

#### **(4) Project Evaluation**

For the results of the project evaluation, the IRR shows 16.2%. This figure indicates the validity of this project. The relatively high IRR is due to the high benefit derived from livestock production which is improved by increasing fodder crop production and conversion of local breed to pure breed.

### **6.6 Cross-Catchment Planning for Natural Resource Management**

#### **6.6.1 Concept of Cross-Catchment Planning**

In the Study Area, forests remain for only about 22 % of the entire catchment, and more than 59 % of the remaining forests are degraded and unproductive. Furthermore, excessive logging and unsustainable harvesting activities of forest resources by local villagers are further damaging the remaining forest resources. Therefore, development and implementation of sustainable, multipurpose forest management through participatory planning approaches is urgently needed to conserve existing forest resources and prevent further degradation. In addition, the current nurseries should be expanded in order to provide more seedlings for afforestation and erosion control activities.

To pursue this objective, the following section suggests three comprehensive projects of “Multipurpose forest management planning project” and “National parks and protected areas management project” and “Nursery expansion and improvement project”, which are of great importance but are not established in Micro-Catchment Planning. These projects would not be planned nor implemented at MC level but should be dealt with across the boundaries of plural MCs.

#### **6.6.2 Multi-purpose (functional) forest management planning project**

##### **(1) Objective**

Forest management plans prepared and implemented by OGM aim principally at conservation of the existing forest resources and development of forest tree vegetation for adequate wood production. Forest inventories with this purpose concentrate exclusively on trees, paying insufficient attention to other resources and functions of forests. Thus, the main objective of this program is to prepare multipurpose forest management plan in model project areas, which will contribute to sustainable management and utilization of natural resources.

##### **(2) Target**

The targets of the project are: a) to accomplish the study of natural resources conditions of the project area in combination with field reconnaissance and GIS / Remote Sensing analysis in the forest and rangeland area, and then b) to prepare multipurpose forest resource

management and plan.

a. Construction of forest inventory GIS database

A detailed comprehensive inventory of forest resources should be planned and launched as soon as possible. Sub-components of this inventory may include: (i) wood resources; (ii) NWFPs; (iii) degraded forest areas and forest openings, including rangelands within forests; (iv) biodiversity and genetic resources, endemic and threatened species; (v) fauna and wildlife resources; and (vi) water and water product resources. All this information should be accumulated in a forest resource database for efficient use and sharing. Different field units of regional agencies of MEF can be assigned as a task force for the inventory of different sub-components (e.g., OGM for i and ii; AGM for iii; DMPG for iv, v, vi). Close cooperation and collaboration should also be established with universities, research institutions and NGOs for efficient execution.

b. Preparation of model multipurpose (functional) forest resources management plan

After potentials and demands for different functions and uses are determined, different working cycle areas for these purposes should be identified. Appropriate silvicultural practices should be taken in order to maximize the effects. For example, forests for water and soil conservation will emphasize preventing landslides, which jeopardize people's lives and properties, and mitigating floods and supplying good-quality water, which is indispensable for living. Management objectives for such forests should include appropriate tending and selective cutting with careful attention to roots and topsoil conservation, and increasing the felling term and decreasing the felling area. Appropriate silvicultural operations such as multi-storied forest management, and long-rotation felling and prohibition of large-area clear cutting will be implemented.

Pilot projects are urgently required to be designed and implemented in some selected forests in order to test and develop appropriate multipurpose forest planning and management models.

**(3) Project Area**

The study area of the project is proposed as follows:

Berta Sub-Catchment Area: An area estimated as approximately 230,000 ha, where there are dense forest and upland rangeland in good quality, located in the hinterland of the dam under construction. The conservation of the area is also justified with importance of headwaters in the Berta tributary of the Coruh River. Berta Sub-Catchment area which has a large area of high forest, although some are degraded, and which serves as soil and water protection and bio-diversity conservation.

**(4) Methodology**

The Study shall include the following items:

- i) Study of present conditions
- ii) Study of basic Aspects
- iii) Detailed analysis including problems and possible countermeasures
- iv) Classification and mapping of areas
- v) Preparation of study report

**(5) Execution Schedule**

Activities	Year 1		Year 2		Year 3	
	1st Sem.	2nd Sem.	1st Sem.	2nd Sem.	1st Sem.	2nd Sem.
Preparation for the Study including arrangement of finance						
First Field Survey						
Analysis of data and information						
2nd Additional Field Survey						
Data Analysis and Report preparation						

During the first field survey, the entire area will be surveyed and detailed information and data will be collected. Based on the analysis of data and information, suitable areas will be selected where more detailed study will be carried out during the second field survey.

