

# Theme9

## Environmental and Social Consideration in Large-scale Projects

Supporting the Reconstruction of Submerged Communities



# Contents

- 1. Introduction**
- 2. Promotion to Develop Water Source Areas and Support for Relocated Residents**
- 3. Environmental and Ecosystem Consideration in Water Source Areas**
- 4. Lessons Learned**

# 1. Introduction

## Why is environmental consideration required?

- Large-scale structures may change a way-of-life of residents and communities.
- Construction projects often alternate the natural topography and lose beautiful landscape.
- Such physical changes may threaten the habitat and behavioral range of plants and animals in the project area

## Theme 9 describes,

- Supporting the people in reconstructing their lives
- The various environmental measures and environmental protection in water resources
- Environmental Impact Assessment

## 2. Promotion and Support for Reservoir Areas

### (1) Measures for Local Communities and Residents to be Submerged due to Dam Construction

#### 1) Opposition Movement against Shimouke Dams (13 years)

- Consider consistency between public works projects and basic human rights
- Protect the property rights of residents in submerged area



Source: Created based on the Japan Water Agency's website

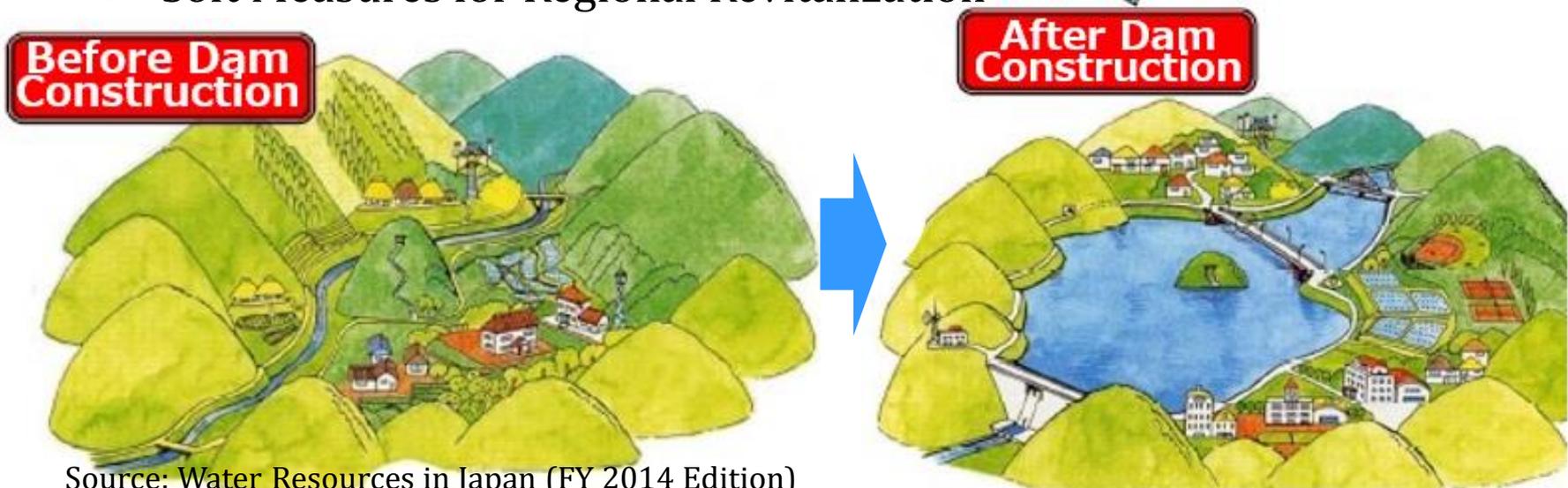
### The Chikugo River Basin and Shimouke Dam

## 2. Promotion and Support for Reservoir Areas

### (1) Measures for Local Communities and Residents to be Submerged due to Dam Construction

#### 2) Support System for Residents of Submerged Areas

- Compensation by Dam Developer
- Act on Special Measures for Water Resources Areas
- Water Source Area Development Fund
- Soft Measures for Regional Revitalization



Source: Water Resources in Japan (FY 2014 Edition)

