Human Resource Development Project	Philippines	Technical Cooperation Project
Sustainability Improvement of Renewable Energy Development in Village Electrification	Philippines	Technical Cooperation Project
Educational Support for the New CNS/ATM Systems Implementation	Philippines	Technical Cooperation Project
Project for Enhancement of Community-based Forest Management Program	Philippines	Technical Cooperation Project
The Project on the Development and Promotion of Location-specific Integrated High-yielding Rice and Rice-based Technologies	Philippines	Technical Cooperation Project
Feasibility Study and Implementation Support on the CALA East-West National Road Project	Philippines	Development Study
Master Plan Study on the Development of National Airport	Philippines	Development Study
Study on the Domestic Shipping Development Plan	Philippines	Development Study
Project for Technical Strengthening of National Institute of Metrology (Phase 2)	Thailand	Technical Cooperation Project
The Project for Improvement of Sewage Treatment Plant Management	Thailand	Technical Cooperation Project
The Study on Implementation of the BMA Subcenters Program	Thailand	Development Study
Development Study on Planning and Capacity Building for Natural Resource Management and Sustainable Rural and Agricultural Development in the North Thailand	Thailand	Development Study
Irrigation and Rice Cultivation Project in Manatuto	Timor-Leste	Technical Cooperation Project
Nursing Education Improvement Project	Uzbekistan	Technical Cooperation Project
Project for Strengthening Cluster-based Teacher Training and School Management	Viet Nam	Technical Cooperation Project
Improvement of Port Management System	Viet Nam	Technical Cooperation Project
Forest Fire Rehabilitation Project	Viet Nam	Technical Cooperation Project
Utilization of Intellectual Property Information	Viet Nam	Technical Cooperation Project
Project for Improvement of Medical Service in Central Region	Viet Nam	Technical Cooperation Project
Capacity Development of Participatory Irrigation Management System through Viet Nam Institution for Water Resources Research (VIWRR) for Improvement of Agricultural Productivity	Viet Nam	Technical Cooperation Project
Strengthening Health Service Provision in Hoa Binh Province	Viet Nam	Technical Cooperation Project
Improvement of Plant Quarantine Treatment Technique against Fruit Flies or Fresh Fruits	Viet Nam	Technical Cooperation Project
Detailed Design Study of Cai Mep-Thi Vai International Terminals	Viet Nam	Development Study
The Study on the Development of Industrial Statistics	Viet Nam	Development Study
Capacity Building for Preparing Feasibility Studies and Implementation Plans for Afforestation Projects	Viet Nam	Development Study
The Comprehensive Urban Development Programme in Hanoi City	Viet Nam	Development Study
<b>Latin America</b>		
Study on Revitalization of Small and Medium Enterprises	Argentina	Development Study
Improvement of Technical Extension for Small-scale Livestock Farmers Project	Bolivia	Technical Cooperation Project
Technological Center on Agriculture and Livestock (Phase 2)	Bolivia	Technical Cooperation Project
Community Policing Project for the Federative Republic of Brazil	Brazil	Technical Cooperation Project
Study on Integrated Plan of Environmental Improvement in the Catchment Area of Lake Billings in Sao Bernardo do Campo	Brazil	Development Study
The Study on Pecem Industrial and Port Complex Development Plan	Brazil	Development Study
The Study on Capacity Development Program in Bridge Rehabilitation Planning, Maintenance and Management Based on 29 Bridges of National Highway Network	Costa Rica	Development Study
Strengthening of the Primary Health Care in the Province of Samana	Dominican Republic	Technical Cooperation Project

Project Title	Country/Area	Cooperation Scheme
Project of Sustainable Agricultural Development of the Small Agriculturists of North Central Region of the Dominican Republic	Dominican Republic	Technical Cooperation Project
The Study for Integrated Management of Urban Solid Waste in Santo Domingo	Dominican Republic	Development Study
The Project for Shellfish Aquaculture Development	El Salvador	Technical Cooperation Project
The Project on Waste Management for Small Municipalities	El Salvador	Technical Cooperation Project
Reproductive Health — Prevention of Uterine Cervical Cancer	Mexico	Technical Cooperation Project
Improvement of Cattle Productivity for Small and Medium Scale Farmers Project	Nicaragua	Technical Cooperation Project
Technological Center on Agriculture (Phase 2)	Paraguay	Technical Cooperation Project
The Project on Strengthening Integrated Health Care for the Population Affected by Violence and Human Rights Violation	Peru	Technical Cooperation Project
MERCOSUR Tourism Promotion Project	MERCOSUR	Technical Cooperation Project
The International Training Course on the Criminal Justice System Reforms in Latin America	Latin American Countries	Technical Cooperation Project
<b>Europe</b>		
Kazanlak Area Revitalization Project	Bulgaria	Technical Cooperation Project
The Study on Establishing Digital Topographic Maps for Georgia	Georgia	Development Study
The Study on Protection and Rehabilitation of the Southern Romanian Black Sea Shore	Romania	Development Study
<b>Oceania</b>		
The Improvement of Pohnpei International Airport	Micronesia	Development Study
Strengthening Expanded Immunization Program in the Pacific Region	Oceania 13 countries	Technical Cooperation Project
<b>Middle East</b>		
Medical Education Project	Afghanistan	Technical Cooperation Project
Strengthening Teacher Training Project	Afghanistan	Technical Cooperation Project
Tuberculosis Control Project	Afghanistan	Technical Cooperation Project
Economic Empowerment for Women	Afghanistan	Technical Cooperation Project
The Central Agricultural Experiment Station Rehabilitation Project	Afghanistan	Technical Cooperation Project
Reproductive Health Project	Afghanistan	Technical Cooperation Project
Urgent Rehabilitation Support Program in Mazar-e-Sharif	Afghanistan	Development Study
A Study of Seismic Microzoning of the Wilaya Algiers	Algeria	Development Study
PPP Program for Cairo Urban Toll Expressway Network Development	Egypt	Development Study
The Study on Water Supply System Resistant to Earthquakes in Teheran Municipality	Iran	Development Study
Tourism Development through Museum Activities	Jordan	Technical Cooperation Project
The Technical Cooperation Project Improvement of Medical Care for Expectant and Nursing Mothers	Morocco	Technical Cooperation Project
National Ports Development Strategy Study	Oman	Development Study
Development and Training Center Project	Saudi Arabia	Technical Cooperation Project
Project on Development of Efficient Irrigation Techniques and Extension	Syria	Technical Cooperation Project
Capacity Development of Environmental Monitoring at Directorates for Environmental Affairs in Governorates	Syria	Technical Cooperation Project
Project for Sustainable Management of Coastal Fisheries Resources	Tunisia	Technical Cooperation Project
Broadening Regional Initiatives for Developing Girl's Education (BRIDGE) Program in Taiz	Yemen	Technical Cooperation Project
<b>Africa</b>		
The Study on Urgent Rehabilitation Program of Ports	Angola	Development Study
The Groundwater Development and Water Supply Training Project (Phase 2)	Ethiopia	Technical Cooperation Project
Project on Strengthening Technology Development, Verification, Transfer and Adoption through Farmers Research Groups	Ethiopia	Technical Cooperation Project
Increasing Access to Quality Basic Education through Developing School Mapping and Strengthening Microplanning in Oromia Region	Ethiopia	Development Study
Project on Basic Training for Reintegration of Demobilized Soldiers	Eritrea	Technical Cooperation Project
Project for the Improvement of Health Service with a Focus on Safe Motherhood in the Kisii and Kerich Districts	Kenya	Technical Cooperation Project
Improvement of Environmental Management Capacity in Nakuru	Kenya	Technical Cooperation Project
The Master Plan and Feasibility Study to Alleviate Traffic Congestion and Improve Traffic Safety in the Nairobi Metropolitan Area	Kenya	Development Study
The Study on the Sustainable, Autonomic Drinking Water Supply Program in the South Region of Madagascar	Madagascar	Development Study
Strengthening of Mathematics and Science in Secondary Education	Malawi	Technical Cooperation Project
The Study on the Capacity Building Programs for the Community-based Prevention of Desertification in the South Region of Segou	Mali	Development Study

Project Title	Country/Area	Cooperation Scheme
The Oasis Zone Development Focused on Feminine Promotion	Mauritania	Development Study
Master Plan Study for Utilization of Solar Energy	Nigeria	Development Study
The Study on the Reorganization of the Production of Rice	Senegal	Development Study
The Study on Water Supply Improvement in Coast Region and Dar es Salaam Peri-urban	Tanzania	Development Study
The Study on Rural Water Supply in Mwanza and Mara Regions	Tanzania	Development Study
Secondary Science and Mathematics Teachers' Project	Uganda	Technical Cooperation Project