**(6) Requirements of the Project**

Requirement of Experts

In order to execute the study, the experts required will be as follows:

- i) Team Leader/ Coordinator
- ii) Forest Management / Silviculture
- iii) Community Forestry
- iv) Flora
- v) Fauna
- vi) Rangeland
- vii) Environmental Legal Framework / Institution
- viii) Socio-economy / Community Development
- ix) GIS / Remote Sensing

Apart from these experts, three assistants, and three persons including drivers and laborers are also required as assistants in the field survey works.

Equipment and Other Requirements

Precise GPS equipment, five personal computers and programs for data processing and calculations including GIS / Remote-sensing software, local transport for the study team (two 4-wheel drive pickup trucks), color Xerox machines for the study purpose, and fax machines.

**(7) Executing Organization and Related Agencies**

In order to understand the current condition of forest ecosystems and their integral values, and to formulate a comprehensive forest management plan, coordination of different General Directorates and regional offices is essential and the relevant stakeholders, including local people, should be involved in forest management. All proposed researches and works such as

conducting forest inventory surveys to collect a variety of data on forest ecosystems should be executed through collaboration of these General Directorates. Moreover, considering the increasing importance of recognizing the expectations and demands of various stakeholders and interest groups, appropriate planning and management of forest resources should be done through participatory approaches with universities, NGOs, other relevant agencies and local people.

### **(8) Effects of the Project**

By accomplishing the Project, the major benefits to be attained are as follows:

- i) Sustainable management and utilization of the natural resources
- ii) Maximum effects of forest multi-functions
- iii) Biodiversity conservation based on scientific research

### **(9) Project Cost Estimation**

Cost of Consultancy Services	: 648 Billion TL
Cost of Equipment	: 90 Billion TL
Other costs including travel, office supplies, consumable items, etc.	: 96 Billion TL
Total Cost of the Study	: 834 Billion TL

## **6.6.3 National parks and protected areas management project**

### **(1) Objective**

The Coruh River catchment embraces precious forest ecosystems with high preservation values, but indigenous fauna and flora are in danger of extinction due to continuous forest degradation. These natural resources are extremely vulnerable under the harsh natural conditions in the Study Area, and rehabilitation is almost impossible once they are destroyed. Therefore, mindless and inappropriate utilization of forest resources must be avoided, and large areas of forests with valuable forest ecosystems should be exclusively preserved. The system for protected areas has been systematically developed based on IUCN in order to comprehensively evaluate diversity and richness of forest ecosystems and natural values, but no management plan has been prepared. Under these circumstances, appropriate management and expansion of protected areas for conservation of biodiversity, wildlife, cultural and aesthetic values are priority needs.

On the other hand, in terms of forest resources utilization, much of the Coruh River catchment is notable for its rugged topography and beautiful scenery with impressive forests which provide potentials for eco-tourism and recreational use of forest areas such as trekking, hunting, rafting and viewing wildlife. However, before any of these eco-tourism components are promoted and adopted, each must be shown to be economically viable and sustainable in the long term, and must also be acceptable to villagers.

The main objective is to prepare management plan for national parks and protected areas, which contribute to biodiversity conservation and sustainable use of natural resources.

## **(2) Target**

The target of the Project is to accomplish the study of wildlife conditions (especially of endangered species) in national park and wildlife protected area and their surroundings, and to form sustainable and effective management plans in both terms of conservation of natural values and satisfying forest villagers needs.

### a. Preparation of effective National Park/ Protected Areas management plan

Management plans for National Parks and other protected areas under the mandate of MEF are prepared and implemented by DMPG, in accordance with the National Parks Law. Management plans have not been developed for any National Parks and protected areas in the Study Area due to insufficient institutional and financial capacities of DMPG. Joint efforts with universities, NGOs or private companies are needed for the preparation of plans for National Parks and other protected areas, which is expected to provide significant contribution in building up institutional capacities on participatory planning and management of such areas. Active and effective discussions with forest villagers, especially at the planning stages for Protected Areas, are essential.