### Overall Picture of Measures for Water Source Areas in Dam Construction

## 2. Promotion and Support for Water Source Areas

### (2) Establishing Legal System and Securing Financial Resources

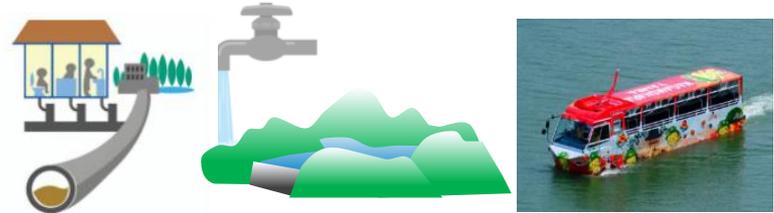
#### General Compensation

- ✓ Relocation site
- ✓ Relocation of public facilities



#### Act on Special Measures for Water Sources Areas

- ✓ Land improvement, roads, simple water supply, sewerage, public facilities
- ✓ Tourism and recreation facilities



#### Reservoir Area Development Fund

- ✓ Counseling
- ✓ Forest maintenance



#### Reginal Revitalization

- ✓ Special product
- ✓ Support network

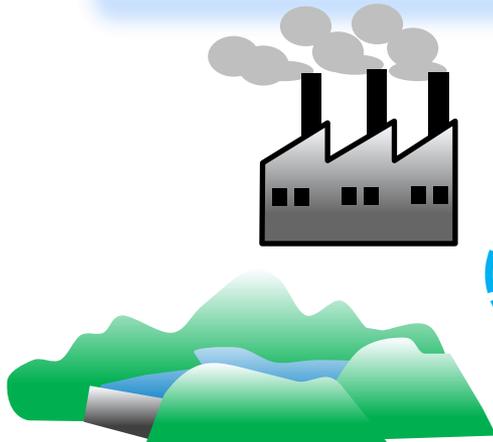


## 2. Promotion and Support for Water Source Areas

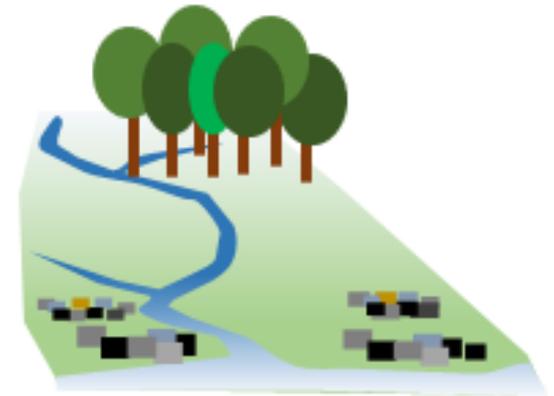
### (2) Establishing Legal System and Securing Financial Resources

Act on Special Measures for  
Water Source Areas

Forest Environmental Tax



Support for Water  
Source Area in  
Whole River Basin



Three Acts for  
Power Development

Water Source Area  
Development Fund

Water  
Resources Tax

Source: Project Research Team (PRT)

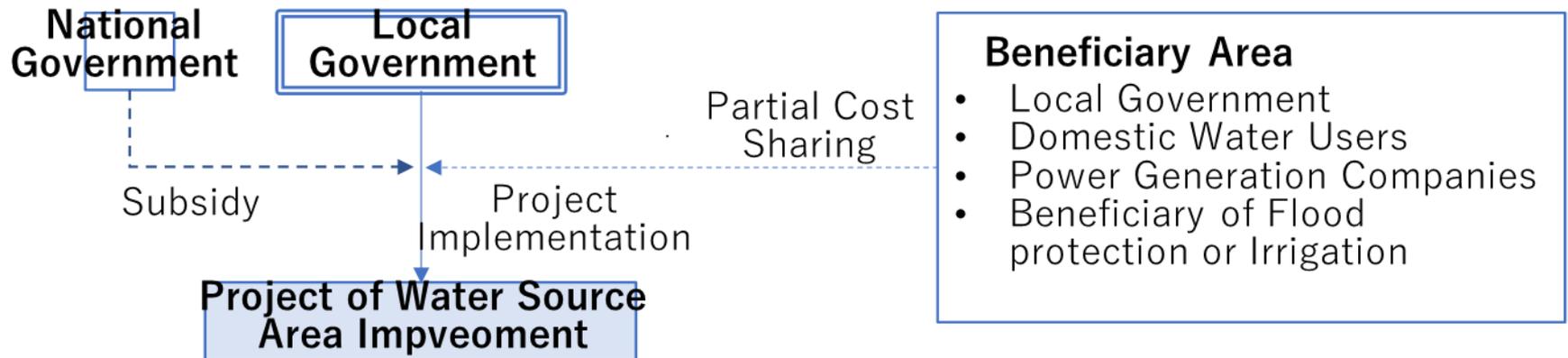
Support for Water Source Areas in Whole River Basin