**Table 2-2** Mid-term Evaluation (Total 27 Projects)

<b>Asia</b>		
Research and Development Center Project on Sustainable Agricultural Technology	China	Technical Cooperation Project
The Japan-China Cooperation Science and Technology Center for Forest Tree Improvement Project	China	Technical Cooperation Project
Human Resource Development of Rehabilitation Professionals	China	Technical Cooperation Project
The Project for Strengthening Extension System for Bivoltine Sericulture	India	Technical Cooperation Project
The Project for Strengthening Decentralized Environmental Management System	Indonesia	Technical Cooperation Project
Mongolia-Japan Center for Human Development	Mongolia	Technical Cooperation Project
Community Forestry Training and Extension Project in Dry Zone	Myanmar	Technical Cooperation Project
Balancing and Modernization of Workshop Facilities at PITAC, Lahore (Phase 2)	Pakistan	Technical Cooperation Project
Asia-Pacific Development Center on Disability	Thailand	Technical Cooperation Project
The Project of the Japan-Thailand Technical Cooperation on Animal Disease Control and in Thailand Neighboring Countries	Thailand	Technical Cooperation Project
Program on the Instructor Training for Electric Power Sector	Viet Nam	Technical Cooperation Project
<b>Latin America</b>		
The Mining Environment Research Center Project	Bolivia	Technical Cooperation Project
The Project for Strengthening Regional Health Network for Santa Cruz Department	Bolivia	Technical Cooperation Project
Strengthening the Agricultural Technical Support System to Small Scale Farmers in Tocantins State	Brazil	Technical Cooperation Project
The Project for Strengthening Institutional Capacity Mining Environmental Management	Chile	Technical Cooperation Project
Vector Control of Chagas Diseases	Guatemala	Technical Cooperation Project
The Improvement of Teaching Method in Mathematics	Honduras	Technical Cooperation Project
Strengthening Continuing Education in Nursing and Midwifery in the South of the Republic of Paraguay	Paraguay	Technical Cooperation Project
<b>Europe</b>		
The Project on the Reduction of Seismic Risk for Buildings and Structures	Romania	Technical Cooperation Project
<b>Oceania</b>		
Palau International Coral Reef Center Strengthening Project	Palau	Technical Cooperation Project
<b>Middle East</b>		
Saudi-Japanese Automobile High Institute Project	Saudi Arabia	Technical Cooperation Project
The Geologic Remote Sensing Project	Turkey	Technical Cooperation Project
<b>Africa</b>		
African Institute for Capacity Development (Phase 2)	Kenya	Technical Cooperation Project
Project for the Development of Human Resources in Health	Senegal	Technical Cooperation Project
Kilimanjaro Agricultural Training Center Project (Phase 2)	Tanzania	Technical Cooperation Project
Project for Participatory Village Development in Isolated Areas	Zambia	Technical Cooperation Project
Lusaka District Primary Health Care Project (Phase 2)	Zambia	Technical Cooperation Project

**Table 2-3** Terminal Evaluation (Total 92 Projects)

<b>Asia</b>		
Integrated Approach for Mitigation of the Arsenic Contamination of Drinking Water	Bangladesh	Technical Cooperation Project
The Capacity Building for the Forestry Sector	Cambodia	Technical Cooperation Project
The Maternal and Child Health Project (Phase 2)	Cambodia	Technical Cooperation Project
The Model Afforestation Project in Sichuan	China	Technical Cooperation Project
Research on Performance Assessment and Product Certification for Residential Building	China	Technical Cooperation Project
Research Project on Timber from Man-made Forests	China	Technical Cooperation Project
Human Resource Development Project for Water Resources	China	Technical Cooperation Project
China-Japan Friendship Project on the National Center for Safety Evaluation of Drugs	China	Technical Cooperation Project

Project Title	Country/Area	Cooperation Scheme
Expanded Program on Immunization Strengthening Project	China	Technical Cooperation Project
Monitoring and Control Techniques of Acid Rain and SO <sub>x</sub>	China	In-country Training
Health-care in Poor Remote Area	China	In-country Training
Assistance to General Election	Indonesia	Technical Cooperation Project
Human Resources Development for Local Governance	Indonesia	Technical Cooperation Project
Strengthening of Polytechnic Education in Electric-related Technology	Indonesia	Technical Cooperation Project
Project for Establishment and Management of Appropriate Technology Center for Waste Water Treatment	Indonesia	JICA Partnership Program with NGOs, Local Governments and Institutes
Collaborative Study Project on the Epidemiology Pathogenesis and Molecular Characterization of NIPAH Virus in Animals	Malaysia	Technical Cooperation Project
Leprosy Control and Basic Health Service Project	Myanmar	Technical Cooperation Project
The Project for the Improvement of Sethathirath Hospital	Laos	Technical Cooperation Project
Development of the Faculty of Economics and Management of National University of Laos	Laos	Technical Cooperation Project
Lao-Japan Human Resource Cooperation Center	Laos	Technical Cooperation Project
International Training Course on Operation and Maintenance of Construction Machinery	Pakistan	Third-country Group Training
Project for Strengthening of Continuing School Based Training Program for Elementary and Secondary Science and Mathematics Teachers	Philippines	Technical Cooperation Project
The Project for Enhancement of Capabilities in Flood Control and Sabo Engineering of the Department of Public Works and Highways (Follow-up)	Philippines	Technical Cooperation Project
The Project for Establishment and Implementation Conservation Plans in Local Government Units in the Province of Cavite	Philippines	Technical Cooperation Project
Extension of Technology Development for Electronic Navigational Charts	Philippines	Technical Cooperation Project
The Project for Improvement of Farmers Income and Area Development	Philippines	Technical Cooperation Project
Environmental and Productivity Management of Marginal Soils	Philippines	Technical Cooperation Project
The Project for the Preparation and Publication of the Philippine Pharmacopeia (Phase 2)	Philippines	Technical Cooperation Project
Information and Communication Technology for Entrepreneurship	Philippines	Third-country Group Training
Regional Training Orientation Course on the Principles and Practice of Appropriate Technology Development	Philippines	Third-country Group Training
Contemporary Development in Banking and Finance	Singapore	Third-country Group Training
Mechatronic Systems Technology	Singapore	Third-country Group Training
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 on the Practical Energy Management Training Center	Thailand	Technical Cooperation Project
Project for Development of Trauma Center Complex	Thailand	Technical Cooperation Project
SiC—Tool and Mold Technology Development Project	Thailand	Technical Cooperation Project
Capacity Building for Planning Management of Local Authorities	Thailand	Technical Cooperation Project
The Project of Capacity Building on the Development of Information Technology for Education	Thailand	Technical Cooperation Project
The Project on the Industrial Water Technology Institute (Phase 2)	Thailand	Technical Cooperation Project
The Project for the Asian Center for International Parasite Control	Thailand	Technical Cooperation Project
Project on Local Management Cooperation	Thailand	Technical Cooperation Project
The Reforestation and Extension Project in the Northeast of Thailand (Phase 2)	Thailand	Technical Cooperation Project
Development of the Method of Urban Development (Follow-up)	Thailand	Technical Cooperation Project
Regional Cooperation Project on Capacity Building of Drug Analysis for Improvement of Drug Law Enforcement in Thailand, Cambodia, Lao P.D.R., Myanmar and Viet Nam	Thailand	Technical Cooperation Project
Communicable Diseases Control and Surveillance	Thailand	Third-country Group Training
The Project for Improvement of Cattle Artificial Insemination Technology	Viet Nam	Technical Cooperation Project
Project on the Improvement of Higher Maritime Education	Viet Nam	Technical Cooperation Project
Strengthening of National Institute of Veterinary Research	Viet Nam	Technical Cooperation Project
The Bach Mai Hospital Project for Functional Enhancement	Viet Nam	Technical Cooperation Project
The Project for Strengthening Training Capacity for Technical Workers in the Hanoi Industrial College	Viet Nam	Technical Cooperation Project
<b>Latin America</b>		
Project on Establishment of Control Capacity for Industrial Wastewater and Waste	Argentina	Technical Cooperation Project
Regional Geologic Mapping with Advanced Satellite Sensors	Argentina	Technical Cooperation Project
Diagnosis and Research on Domestic Animal Diseases	Argentina	Third-country Group Training
Caribbean Disaster Management	Barbados	Technical Cooperation Project
Project for the Dissemination of High-quality Rice Seeds for Small-scale Farmers	Bolivia	Technical Cooperation Project

Project Title	Country/Area	Cooperation Scheme
Support to Promotion of Participation by Community Residents in the Field of Education	Bolivia	Community Empowerment Program
Technology Development for Revegetation and Utilization of Degraded Areas in the Semi-arid Region (Caatinga) of the Northeastern Brazil	Brazil	Technical Cooperation Project
Project of Community Development through Training of Community Educators	Brazil	Community Empowerment Program
Public Health Course for PALOPS	Brazil	Third-country Group Training
International Course about Tropical Illness	Brazil	Third-country Group Training
Training in Integrate Development of Cassava for PALOPS	Brazil	Third-country Group Training
Worker's Health	Brazil	Third-country Group Training
The Project on Conservation of the Environment and Rural Development with Farmers' Participation for the Mediterranean Dryland Zone of Chile	Chile	Technical Cooperation Project
Improvement of Productivity for the Small-scale Dairy Farmers Project	Chile	Technical Cooperation Project
The Reproductive Health Project in the Health Region 7	Honduras	Technical Cooperation Project
Development of Method of Research and Education in Electronic Field	Mexico	Technical Cooperation Project
Development of Agriculture and Local Community in South Baja California State	Mexico	JICA Partnership Program with NGOs, Local Governments and Institutes
The Project for Strengthening of the Local System of Integrated Health Care (SILAIS) of Granada	Nicaragua	Technical Cooperation Project
Leader Training for the Small and Medium-sized Companies	Paraguay	Technical Cooperation Project
Improvement of Small and Medium Scale Dairy Farm Management Project	Paraguay	Technical Cooperation Project
Improvement of Local Health System	Peru	Technical Cooperation Project
<b>Europe</b>		
Human Resources Development for Environmental Engineers at the College of Dunaujvaros	Hungary	Technical Cooperation Project
<b>Oceania</b>		
Information and Communication Technologies (ICTs) Capacity Building at the University of the South Pacific	Fiji	Technical Cooperation Project
<b>Middle East</b>		
The Project on Upgrading of Metal Processing Technology	Egypt	Technical Cooperation Project
The Water Management Improvement Project in the Nile Delta	Egypt	Technical Cooperation Project
Project on the Improvement of Audio-visual Aids and Instruction Methods in Vocational Training at the Instructor Training Center (ICT)	Iran	Technical Cooperation Project
The Training Center Project for Agricultural Mechanization	Morocco	Technical Cooperation Project
Third Country Training Program in the Merchant Marine Field	Morocco	Third-country Group Training
Portable Water and Sanitation	Morocco	Third-country Group Training
The Establishment of the Water Resources Information Center	Syria	Technical Cooperation Project
Management of Water Resources and Improvement of Water Use Efficiency in Dry Areas	Syria	Third-country Group Training
The Project for Strengthening of Reproductive Health Education	Tunisia	Technical Cooperation Project
Project on Improvement of Maritime Education	Turkey	Technical Cooperation Project
<b>Africa</b>		
The Small-scale Irrigated Agriculture Promotion Project (Follow-up)	Ghana	Technical Cooperation Project
Improvement of Educational Achievement in Science, Technology and Mathematics (STM) in Basic Education	Ghana	Technical Cooperation Project
Strengthening of Rural Women's Capacity for Community Development	Kenya	In-country Training
Regional Course for the Promotion of Social Forestry in Africa	Kenya	Third-country Group Training
Capacity Building for WATSAN Stakeholders in the Sustainability of Water Facilities in Oyo State	Nigeria	In-country Training
The Integrated Community Forestry Development Project	Senegal	Technical Cooperation Project
Sustainable Rice Cultivation by Mulch System	Tanzania	Technical Cooperation Project
Community Empowerment for Water Supply and Sanitation	Zambia	Community Empowerment Program
In-Country Aquaculture Training	Zambia	In-country Training