## 2. Promotion and Support for Water Source Areas

### (3) Fair and Satisfactory Compensation Process

#### 1) Act on Special Measures for Water Resource Areas

- National government, local municipalities, and beneficiary area share the cost.



Source: PRT

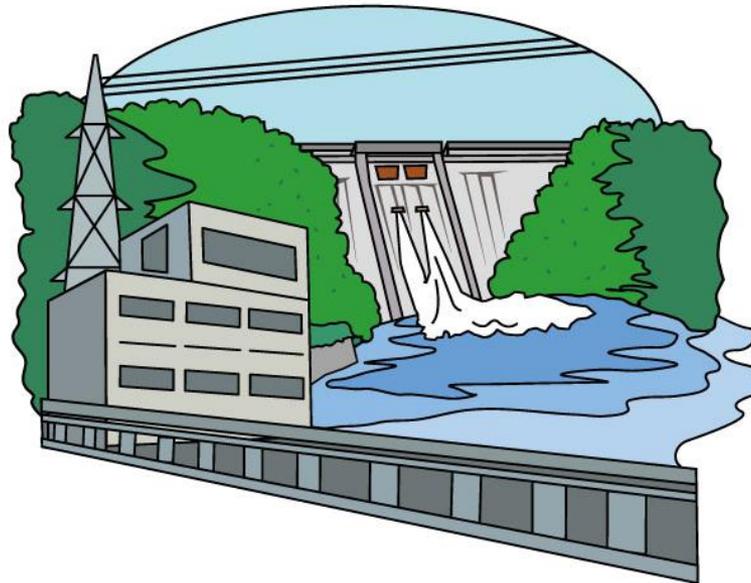
#### Cost Burden for Projects Related to the Water Source Area Improvement Plan

## 2. Promotion and Support for Water Source Areas

### (3) Fair and Satisfactory Compensation Process

#### 2) Three Acts for Power-Resources

These laws aim to **promote power supply** development and facilitate operations by helping **subsidize** areas where power supply development is to take place.



## 2. Promotion and Support for Water Source Areas

### (3) Fair and Satisfactory Compensation Process

#### 3) Reservoir Area Development Fund

The Fund is used for meticulous projects for **reconstruction of residents' livelihood and community development**

It is collected from beneficiaries located downstream area.

In the Tone River system, the community is revitalized through **mutual exchange between people in upstream and downstream area.**



Source: Tokyo and Gunma Prefecture Website  
**Upstream and Downstream Exchange Project in Tone River**

## 2. Promotion and Support for Water Source Areas

### (3) Fair and Satisfactory Compensation Process

#### 4) Financial Resources for Water Source Area Conservation

- Act on Forest Environment Tax and Forest Environment Transfer
- Tax for Reservoir Area



Source: Kanagawa Prefecture website

## 2. Promotion and Support for Water Source Areas

### (4) Relocation Site Development

By preparing **relocation sites**, the local community and industry can reconstruct the livelihood for relocated residents.