**Table 2-4** Project-level Ex-post Evaluation (Total 42 Projects)

<b>Asia</b>		
The Project for Improvement of Water Supply Facilities in Phnon Penh 2	Cambodia	Grant Aid (Basic Design Study)
The Watershed Management Training Project on the Loess Plateau	China	Technical Cooperation Project
The Integrated Development Project in the Waterlogged Area in the Four-Lake Area of Jiangnan Plain, Hubei Province	China	Technical Cooperation Project
Environmental Protection and Safety Training Center of the Coal Industry	China	Technical Cooperation Project
Technology for the Control of Waste Gases in the Petrochemical Industry	China	Technical Cooperation Project

Project Title	Country/Area	Cooperation Scheme
Dairy Development Project in Tianjin	China	Technical Cooperation Project
Forest Protection Research Project in Ningxia-Hui	China	Technical Cooperation Project
The Project for Improvement of Kalawati Saran Children's Hospital	India	Grant Aid (Basic Design Study)
The Irrigation Engineering Service Center Project	Indonesia	Technical Cooperation Project
The Integrated Agricultural and Rural Development Project in Southeast Sulawesi Province	Indonesia	Technical Cooperation Project
The Agricultural Statistics Technology Improvement and Training Project	Indonesia	Technical Cooperation Project
Technical Cooperation Project for Improvement District Health Service in South Sulawesi	Indonesia	Technical Cooperation Project
Dairy Technology Improvement Project	Indonesia	Technical Cooperation Project
Pediatric Infectious Disease Prevention Project	Laos	Technical Cooperation Project
The Project on Risk Management of Hazardous Chemical Substances	Malaysia	Technical Cooperation Project
The Project for Construction of Sixth Male Primary School	Maldives	Grant Aid (Basic Design Study)
The Central Forestry Development Training Center Project	Myanmar	Technical Cooperation Project
The Maternal and Child Health Project	Pakistan	Technical Cooperation Project
Project for Prevention and Control of AIDS	Philippines	Technical Cooperation Project
The Family Planning and Maternal and Child Health Project (Phase 2)	Philippines	Technical Cooperation Project
Pesticide Monitoring System Development Project	Philippines	Technical Cooperation Project
The Research Project for Higher Utilization of Forestry and Agricultural Plant Materials	Thailand	Technical Cooperation Project
<b>Latin America</b>		
The Beef Cattle Improvement Project	Bolivia	Technical Cooperation Project
The Clinical Research Project of State University of Campinas	Brazil	Technical Cooperation Project
Quality Improvement of Foundry Technology in Small and Medium Scale Industry	Brazil	Technical Cooperation Project
The Research Project on Small-scale Horticulture in Southern Brazil	Brazil	Technical Cooperation Project
The Project for Agricultural Development on Sloped Terrains	Dominican Republic	Technical Cooperation Project
Research and Clinical Project for the Gastroenterological Diseases	Dominican Republic	Technical Cooperation Project
The Project for Improvement of Water Supply Facilities in the Southern Region of Quito City	Ecuador	Grant Aid (Basic Design Study)
Engineering and Industrial Development Center for Small and Medium Scale Industries at Queretaro State	Mexico	Technical Cooperation Project
Refinery Safety Training Center Project	Mexico	Technical Cooperation Project
The Project for the Improvement of Vegetable Production Techniques for Small Scale Farmers	Paraguay	Technical Cooperation Project
The Forest Extension Project in the Eastern Region of Paraguay	Paraguay	Technical Cooperation Project
Agricultural Statistics Project (Aftercare)	Paraguay	Technical Cooperation Project
The Forest Tree Improvement Cooperation Project	Uruguay	Technical Cooperation Project
The Veterinary Laboratory Improvement Project	Uruguay	Technical Cooperation Project
<b>Middle East</b>		
The Pediatric Emergency Care Project	Egypt	Technical Cooperation Project
The Fisheries Technical Training Project	Morocco	Technical Cooperation Project
Improvement of Mine Safety Technologies	Turkey	Technical Cooperation Project
<b>Africa</b>		
Kenya Institute of Surveying and Mapping	Kenya	Technical Cooperation Project
The Project for Rehabilitation of Building and Equipment of Coast Provincial General Hospital	Kenya	Grant Aid (Basic Design Study)
The Project for Construction of Primary Schools	Senegal	Grant Aid (Basic Design Study)

## Example of Ex-ante Evaluation

### I Outline of Project

- Country: Syria
- Project title: Capacity Development of Environmental Monitoring at Directorates for Environmental Affairs in Governorates
- Sector: Environmental management
- Cooperation scheme: Technical Cooperation Project
- Division in charge: Global Environment Department, Group 2



In an ex-ante evaluation, a workshop is held with the participation of stakeholders in order to formulate a project in line with local needs.



- Total cost (Japanese side): Approximately 340 million yen
- Period of cooperation: January 2005 to January 2008 (three years)
- Partner country's implementing agency: Ministry of Local Administration and Environment (MOLAE)
- Supporting organization in Japan: Ministry of the Environment

### 1. Outline of Cooperation

This project aims at strengthening the environmental monitoring capabilities (including both general environmental monitoring capability and pollution sources surveillance capability) of the Directorates for Environmental Affairs in Syria (hereinafter referred to as "the directorates"). Targeting 14 directorates nationwide, it focuses on improving the analytical skills of staff members in charge, laboratory operation and management skills, information management skills, environmental monitoring planning skills and environmental education implementation skills.

### 2. Necessity and Positioning of Cooperation

#### (1) Current Situation and Problems

The aggravating environment, especially of late, following industrialization in Syria has affected ordinary citizens in such ways as contamination of drinking water and food caused by water pollution and development of respiratory illness caused by air pollution. In order to respond to such problems, Syria has promoted system building in preparation for full-scale environmental administration by developing laws and regulations including the Basic Environmental Law and Environmental Protection Law, and by establishing Directorates for Environmental Affairs nationwide to monitor the environment. However, environmental monitoring by the directorates that are in charge of protecting local environments has just started and the conditions of equipment maintenance and staff members' skills are still immature. In other words, while the framework for an administrative system has been developed, the environmental monitoring capabilities of staff members at the directorates (including sampling, analysis, interpretation, evaluation, data filing and reporting, data management skills, laboratory operation and management skills and monitoring planning skills) have not fully developed and need immediate attention.

The directorates have just started implementing enlightenment and dissemination activities for local residents; however, the activities vary among provinces and are not implemented on a full scale. It is necessary to strengthen those activities in order to improve the residents' awareness about the environment.

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

The 9th Economic and Social Development 5-year Plan (2001-2005) stresses the importance of environmental consideration while announcing further industrial promotion and econom-

ic liberalization. Utilization of the resources in a sustainable way in order to strike a balance between the environment and industries is planned. The National Environmental Action Plan officially approved in 2003 sets specific goals to be achieved in the next 10 to 12 years in areas such as improvement of environment-related laws and regulations, development of human resources, and control of damages on human health. It outlines the short- and mid-term action plans in order to realize the aforementioned goals. Furthermore, the minister announced in January 2004 that he would establish directorates in charge of monitoring the environment in 13 of the total 14 governorates nationwide (excluding Ar-Raqqah).

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

The ODA Charter endorsed by the Cabinet in August 2003 states "balancing environment and development" as one of principles for providing aid. The project also conforms to Millennium Development Goals, the Environmental Conservation Initiative for Sustainable Development (Eco ISD) by the Japanese government, and the policies of the Third World Water Forum. In order to meet the requirements of the Japanese government and the international community for environmental consideration as stated above, administrative skills of the Syrian environmental administration must be improved. The project conforms to environmental conservation (strengthening of environmental policy planning capability), one of the priority target areas for providing aid, in JICA's Country Program for Syria.

### 3. Framework of Cooperation

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

##### 1) Objective to be achieved at the end of cooperation (project purpose)

The target Directorates for Environmental Affairs in Governorates are capable of introducing and conducting regular monitoring of required parameters for water and air quality according to the monitoring plan formulated by the directorates themselves as well as implementing activities for public awareness, including publication of the monitoring results.

##### [Indicators]

- The analysis technology level to be targeted at each directorate is as follows:
  - Damascus:** (water) chemical and biological analysis level, (air) basic sampling level (manual)
  - Aleppo and Homs:** (water) basic analysis level, (air) basic sampling level (manual)
  - Other 11 directorates:** (water) manual sampling level, (air) not included in the project
- The target directorates conduct monitoring of water and air on a regular basis according to the monitoring plan they formulate themselves.
- Activities for public awareness are implemented in at least four

directorates of the 14 directorates.

- Monitoring results are issued and constantly open to the public as an annual report at the governorate level

## 2) Objectives expected to be achieved after the end of cooperation (overall goal)

Environmental monitoring system and publication of the monitoring results are introduced and disseminated to all the directorates.

### [Indicators]

- All the directorates conduct monitoring of air on a regular basis according to the monitoring plan they formulate themselves no later than five years after the completion of the project.
- Roles for the national monitoring system are properly allocated among the directorates (reference system).
- Results of the monitoring are constantly issued and open to the public as an annual report at all governorates.
- Results of the monitoring are issued and open to the public as an annual report at the national level.

## (2) Outputs and Activities

**Output 1:** The technical level of laboratory staff concerning environmental sampling and analysis is improved in the target directorates.

**[Indicators]** The following conditions at the target directorates as of 2008.

- a. The whole laboratory staff conducts environmental monitoring according to the Standard Operation Procedures (SOP) compiled.
- b. The whole laboratory staff reaches the grade B\* level on monitoring items in charge.
- c. 50% of laboratory staff reaches the grade A\* level on monitoring items in charge.

\* Grade A: able to analyze samples, evaluate the data, and determine them on his/her own

\* Grade B: able to analyze samples and work out the data, but need decision from their superiors to evaluate and determine the data

### [Activities]

- a. Compilation of SOP for samplings, analysis, interpretation, evaluation, data filing and reporting
- b. Training in theory for making monitoring plans, samplings, analysis, interpretation, evaluation, data filing and reporting
- c. Hands-on training in sampling, pre-treatments, analysis, interpretation, evaluation, data filing and reporting
- d. On-site on-the-job training (OJT) in sampling, analysis, interpretation, evaluation, data filing and reporting
- e. Training in analysis results checking, concept and procedures of evaluation

**Output 2:** Laboratories are properly managed by the laboratory staff itself at the target directorates.

**[Indicators]** The following conditions at the target directorates as of 2008

- a. Equipment in laboratories are properly operated and maintained according to the operation and maintenance manual compiled by the laboratory staff.
- b. A spare parts and consumable materials management system has been established.
- c. Chemical reagents are properly stored and cared for according to the operation and maintenance manual.
- d. Liquid and solid wastes from the laboratory are properly treated according to the operation and maintenance manual.
- e. Each directorate prepares its budget plan for regular monitoring.

### [Activities]

- a. Compilation of a “laboratory operation and maintenance manual” for equipment operation and maintenance, spare parts preparation, reagents storage and treatment, liquid and solid laboratory wastes treatment and others
- b. Hands-on training for equipment operation and maintenance, reagents storage and treatment, liquid and solid laboratory wastes treatment, and others
- c. Assistance and guidance to prepare directorates’ budget plan for regular monitoring

**Output 3:** Environmental analysis data is accumulated and properly managed at the target directorates.

**[Indicators]** Condition on the accumulation of the monitoring records at the target directorates as of 2008

### [Activities]

- a. Creation of format for the monitoring records for laboratories and the General Commission for Environmental Affairs in MOLAE
- b. Compilation of monitoring records at each directorate
- c. Each directorate sends monitoring records to the General Commission for Environmental Affairs in MOLAE

**Output 4:** Laboratory staff at the target directorates is able to formulate an environmental monitoring plan specifying required parameters.

**[Indicators]** The following conditions at the target directorates

- a. Environmental Monitoring Plan specifying parameters and monitoring sites is established in respective laboratories as of 2006.
- b. The existing “Environmental Monitoring Guideline” is established as a standard for all laboratories as of 2008.

### [Activities]

- a. Preliminary pollution source inventory surveys
- b. Specification of monitoring sites and their parameters
- c. Formulation of “Environmental Monitoring Plan” specifying parameters and monitoring sites in respective laboratory
- d. Assistance and guidance to integrate the existing “Environmental Monitoring Guideline” into a standard for all laboratories

**Output 5:** The results and data acquired by the project are open to and shared with the citizens of the target directorates. The staff of target directorates is able to formulate its action plan for public awareness and environmental education.

**[Indicators]** The following conditions at the target directorates as of 2008

- a. Preliminary condition on public awareness is comprehended by each governorate and shared among the organizations concerned.
- b. Materials for activities for public awareness, such as textbooks, manuals, and pamphlets, are prepared.
- c. Seminars and workshops targeted for educational institutions and so forth are conducted.
- d. A periodical network meeting among organizations and/or institutions regarding environmental education in each governorate is organized.

**[Activities]**

- a. Preliminary survey on activities regarding environmental education and public awareness in each governorate
- b. Development of textbooks, manuals, pamphlets for environmental education
- c. Seminars and workshops for educational institutions, NGOs, etc.
- d. Strengthening of network among organizations and/or institutions regarding environmental education in each governorate and implementation of regular meetings

### (3) Inputs

#### Japanese side

Dispatch of experts: environmental management, water quality analysis, air quality analysis and monitoring, data management, environmental education

Equipment provision: simplified water quality analysis equipment, general chemical and biochemical analysis equipment, heavy metal analysis equipment, air monitoring equipment, and accompanying equipment. Personal computers for data management, etc.

Counterparts training: training in Syria envisioned

Project operation expenditures

#### Syrian side

Counterparts' labor cost

Arrangement of facility and land: laboratory equipment, disposal equipment for laboratory waste, expendables, project operation expenditures including the transportation expenses of seminar participants

### (4) External Factors (External Conditions to be Met)

- Appropriate number of staff members with appropriate academic background or experience is assigned to the 14 directorates and the ministry.
- Laboratory staff trained by the project stays in laboratories and keeps working on the environmental monitoring.

- Agents/manufactures provide spare parts for the equipment in a timely manner.
- The Syrian government issues the administrative instruction on environmental monitoring.
- The Syrian government allocates budget for staff placement and equipment procurement to all directorates.
- The Syrian government issues the administrative instructions for environmental monitoring staff.

## II Results of Evaluation

### 1. Summary of Evaluation Results

#### (1) Relevance

The relevance of this project is high for the following reasons.

Partner country's needs: Deterioration of environment has been progressing every year in Syria and prompt response is necessary. This project aims at regularly providing information on the current conditions of environmental contamination, the basis for enforcing the environmental administration, which is high in demand in Syria. It is said that the environmental problems become apparent when the GDP per person exceeds US\$1,000. Presently in Syria, where per capita GDP is around US\$1,200, the implementation of this project is timely.

Consistency with partner country's policies: Recognizing the necessity of environmental policies, the Syrian government has enacted various environment-related laws and regulations including a Basic Environmental Law, regulations on sewage and gas emissions, an Environmental Protection Law and a National Environmental Action Plan. At the same time, the government established a Directorate for Environmental Affairs in each governorate to perform environmental monitoring. In relation to the 9th Economic and Social Development 5-year Plan in which development of human resources in the environment field, establishment of environmental monitoring capabilities, strengthening of authorities of directorates, and establishment of laboratories were announced, the purpose of this project is highly consistent with the policies of the Syrian government.

Consistency with the aid policies of the Japanese government: Environmental consideration is one of the core policies for Japanese aid activities as apparent in the ODA Charter, in which "balancing environment and development" is stated as one of the fundamental conditions for providing aid, and also in the JICA Guidelines for Environmental and Social Considerations, which requires appropriate consideration of the environmental situation in the partner countries. Therefore, this project is consistent with Japanese aid policies. It is also consistent with environmental conservation (strengthening of environmental policy planning capability), one of the priority areas for providing aid, in JICA's Country Program for Syria.

Relevance of methods: Japanese technical advantage in this field is quite high, as Japan has overcome its pollution problems

in the past. JICA has implemented similar environment center projects in Thailand, Indonesia, Mexico, Chile and Egypt, and the experience, knowledge and lessons learned from those projects can be effectively utilized in the implementation of the project in Syria. The target area, technical transfer items and technical transfer targets of this project were determined based on the population of the target group, degree of environmental contamination, conditions of establishment of directorates' laboratories, existing skills of laboratory staff members, policies of the Ministry of Local Administrations and Environment, etc., and the choice is relevant. As of May 2004, there was no aid from other donors or Syrian government projects focusing on strengthening environmental monitoring capabilities, so this project does not overlap with any other aid programs. In the Latakia directorate, where UNEP-MED-POL (phase 2) is in the examination stage, the project focuses primarily on the accumulation of seawater quality monitoring data. The technical level of analysis is different from that of this project, thus the Latakia project does not directly overlap with this project.

## **(2) Effectiveness**

This project is expected to be effective for the following reasons.

This project is structured theoretically as follows. The directorates improve their technical capabilities on environmental-monitoring (output 1). Operation and management of laboratories become appropriate (output 2). Data management capabilities are improved (output 3). Environmental monitoring plans are formulated (output 4). Environmental education capabilities are improved (output 5). When the Syrian government issues the administrative instructions on environmental monitoring (external factor), each directorate performs periodical monitoring according to the self-developed plans, and discloses its results (project purpose). The structure covers necessary and sufficient items for achieving the project purpose, and there appears no leap, duplication, or deficit in its theory.

Administrative instructions, the external factor, exist although they are incomplete. The environmental monitoring plan, standard operation procedures, operation and maintenance manuals, etc., which are created under this project, provide information to supplement the incomplete area of these administrative instructions. Therefore, although issuance of administrative instructions is the external factor for this project, this project is able to call on the completion and issuance of such instructions; therefore, this external factor will most likely be achieved.

## **(3) Efficiency**

This project is expected to be efficient for the following reasons.

Equipment is provided locally through suppliers who have reliable local agencies. That makes procurement of spare parts easy, shortening the idle time of equipment. Purchasing cost can also be lowered. It is also easy to replenish reagents and expend-

ables accompanying the equipment.