In Miyagase Dam, total number of 281 persons relocated. **68% of persons were relocated to the alternative site.**



Source: Dam Handbook

**Miyagase Dam**

## 2. Promotion and Support for Water Source Areas

### (5) Involvement of People outside the Water Source

#### 1) Support for Livelihood

The MLIT is implementing the “headwater villages support project” to revitalize the region



Source: Headwater Villages Support Project, MLIT

#### Contest for the Design of a Trip to Headwater Villages



Source: Road Station of Yanba Dam Website

#### Specialty Products

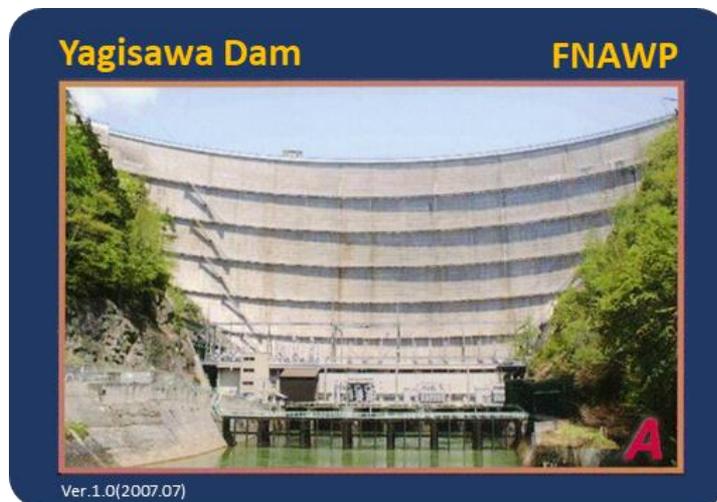
## 2. Promotion and Support for Water Source Areas

### (5) Involvement of People outside the Water Source

#### 1) Act on Special Measures for Water Resource Areas

### Dam Card Distribution

- “Dam card” is distributed to people who visited the dam.



Source: MLIT website

#### DAM-DATA

|                      |  |
|----------------------|--|
| Location             | : Minakami Town, Tone-gun,<br>Gunma Prefecture |
| Name of river        | : Tone River, Tone riverine                    |
| Dam type             | : Arched Concrete Dam                          |
| Gate                 | : overflow type & 2 stages, 2 roller gates     |
| bank height / length | : 131m/352m                                    |
| Dam Volume           | : 204 million 300 thousand m <sup>3</sup>      |
| Authority            | : Japan Water Agency                           |
| Completion           | : 1959/1967                                    |

#### Random Information

There's no road at the upstream of the Dam. Place around the reservoir is remained wild nature and treasure house of animals and plants. In winter, the place is covered with snow and snowfall accumulation becomes 12m, which is one of the heaviest snowfall area in Japan. These snow is important water resource for Tokyo metropolitan area.

#### Special Technology

The dam consists of 3 type materials, main part of dam is arch type concrete, Spillway is concrete of gravity, and cutoff is made with rockfill. The scene of discharge from ski jump type spillway which is 30m height is incredible.

### Example of Dam Card

## 2. Promotion and Support for Water Source Areas

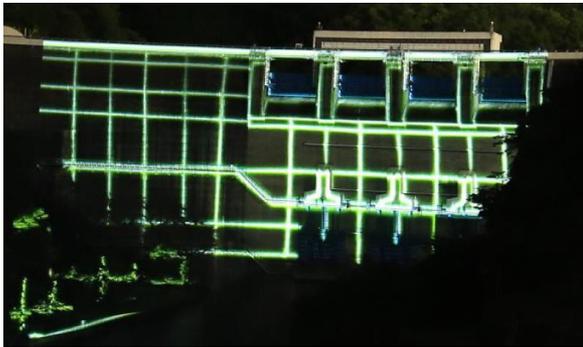
### (5) Involvement of People outside the Water Source

#### Economic Revitalization Using Reservoirs

- Projection Mapping
- Triathlon tournament utilizing the dam environment
- Backstage tour by private entities



Source: Izumo River Office website



Source: Yodo River Dams Integrated Management Office website



Source: Nikkou City Website



#### Regional Revitalization Using Reservoirs

## 3. Environmental and Ecosystem

### (1) Environmental Impact Assessment and Countermeasures

#### 1) Environmental Impact Assessment (EIA)



### 3. Environmental and Ecosystem

#### (1) Environmental Impact Assessment and Countermeasures

#### 2) JICA's System on Environmental and Social Considerations

1. Categorization (4 categories)

2. Documents on environmental and social considerations

3. Environmental review results

4. Monitoring results

## 3. Environmental and Ecosystem

### (1) Environmental Impact Assessment and Countermeasures

#### 3) JICA'S Environmental and Social Consideration

- Advisory Committee for Environmental and Social Considerations
- Residents Relocation Plan