As for counterpart training, basic training in Damascus City by the Syrian local parties including universities and laboratories is planned as well as those by Japanese experts. The fact that the site for the project and for training is the same location contributes to providing more appropriate training at lower cost; thus high cost-effectiveness is anticipated.

## **(4) Impact**

The impact of this project is anticipated as follows.

The overall goal of this project is expected to be realized within approximately five years after the project is completed by establishing a mechanism to multiply the effects during the project period. The external factor to achieve the overall goal is that the Syrian government allocates a budget for staff placement and equipment procurement to all directorates. It is very possible this external factor will be achieved given that the Ministry of Local Administrations and Environment has already started to establish laboratories at the directorates.

The primary focus of capacity building in this project is on Damascus, Aleppo and Homs; however, the project considers the establishment of a mechanism to multiply the effects from the target directorates to all the directorates. Specifically, the mechanism addresses the following two points after due consideration is given to whether or not the establishment of laboratories with superior analysis capabilities in other provinces are appropriate. 1) Before the establishment of such laboratories or even in governorates where such laboratories are deemed unnecessary, a system should be established where directorates send collected and analyzed samples to the Damascus directorate for more advanced analysis so that such directorates have a way to obtain advanced analysis results. 2) Standard operating procedures and laboratory operation and maintenance manuals should be created so that they can be used at directorates which have newly installed laboratories.

This project will improve the directorates' capabilities to provide timely and reliable information on environmental contamination, which is expected to lead to the improvement of overall environmental management capabilities necessary to implement countermeasures against contaminated materials such as inspection of business entities that produce contaminated materials and issuance of administrative directions and orders.

By raising the community's awareness of the environment, this project is also expected to result in more complaints and requests regarding the environment, development of consensus for pollution prevention (depending on national circumstances), and residents reviewing their own lifestyles, thus finally strengthening the social environmental management capabilities.

No negative impacts are anticipated from this project.

## **(5) Sustainability**

The sustainability of this project is anticipated for the following reasons.

Recognizing fully the degree of environmental contamination, the Syrian government has established various environmental laws and regulations, and has planned to improve environmental monitoring capabilities, strengthen the authority of directorates, and establish laboratories under the 9th Economic and Social Development 5-year Plan. It also has appropriated a budget for the implementation of those plans. In short, they are ready to provide political and financial support with laws and regulations developed to ensure sustainability of this project.

This project strengthens the existing services of the laboratories of existing organizations, with no additional organizations, capabilities, or duties. Therefore, this project is expected to achieve sustainability smoothly from the organizational capability standpoint.

Also from the standpoint of the settlement of human resources, given that the transfer from public sectors to private sectors is not common in local cities in Syria, this project is expected to be sustainable. The Syrian government is also committed to improving treatment for civil servants so they are likely to stay in their jobs. For example, wages of government employees have continued to increase since 2003 (a 20% increase was introduced twice), and another wage increase will be introduced in 2005.

This project is expected to be sustainable from the standpoint of equipment maintenance, as activities to promote sustainability are incorporated into the project. Those activities include the provision of equipment that is easy to maintain by prioritizing local procurement in the selection of provided equipment, and setting the improvement of laboratory operation and management including equipment maintenance as one of the outputs for this project.

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

Only one directorate operates a laboratory in a practical manner; however, the laboratory has no facility to dispose of waste despite the fact that it is an environmental laboratory. Therefore, this project sets as a precondition the establishment of appropriate waste disposal facilities at laboratories of the target directorates. The project calls on the Syrian government to enforce measures necessary to meet this precondition.

## 3. Lessons Learned from Past Experience

Thematic Evaluation: Environmental Center Approach: Development of Social Capacity for Environmental Management in Developing Countries and Japan's Environmental Cooperation was reported in 2002 as an evaluation by third parties of projects in the environmental management field. The report points out tasks for the future such as 1) administrative positioning of a project, 2) contribution to companies and society, and 3) response to decentralization.

Lessons learned in the past are utilized in this project as follows: 1) monitoring environment (monitoring of sources for water contamination, general environmental monitoring of air quality) is the goal, not only in terms of improving analysis capabilities but also in terms of management of data obtained from the analysis; 2) community enlightenment and information disclosure activities are included to contribute to the improvement of social environmental management capabilities; and 3) not only the central ministry but also directorates are targeted in cooperation.

## 4. Future Evaluation Plan

Mid-term evaluation is scheduled to be implemented around July 2006, terminal evaluation around July 2007, and ex-post evaluation about five years after the end of cooperation.

## Example of Mid-term Evaluation

### I Outline of Project

- Country: Senegal
- Project title: Project for the Development of Human Resources in Health
- Sector: Health
- Cooperation scheme: Technical Cooperation Project
- Division in charge: Human Development Department, Group 3
- Period of cooperation: November 2001 to October 2006
- Partner country's implementing organization: Department of Research and Education of the Ministry of Health and Prevention, Ecole de Nationale de Développement Sanitaire et Social (ENDSS), etc.



Practical training to check blood pressure at ENDSS

- Supporting organization in Japan: International Medical Center of Japan

## 1. Background of Cooperation

The government of Senegal issued the National Plan for Development of Human Resources in Health (PNF) in 1997, which states as one of its priority issues the securing of human resources in health. In Senegal, there are only seven doctors and 35 nurses per 100,000 citizens, and the numbers are significantly lower than the average numbers in all developing countries (78 doctors and 98 nurses). In addition, 73% of doctors, 60% of midwives, and 43% of nurses practice in the capital city of Dakar, where only 22% of the population resides, and therefore in rural areas unqualified medical staff has to examine and treat patients. Under such circumstances, the government of Senegal requested Japanese cooperation to assist in implementing the PNF.

## 2. Framework of Cooperation

### (1) Overall Goal

To contribute to increasing the number of competent human resources in health who work in the primary health care system

### (2) Project Purpose

To strengthen the education and training system for human resources in health who work in the primary health care system

### (3) Outputs

**Output 1:** Schools, especially capabilities to educate and train human resources who work in the primary health care system, are strengthened.

**Output 2:** An appropriate in-service training system for nurses in the primary health care system is established.

**Output 3:** An appropriate education system for regional health care workers (ASC) in Gossas district (test district) is established.

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

#### Japanese side

- Dispatch of long-term experts: 8 experts
- Dispatch of short-term experts: 11 experts
- Trainees received: 13 people
- Equipment provision

#### Senegalese side

- Assignment of counterparts: 14 people
- Land and facility provision
- Local cost burden
- Others

## II Evaluation Team

- Team leader: Harumi Kitabayashi  
Director, Group 3, Human Development Department, JICA
- Health administration: Noriaki Ikeda  
Specialist, Bureau of International Cooperation, International Medical Center of Japan
- Evaluation analysis: Eimitsu Usuda  
IC Net Limited
- Cooperation planning: Keiji Ehara  
Group 3, Human Development Department, JICA
- Interpreter: Mariko Sekita

Period of evaluation: June 21, 2004 to July 9, 2004

Type of evaluation: Mid-term evaluation

## III Results of Evaluation

### 1. Achievement Level

#### (1) Initial Education

In order to strengthen the institutions and systems of initial education, the Department of Research and Education of the Ministry of Health and Prevention (DERF) drafted criteria for the establishment of private training schools for nurses and midwives, as well as a ministerial ordinance on the establishment of National Initial Education Coordination Committee that is in charge of promotion and coordination of national initial education. Though these drafts have not yet been signed, under DERF's guidance, three private schools have already met the criteria required for the establishment of schools.

In order to improve the capabilities of the Ecole de Nationale de Développement Sanitaire et Social (ENDSS), the only national educational institution for human resources in health, systemization of financial management and training equipment control, and the contents of practical training programs for nurses and midwives were thoroughly examined. The plan to utilize the multi-purpose building built with Japan's grant aid was also included. For the purpose of strengthening the capabilities of instructors at regional training centers in Kaolack, Tambacounda and Saint-Louis, who provide initial education and in-service training for assistant nurses, necessary equipment was provided to the centers and training was conducted for instructors.

#### (2) In-service Training

DERF drafted a ministerial ordinance on the establishment of the National In-service Training Coordination Committee in order to strengthen policies and system regarding in-service training for nurses and midwives. However, as with the National Initial Education Coordination Committee, the National In-service Training Coordination Committee has not yet been approved by the Ministry of Health and Prevention. Meanwhile, the project conducted an assessment on the needs for in-service training in eight regions for the purpose of promoting programming of in-service training. Based on the analysis results, a revised guide book for chiefs at health posts was drafted and teaching manuals for instructors were developed. Reports on in-service training for 2001-2002 and 2002-2003 were compiled and distributed to offices related to the regional medical affairs offices and donors concerned.

#### (3) Training for Regional Health Care Workers

The project conducted evaluation and analysis on the current national situation of regional health care workers' (ASC) activities. Based on the results, the Gossas health district in Fatick region was selected as a test model for training for ACS and support for ASC with community participation.

In the planning for this test model, methods of maintaining the motivations of ASC through community participation and of monitoring the test model were discussed and a draft for the standard manual for ACS training was developed.

## 2. Summary of Evaluation Results

### (1) Relevance

The relevance is secured even at the time of mid-term evaluation.

Strengthening of the education system for nurses and midwives, which the project targets, is an urgent task and is also specified as the priority issue in the last 5-year plan (2004-2008) of the National Health Initiative, which is currently under development. Initial educational institutions for nurses and midwives (ENDSS) always receive many applications, which accounts for 30 to 40 times more than its capacity. The assessment on needs for in-service training also revealed that 73% of nurses and midwives currently in service want some kind of training.

Only 20% of health care stations at the frontier of primary health care service are functioning and a mechanism for maintaining health care stations continuously is called for. Since health posts and health care stations are the key operations in the primary health care service, education and reeducation of nurses and midwives who operate and manage those posts and stations as well as training of ASC and community support are appropriate strategies.

### (2) Effectiveness

The project purpose shown in PDM, "To strengthen the education and training system for human resources in health who work in the primary health care system," is somewhat abstract. However, when taking a look at the results of the project from the standpoint of "strengthening capabilities to educate and train chiefs of health posts that are the key function of the primary health care service," it is deemed that this project is expected to achieve its goal by the end of termination of cooperation if several obstacles are removed.

As for initial education for nurses and midwives who will become chiefs of health posts in the future, the total number of students in the Nursery and Midwifery Department of ENDSS in academic year 2003-2004 was 230, a 15% increase over three years compared to the number in academic year 2000-2001, which was 198. As for in-service training, based on the need analysis regarding national in-service training, a draft of a guide book for chiefs at health posts and a teaching manual that are to be used for in-service training will be completed soon. As for ASC training and community support, which are required for chiefs of health posts, model activities of training and maintaining motivation of ASC are at the stage of trial implementation in Goosas health district of the Fatick region.

### (3) Efficiency

The project is generally being implemented efficiently. One

exception is that there was a problem with input timing, which was a delayed dispatch of experts in initial education from the Japanese side. Though the equipment provided to ENDSS Khombole is used effectively, its positioning in the project has been altered and scaled down.

### (4) Impacts

The outputs of this project are expected to be utilized nationwide if the Ministry of Health and Prevention and the Ministry of Vocational Training accredit the National Initial Education Coordination Committee, the National In-service Training Coordination Committee, and approve the criteria for the establishment of private schools, the guide book for health post chiefs, and the manual for ASC training.

### (5) Sustainability

Capabilities of instructors at ENDSS are advanced and, therefore, new curricula and new methods of operation and management of practical training will be internalized in the organization through the counterparts. However, more examination is necessary in areas such as methods of maintenance and management of equipment at the newly built multi-purpose building and procurement of expendables.

As for in-service training, reorganization of the agency concerned with this project is underway, including the establishment of a Bureau of Human Resources within the Ministry of Health and Prevention. It is necessary to designate the chief of this bureau as early as possible.

As for ASC training, the ASC motivation maintenance model should be tested and established in order to achieve sustainability.

## 3. Contributing Factors

There have been few personnel changes of counterparts since the commencement of the project, thus contributing to the maintenance of consistency.

## 4. Inhibiting Factors

The PDM of the project is a basic plan that should be shared by JICA's expert team, counterparts, and other project-related parties. However, as the contents of PDM including indicators were not examined thoroughly, much time was consumed for coordinating among related parties and departments regarding its interpretation, identifying and analyzing problems and issues in details. Afterwards, joint coordination committee meetings were held four times to discuss the PDM, including the operation of the project. However, tripartite joint meetings that require cooperation and coordination among concerned sectors were held only twice, resulting in insufficient coordination for the decision making of the project contents.

## 5. Conclusion

Various activities to strengthen education, training and activities for personnel who are engaged in the primary health care ser-

vice have been implemented in each field for the past two years and eight months. As a result, criteria for the establishment of schools, teaching materials in nursing education, draft of revised guide book for chiefs at health posts, annual reports on in-service training, and ASC training manuals were developed. These outputs are consistent with the strategies laid out in the National Plan for Health Development (PNDS) and the National Plan for Development of Human Resources in Health (PNF). For the rest of the project period, focus should be placed on activities to effectively utilize these outputs in developing human resources in primary health care service, especially chiefs at health posts.

## 6. Recommendations

- Senegalese project manager and JICA chief advisor should hold working-level tripartite meetings on a regular basis.
- Incorporating the guide book for chiefs at health posts and ASC

training manuals in the initial education curriculum for nurses and midwives should be added to one of the activities of the PDM, “improving educational contents at EDESS.” At the same time, a specific activity plan should be developed and a person in charge of the activity should be designated.

- Ministry of Health and Prevention should accredit at an early date the guide book for chiefs at health posts developed in the project, and approve the ministerial ordinance on the establishment of two national coordination committees (initial education and in-service training).
- Ministry of Health and Prevention should accredit at an early date the manual for ASC training developed in the project.
- After discussion between JICA’s expert team and counterparts on appropriate indicators for the project purpose, the existing PDM should be revised and approved by the joint coordination committee.

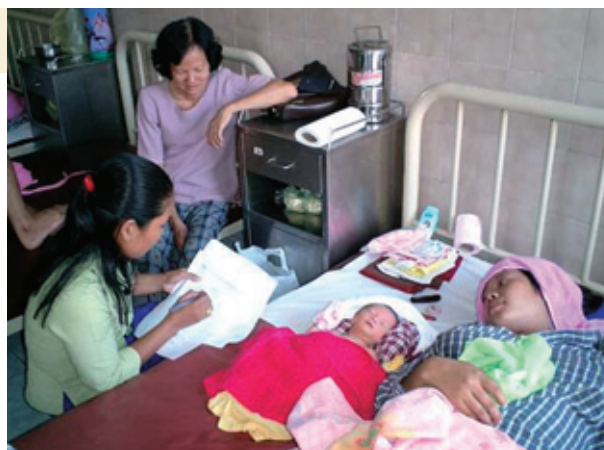
## Example of Terminal Evaluation

### I Outline of Project

- Country: Cambodia
- Project title: The Maternal and Child Health Project (Phase 2)
- Sector: Health
- Cooperation scheme: Technical Cooperation Project
- Division in charge: Human Development Department, Group 4
- Total cost (at the time of evaluation): About 630 million yen
- Period of cooperation: April 2000 to March 2005
- Partner country’s implementing organization: The National Maternal and Child Health Center (NMCHC)
- Supporting organization in Japan: International Medical Center of Japan

### 1. Background of Cooperation

Cambodia ended its 30-year civil war at the Paris Peace Conference in October 1991, and made its first significant step towards democracy with the general election in 1993. Japan dispatched medical advisors to the Ministry of Health of Cambodia for three years starting in March 1992 to study the situation. As a result, it was revealed that not only the medical facilities but also human resources had been devastated and the training of medical practitioners was urgently required. Responding to the study results, Japan pledged to provide technical cooperation in the field of maternal and child health, which had little support from other agencies, as well as build a national maternal and child health center with grant aid. In response, JICA provided project-type technical cooperation for the purpose of improving the management and operation ability of the center, training activities, and examination/treatment standards between 1995 and 2000. The



A mother and child in the National Maternal and Child Health Center

new center, which was built with grant aid, was opened in April 1997. Though the outcome of the first-phase technical cooperation was highly praised, it was still necessary to enhance the clinical, training, and hospital management divisions. In particular, it was essential to improve the local maternal and child health service. Thus, the second-phase project, whose aim was strengthening human development for the improvement of maternal and child health, was implemented for five years starting in April 2000.

### 2. Framework of Cooperation

#### (1) Overall Goal

The quality of maternal and child health service in Cambodia is improved.

#### (2) Project Purpose

Human resource development is strengthened to improve maternal and child health, including community health service.

#### (3) Outputs

**Output 1:** NMCHC’s function as the top referral hospital is fur-



ther strengthened.

**Output 2:** NMCHC's function as the national training center is further strengthened.

**Output 3:** NMCHC's functions as the national program implementation and collaboration organization are strengthened to support national policy making.

**Output 4:** Hospital facility management at NMCHC, national hospitals and referral hospitals is improved.

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

##### Japanese side

Dispatch of long-term experts: 15 people

Dispatch of short-term experts: 46 people

Trainees received: 22 people

Equipment provision

Third-country training

##### Cambodian side

Counterparts: 368 people

Land/facility provision

Equipment purchase

Local cost burden

## II Evaluation Team

Team leader: Akiko Tomita

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Nursing/training evaluation: Yoko Konishi

Director, Nursing Department, National Hospital Organization Kanagawa Hospital

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Group 4, Human Development Department, JICA

Project effect analysis: Keiko Noji

IC Net Limited

Period of evaluation: August 18, 2004 to September 3, 2004

Type of evaluation: Terminal evaluation

## III Results of Evaluation

### 1. Achievement Level

The human resource development system was successfully established in the area of maternal and child health through the project based on the following results: the NMCHC has been strengthened as a training center; training provided by the project for doctors and midwives who work at referral hospitals and health centers has been accredited as a national training course by the Ministry of Health.

The results of pre- and after-course tests conducted during the training shows that the training has been implemented appropriately and the trainees have improved their knowledge. In order to assure that the knowledge gained through the training is main-

tained and practiced in the field, annual itinerary guidance has been carried out. According to the itinerary guidance reports that the NMCHC training department staff put together, the performance of the training participants at their work site is generally satisfactory.

## 2. Summary of Evaluation Results

### (1) Relevance

Cambodia still has higher maternal death and infant mortality rates than its neighboring countries. In particular, health/medical care workers at local medical institutions are in short supply. To develop high quality health/medical care workers is the primary issue of the strategic plan in the health/medical care sector and corresponds to the needs of Cambodia. The enhancement of health care service is one of the priority cooperation sectors of Japan's cooperation with Cambodia, and is included in the priority cooperation sector of the JICA Country Program as well. As the target group of the project is women and children, and the medical fee exemption system for needy people has also been introduced to NMCHC, it benefits the vulnerable groups of the society.