Source: JICA

#### **Advice of Advisory Committee for Environmental and Social Considerations**

# 3. Environmental and Ecosystem

## (2) Environmental Conservation Measures

### 1) Conservation of Ecosystems by Biotopes and Fishways

**Twin Hills**

**Stone Fence**

**Moat for Observation**

**Pond and Stream**

Japanese deer footprints   Wild boar footprints   Raccoon dog footprints

Calopteryx cornelia   Japanese wagtail

Source: Website of the Sagami River Wide Area Dam Management Office, Kanto Regional Development Bureau, MLIT

### Higashizawa Biotope Created in Miyagase Dam Area

# 3. Environmental and Ecosystem

## (2) Environmental Conservation Measures

### 1) Conservation of Ecosystems by Biotopes and Fishways



**Pirika Dam Fishway**



**Lower channel in low flow channel**



**Refuge Pool**



**Fish Ladder**



**Nature-oriented Fishway**

Source: Website of Hakodate Development and Construction Department, Hokkaido Regional Development Bureau, MLIT

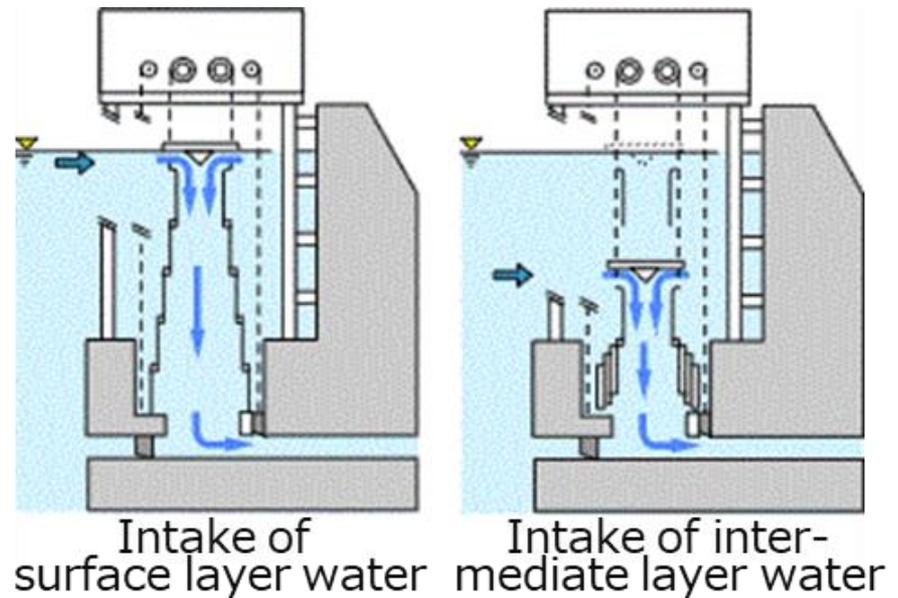
# 3. Environmental and Ecosystem

## (2) Environmental Conservation Measures

### 2) Measures for Water Quality Deterioration Caused by Dam Discharge



**Exterior view of facility**



**Mechanism of selective intake**

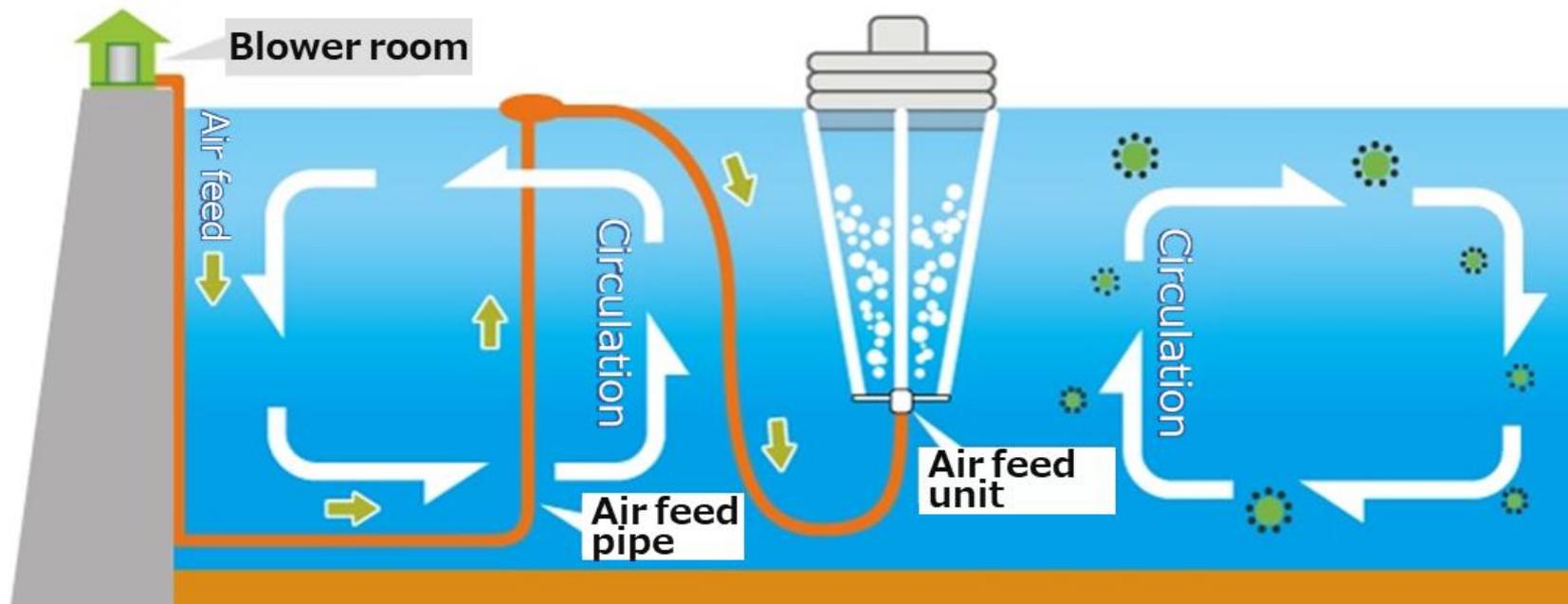
Source: Website of the Sagami River Wide Area Dam Management Office, Kanto Regional Development Bureau, MLIT

### Selective Intake Facility of the Miyagase Dam

### 3. Environmental and Ecosystem

#### (2) Environmental Conservation Measures

#### 2) Measures for Water Quality Deterioration Caused by Dam Discharge



Source: Website of the Hijikawa River Dam Integrated Management Office, Shikoku Regional Development Bureau, MLIT

#### Mechanism of the Aeration System

## 4. Lessons Learned (1)

(1) Large-scale projects should be planned for the benefits of affected local communities also.