### (2) Effectiveness

Human resource development in health care largely depends on instructors, teaching materials, facilities, and training management, which were thus addressed comprehensively to increase the achievement level of the project purpose. The training that NMCHC conducted for doctors and midwives from referral hospitals and health centers has been accredited as a national training course (Minimum Package of Activities: MPA/Complimentary Package of Activities: CPA Training). The accumulated total of the medical care service workers developed by the project from the first phase are 25 doctors and 110 midwives working at referral hospitals, and 303 midwives working at health centers. Though the ratio appears small compared to the total number of medical care workers in Cambodia, this is because the focus of the project is placed on developing human resources who can be the core or leaders to provide good quality medical service at medical institutions. Trainees are very satisfied with the course and they gained adequate knowledge and skills by participating in the course. Though they face problems such as a shortage of manpower, equipment, and medicine at their work sites, they utilize their knowledge and skills as much as they can.

### (3) Efficiency

As equipment was provided substantially during Phase 1, the provision during Phase 2 was minimized and no delay in the timing of equipment provision was observed. Furthermore, thanks to the proper selection of equipment, the equipment is utilized effectively and as a result of the activities to establish a system for maintenance and management of the equipment, a high operation rate is maintained. In terms of training cost, in addition to the burden borne by the national budget, advanced donor coordination

brought support from other donors such as UNICEF. As a result, the initial cost borne by JICA, which was about 80% at the initial stage of the project, has decreased every year, and in fact decreased to about 20% in the fourth year. Since the range of the activities is wide, a relatively large number of counterparts received training, to which short-term experts were dispatched. However, by incorporating third-country training and third country experts, the cost was reduced. The timing for all inputs was appropriate and there was no major delay.

#### **(4) Impacts**

This project succeeded in developing medical care workers equipped with adequate knowledge and skills and contributed to achieving the overall goal (to improve the quality of maternal and child health service in Cambodia). If the working conditions and shortage of medical equipment, medicine, and manpower at referral hospitals and health centers improve and the environment where trained medical care workers can demonstrate their learned skills is created, then it is possible to further increase the chance of achieving the overall goal. The Ministry of Health instructed hospitals/health centers to introduce the medical care cost collection system that this project started and the system has spread widely throughout the country, showing the emergence of an institutional impact. Also, some of the former trainees have become trainers for activities by NGOs and other donor agencies, showing the emergence of technical impact as well.

#### **(5) Sustainability**

At NMCHC, where systems to plan, manage, evaluate hospital management, training, and equipment management were established, the development of the next generations' human resources to lead in clinical care and training, as well as strengthening the management capacity for the program called Preventing Mother-to-Child Transmission (PMTCT) of HIV, are tasks for organizational sustainability. Most of the equipment at NMCHC will become obsolete in the next five years and new equipment must be purchased. Financial sustainability, however, can be maintained because of the stable financial source of the medical care cost collection system as well as increased expenditures of the national financial resource to NMCHC. As technology transfer to the counterparts was smoothly conducted, technical sustainability is high. However, since guidance by Japanese experts will not be available after the completion of cooperation, they need to secure alternatives to acquire new technology and information.

### **3. Contributing Factors**

#### **(1) Factors Regarding Planning**

A workshop on Project Cycle Management (PCM) was held during the planning stage of the project, and a plan was made through the participatory process resulting in the reflection of opinions of related people. It should be noted that another PCM workshop was held during mid-term evaluation, which incorpo-

rated the issues and changes that the project faced in the process of implementation, and revised the Project Design Matrix (PDM) to one reflecting the activities that the project responded to in various situations.

#### **(2) Factors Regarding the Implementation Process**

A mechanism to internalize the changes in important external assumptions was created. Even though the important assumptions of PDM, "no delay in medicine provision by the Ministry of Health," and "main counterparts will not leave their job," were not fulfilled, revenues from the medical fee collection system that was introduced to the NMCHC allowed for the purchase of medicine on their own, as well as the placement of new personnel, avoiding considerable impact on the project. When GTZ (German Technical Cooperation) discontinued cooperation called the Physical Asset Management for creating inventory of hospital equipment and facilities in Cambodia, the project decided to include a new activity for the creation of a simplified inventory to prevent this change in the external condition from having an adverse effect.

### **4. Inhibiting Factors**

#### **(1) Factors Regarding Planning**

The PDM indicator was not clearly defined in the stages of planning and implementation. At the beginning stage of the project, baseline data should have been taken to set appropriate numerical targets, which show how much the project should have accomplished within the limited timeframe of five years. Also, an indicator to measure quality improvement in the counterparts and trainees should be added in the implementation process of the project. If there had been precise indicators, it could have been possible to prioritize or add activities in response to the changes of indicators (e.g. trainees' performance at their work sites) during the implementation of the project. For the same reason, it was difficult to objectively evaluate the degree of achievement of the project at the terminal evaluation.

#### **(2) Factors Regarding the Implementation Process**

This project initially assumed the task of training medical care workers at regional training centers (RTC) and referral hospitals in addition to the NMCHC. However, the training and supervising function of RTC and referral hospitals was so weak that the training was conducted only at NMCHC, which is the central-level. This choice seems reasonable. However, there is a lack of examination for a specific path to utilize trained personnel through this project to improve local-level health and medical care service.

### **5. Conclusion**

This project matches the needs and policies of Cambodia as well as the aid policy of Japan. The project purpose and outputs



Midwives' training

have been effectively achieved. Positive impact has been confirmed in the introduction of the medical fee collection system at other hospitals and health care centers, as well as training programs that other institutions conduct. The sustainability of the project's effects is good overall, although there remain some concerns (developing next-generation human resources at NMCHC, strengthening management capacity of PMTCT, updating equipment, securing the means to get new technology and information).

## 6. Recommendations

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

The Ministry of Health should complete the MPA/CPA training course curriculum for doctors and midwives who work at referral hospitals and health centers.

In preparation for the retirement of 14% of the personnel at NMCHC over the next four years, specific personnel strategy and plans need to be formulated. This includes personnel placement not based on age but on performance, and management training for new mid-level management positions. It is critical to develop the next-generation leaders at the NMCHC who will take charge of hospital management, training, national program implementation, and equipment management.

Existing data obtained to measure the quality of trainees (pre-test, post-test, follow-up survey/guidance of trainees, etc.) need to be organized and analyzed. In order for the training to become an effective means of improving services at the work sites of medical care, the past training course needs to be analyzed to reflect its findings in the future training course.

The procurement system of medicine and equipment at NMCHC should be further improved and the revenue from the medical treatment fee collection system should be used more effectively.

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

#### <Department of Human Resource Development of the Ministry of Health>

The overall plan to deploy MPA/CPA training (including follow-up survey and guidance of the former trainees) nation-

wide should be included in the annual activity plan of the Department of Human Resource Development and should be implemented.

The training function of RTC and the management function of Provincial Health Departments should be strengthened to implement training in local areas and improve the quality of health and medical care service (including follow-up survey and guidance of the former trainees). It is also necessary to consider coordination with hospitals that offer clinical practical training as well as improvement of the facilities and equipment of local medical institutions.

#### <Department of Drugs and Food of the Ministry of Health>

In cooperation with the Ministry of Economy and Finance, national procedural time to procure medicine needs to be shortened. Provide medicine with sufficient expiration date to hospitals and health centers.

#### <Department of Hospital Services of the Ministry of Health>

Budget to continue instructor training for laboratory technicians needs to be secured. Utilizing performance of the project regarding medical equipment management, equipment management and maintenance service should be provided at referral hospitals nationwide.

#### <National Maternal and Child Health Center>

Management capacity of the PMTCT, Provincial Health Departments, and health administrative districts should be strengthened. Coordination between PMTCT and other national programs should be strengthened.

## 7. Lessons Learned

Factors that contributed to the sustainability of the project substantially are: initiative and ownership of the partner government and implementing organization were respected; support for their original operations and issues that they are concerned with continued from the planning stage of the project; and the partner government and implementing organization now have a sense of ownership in carrying out activities in the project. It is agreed that the Department of Human Resource Development of the Ministry of Health will take responsibility for MPA/CPA training, and Department of Hospital Services of the Ministry of Health will take responsibility for implementing and deploying the hospital equipment management system nationwide.

Constant information-sharing and coordination with the Ministry of Health and donor agencies are important. Sector-wide management is being advanced in the medical and health sector in Cambodia, and in addition to the NMCHC being a member of the working group, the center's director also served as the chairman and coordinator. As a result, an increased number of institutions understand and cooperate with this project, which had a positive impact on the effectiveness and efficiency of the project.

## Example of Project-level Ex-post Evaluation

### I Outline of Project

- Country: China
- Project title: The Integrated Development Project in the Waterlogged Area in the Four-Lake Area of Jiangnan Plain, Hubei Province
- Sector: Agriculture, Forestry and Fisheries
- Cooperation scheme: Technical Cooperation Project
- Division in charge: Agricultural Technical Cooperation Division, Agricultural Development Cooperation Department (currently Rural Development Department)
- Total cost: About 840 million yen
- Period of cooperation: January 1997 to January 2002 (five years)
- Partner country's implementing organization: Hubei Provincial Department of Science and Technology, Hubei Provincial Development Engineer Research Center for Lake Wet Lands Development Project
- Supporting organization in Japan: The Ministry of Agriculture, Forestry and Fisheries

#### 1. Background of Cooperation

In China, the economic disparity between coastal areas and inland areas has been a major problem. In the national plan, the development of inland areas is positioned as an important issue.

The Jiangnan Plain, located in an inland area of China, consists of sedimentary layers of the earth from the Yangtze and its tributaries. The waterlogged area is concentrated in the Four Lakes, which are in the center of the Jiangnan Plain. Consequently, due to limitations in the utilization of land, inefficient cultivation system, and bad soil, the potential for agricultural production was not fully exploited, urgently requiring the development of a drainage system with the agricultural field and the corresponding establishment of farming techniques.

Under these circumstances, China requested Japan to provide technical cooperation with the aims of introducing Japanese techniques related to the development of waterlogged areas and demonstrating a model of development for the freshwater swamp area.