Large-scale projects, such as dam construction, could adversely impact local communities and ecosystems if appropriate measures are not taken. The entire community could be submerged and collapsed. Projects should support local communities and industries in rehabilitating their lives and activities. The project should include relocation site development as a part of the project. Support for livelihood reconstruction is required for the affected residents. Affected people must be involved in the process of consensus building and planning for reconstruction and resettlement programs.

## 4. Lessons Learned (2)

(2) Measures for water source areas, including financial resources, need to be institutionalized.

It is necessary to implement various effective measures for water source areas. Legal systems should be provided to implement measures and secure the financial resources necessary for implementation, such as river basin funds.

(3) Partnerships with various stakeholders should be established to support the water source areas.

Cooperative relationships with downstream areas, private companies, and civil society organizations are crucial for mobilizing resources and developing activities. People outside the water source areas, such as those from downstream or urban areas, should be involved in efforts to revitalize the water source area. Interactions between people and those in the water source area deepen their understanding about each other and develop cooperative activities.

## 4. Lessons Learned (3)

(4) Assessing the environmental impact and considering conservation are prerequisites for large-scale projects.

Large-scale water management projects may affect the natural environment. To improve the project plan, there is a need to properly assess the environmental impacts, and carefully consider environmental conservation measures. It is also necessary to establish a procedure for environmental impact assessments, prepare the necessary documents at each stage, and incorporate residents' opinions into the assessment. Various environmental conservation measures should be implemented when constructing and managing facilities to avoid or reduce the adverse impacts.