#### 2. Framework of Cooperation

The project was implemented between January 10, 1997 and January 9, 2002 to foster personnel engaged in the development of freshwater swamps through the experimental proof of utilization methods of submerged land development at the two pilot areas (Jingsha City and Shenjiang City) within the Four-Lake Area together with Hubei Provincial Development Engineer Research Center for Lake Wetlands Development Project (hereinafter referred to as "the Center").



A counterpart explaining the overview of the test agricultural field

### (1) Overall Goal

Techniques developed in the project are disseminated in Jingsha City and Shenjiang City.

### (2) Project Purpose

The personnel engaged in the development of freshwater swamps are fostered through the experimental proof of utilization methods of submerged land development at the two pilot areas within the Four-Lake Area.

### (3) Outputs

**Output 1:** The techniques necessary for development of the freshwater swamp are established through the tests and experimental validations at the pilot agricultural land and the pilot areas.

**Output 2:** Human resources development system necessary for the development of a freshwater swamp is established.

### (4) Inputs

#### Japanese side

- Dispatch of long-term experts: 13 people
- Dispatch of short-term experts: 16 people
- Trainees received: 23 people
- Equipment provision

#### Chinese side

- Counterparts: 23 people
- Local cost burden

### II Evaluation Team

Evaluator: Yang Weiming  
Chinese International Process Consulting Co.

Period of evaluation: November 1, 2004 to March 3, 2005  
Type of evaluation: Ex-post evaluation by overseas office

### III Results of Evaluation

#### 1. Summary of Evaluation Results

##### (1) Impact

The overall goal of the project (to disseminate techniques developed in the project in Jingsha City and Shenjiang City) was largely achieved. In the three years since the project was terminated, research and training have been strengthened at the Center, and various research and training have been conducted by technicians who received counterpart training in the Kaochang pilot area, the Cenhe pilot area, and the Four-Lake water discharge testing ground. The total cost that the Center put in was 1.8 million yuan for research expenses, 60 thousand yuan for training expenses.

es, and 5.5 million yuan for training in prefectures and cities. As described below, these inputs and activities led to the achievement of the overall goal.

Three hundred and fifty middle-class technicians received training at the Center in the three years following the termination of the project, and more than 1,400 middle-class agricultural technicians and more than 20,000 farmers were indirectly trained through training organizations in those two pilot cities and related prefectures and cities. More than 100 new techniques and new breeds were directly taught.

According to the data provided by the Center, the submerged areas of Jingsha City and Qianjian City occupy two-thirds and four-fifths of arable land, respectively. Two pilot cities converted a total of 280 thousand mu (1 mu is about 6.667a) of farming land using the techniques of this project, disseminated the underdrain to 21 thousand mu, and multiple cropping to 1.2 million mu, and the total of those areas became one-fourth of the submerged areas in those two cities. The areas converted for multiple cropping in one project site, Cenhe, was 70%. It is particularly notable that though the Kaoyang pilot area, one of the project sites, suffered from record rainfall, the most in the last 137 years (460 mm waterfall in three days), in 2004, the draining facility helped reduce the loss by more than 3 million yuan. This case encouraged city governments and farmers to utilize the techniques developed in the project to convert the land.

In the three years following the termination of the project, the Center has achieved an advanced academic background of personnel, high duty positions, younger generation leadership, increased academic subjects, and a network of research organizations (a science and technology innovation system has been formed under the initiative of the Center by over 20 universities and research institutions and over 10 research centers). Furthermore, by establishing provincial priority subjects and priority laboratories at the Center, the research capacity was strengthened, and a foundation to develop high-level personnel was laid. Meanwhile, the counterparts of the project conducted more than 20 scientific research projects on their own, among which 16 research and development projects, two international cooperation projects, and four natural science fund projects have received some kind of award (more than 60 people have received the awards). The Center was certified to have provincial priority subjects and a priority laboratory and as an institution to offer master degrees, and has formed a research network with more than 20 universities/research institutions in China, thus elevating its academic position substantially.

Other than the above-mentioned results, techniques developed in this project also played a positive role in the fields of prevention and eradication of schistosome fluke, improvement of the local sanitary environment, and environmental beautification.

## (2) Sustainability

The Center is an independently organized and financially

independent research institute under Yangtze University, and its necessary expenditure is secured by the operation expenses of the University and the research expenses of the government. The organizational system of the Center has advanced further and the level of the technical team has been constantly improving with a younger average age. With technical development and its application and dissemination system already built, the Center will play an even more important role as a base for China's submerged area development in the future. Thus, the Center is equipped with good sustainability in all aspects such as organization, finance, and techniques.

Following the termination of the project, the pragmatic usefulness of the techniques developed in this project has been proven, and the dissemination in the project site has reached a certain scale, which has proven effective in bringing technological advancement and income increases to the local farmers. The needs of these techniques will be continuously great, and since, as mentioned above, the Center has good sustainability as a disseminating institution of techniques, the effect of this project will have good sustainability.

## 2. Contributing Factors

### (1) Factors that Contributed to Impact

Regarding the implementation system, there is strong support from the government. Government sectors such as Provincial Department of Science and Technology, Department of Water Resources, and Department of Education are in close contact with the Center, forming a support system in policy and finance. Since the Center won the Science and Technology Award, its sense of presence has increased and promoted the dissemination of the techniques developed in the project.

Public relations is another factor. In this regard, during the three years following the termination of the project, the Center was reported on 117 times by the media, including the Science and Technology Times of China Central Television, which played a role in promoting an expanded impact. During this period, seven members of the Chinese Academy of Sciences and Chinese Academy of Engineering, both of which are the top national authoritative organizations, visited the Center more than 10 times and positively appraised the achievement of the project and its future prospect, helping to powerfully promote the presence of the project and the dissemination of the outputs. As the achievement of the project became widely known, it brought opportunity for the outputs to further expand, advancing domestic as well as international cooperation.

The pilot activities of the project were recognized and the dissemination of the techniques developed in the project was pushed forward by local governments, thus promoting the use of those techniques by farmers.

### (2) Factors that Contributed to Sustainability

From the termination of the project to this ex-post evaluation,

Chan Jiang University added departments, priority subjects, and a priority laboratory with powerful support from the government and voluntary efforts of the implementing organization. This further established the Center's central position, which helped to organize a research and development network with over 20 universities and research institutions nationwide as well as establish the training dissemination system in prefectures and cities where the project sites were located. This indicates that sustainability of the Center from an organizational aspect has been strengthened.

The central government of China regards Jiangnan Plain as one of the six priority development areas in China's inland area. At the same time, the government has made the development of rivers and lakes and the incorporation of three agricultural issues of agriculture/farming villages/farmers, into the development plan as top priorities. Also, in the Four-Lake and Changnan Plain areas, more than 20 prefectures and cities are specified as national priority development districts for grain, cotton, oil, fishery, and special local products. Under these circumstances, research and development of the submerged areas has started to expand, and developing techniques for the submerged areas has become the top priority in southern China. Furthermore, the techniques developed in the project have proven to be in line with the local needs and effective. This has contributed to the promotion of sustainability of the Center in the technical aspect.

On top of it all, the Center receives an annual average budget of one million yuan from the Yangtze University, and the Department of Education and Department of Science and Technology of the Hubei Province. This promotes sustainable deployment of the activities of the Center.

### 3. Inhibiting Factors

#### (1) Factors that Inhibited Impact

A few techniques that the project worked on, such as leveling skills and mechanization promotion, were not successful. The main cause was that current Chinese agriculture is implementing a subcontract system by family unit, which is family-based management. This restricted the dissemination of techniques in the project. Since the initial investment necessary for leveling the land and building an underdrain system is relatively large (following the termination of the project, technical development for cost reduction was conducted on their own, but the investment of over 1,000 yuan per mu is still needed), individual payment of the cost by farmers is difficult unless it is subsidized by the government.

Finance is a factor that influences the effectiveness of the Center. With the current research budget of the Center, pilot exhibition and dissemination of techniques are feasible only on a small scale, which is not able to cope with higher needs.

#### (2) Factors that Inhibited Sustainability

Consumables and parts of some equipment are in short sup-

ply and cannot be locally procured, thus making it hard to fix such equipment and having an adverse effect on the use of that equipment.

### 4. Conclusion

During the three years following the termination of the project, the Center effectively conducted the dissemination of the outputs and the expansion of the effects generated by the techniques developed in the project. As a result, the improvement and dissemination of the project's outputs have been promoted in Jingsha City, Qianjiang City, and their neighboring area, and the overall goal of the project has been basically achieved. At the same time, it was proved that improving the submerged areas with the techniques could increase agricultural productivity, resulting in gaining the approval and support of the government for the transferred technology of the project, which has been accepted by farmers, too. The Center has a good reputation both domestically and overseas, and with a strengthened organizational system and technical capacity, its sustainability is considerably high.

### 5. Recommendations

- It is necessary for the Center to further invest in a training program in order to expand the impact of the project further. The Center should attempt to disseminate techniques directly to farmers by building and developing an agricultural technology market.
- Effective implementation of technical dissemination requires a close cooperative relationship between the Center and each class of the government-related sector.

### 6. Lessons Learned

- Durability and maintenance of equipment purchased in the project need to be considered for high sustainability. Some equipment, where possible, should be procured locally to avoid any difficulty in purchasing the necessary spare parts at a later time.
- During the three years following the termination of the project, reports on the project were broadcast 117 times by the Science and Technology Times of the China Central Television, which played a significant role in expanding the impact. Also, in those three years, seven members from the Chinese Academy of Sciences and Chinese Academy of Engineering, which are the highest authoritative organizations in China, visited the Center more than 10 times, and positively appraised the achievement of the project and its future prospect, which played an important role in promoting the presence of the project and the dissemination of the outputs. Thus, in promoting impact of a project, strengthening public relations activities, and involving the domestic authoritative organizations in the project are considered effective.