### b. Participatory planning

Participatory approaches must be used for planning and for making management decisions for Protected Areas. There are many conflicts due to the lack of consensus building between forest villagers, who need to utilize the natural resources of the Protected Area, and MEF, which is placed in the position of prohibiting these activities. The situation is exacerbated by the lack of effective Management Plans that will permit some of these activities while simultaneously protecting certain agreed specific areas. MPG is making serious attempts to engage in discussions with some of the villages (under the GEF II project), but these Protected Areas do not have effective Management Plans. Therefore, active and effective discussions with forest villagers, especially at the planning stages for Protected Areas, are essential. Acceptable mechanisms for providing compensation for any restriction of economic and livelihood activities should be provided, through possible measures such as fees paid to the villagers for protecting the area or through ORKOY credits. Effective Management Plans must be prepared, particularly with the active participation of the villagers. MPG staff needs training and re-training in all aspects of management planning for Protected Areas.

### c. Protection area evaluation

Designation of protected areas and their expansion based on appropriate scientific research and ample consensus building with the local villagers should be further encouraged. Comprehensive evaluation of diversity and richness of forest ecosystems and natural values should be conducted, and they must be integrated with forest inventory surveys. Preparation

of inventories on important wildlife species will also be promoted.

**d. Green corridors planning**

Connecting protected areas and thereby creating ecosystem networks is expected to enhance the effects of forest ecosystem conservation.

**e. Eco-tourism potentials research**

The potentials for eco-tourism and recreational use of forest areas such as trekking, hunting, rafting and viewing wildlife should be carefully examined. Any eco-tourism activities proposed should be economically viable and sustainable in the long term.

**(3) Project Area**

The study area of the Project is proposed in the following:

- i) Hatilla National Park (Artvin) 17,104 ha
- ii) Vercenik Mountain Wildlife Conservation Area (Erzurum, Ispir) 50,435 ha

**(4) Methodology**

The Study shall include the following items:

- i) Study of present conditions
- ii) Study of basic Aspects
- iii) Detailed analysis including problems and possible countermeasures
- iv) Classification and mapping of areas
- v) Preparation of study report

**(5) Execution Schedule**

Activities	Year 1		Year 2		Year 3	
	1st Sem.	2nd Sem.	1st Sem.	2nd Sem.	1st Sem.	2nd Sem.
Preparation for the Study including arrangement of finance						
First Field Survey						
Analysis of data and information						
2 <sup>nd</sup> Additional Field Survey						
Data Analysis and Report preparation						

During the first field survey, the entire area will be surveyed and detailed information and data will be collected. Based on the analysis of data and information, suitable areas will be selected, where more detailed study will be carried out during the second field survey.

**(6) Requirements of the Project**

**Requirement of Experts**

In order to execute the Study, the experts required will be as follows:

- i) Team Leader/ Coordinator
- ii) Forest Management

- iii) Flora
- iv) Fauna
- v) Environmental Legal Framework / Institution
- vi) Socio-economy / Community Development
- vii) Participatory Planning
- viii) GIS / Remote Sensing
- ix) Eco-tourism
- x) Environmental Education

Apart from these experts, three assistants, and three persons including drivers and laborers are also required as assistants in the field survey works.

#### Equipment and Other Requirements

Precise GPS equipment, five personal computers and programs for data processing and calculations including GIS / Remote-sensing software, local transport for the study team (two 4-wheel drive pickup trucks), color Xerox machines for the study purpose, and fax machines.

#### **(7) Executing Organization and Related Agencies**

MEF is the responsible agency. Participatory approaches must be used for planning and making management decisions for Protected Areas. Education, training and awareness-raising must be coordinated with relevant agencies within MEF.

#### **(8) Effects of the Project**

By accomplishing the Project, the major benefits to be attained are as follows:

- i) Designation of the legal conservation area
- ii) Effective management of natural parks and protected areas
- iii) Protection of rare and endangered flora and fauna
- iv) Development of eco-tourism
- v) Recreation for local population
- vi) Environmental education

#### **(9) Project Cost Estimation**

Cost of Consultancy Services	: 2,592 Billion TL
Cost of Equipment	: 75 Billion TL
Other costs including travel, office supplies, consumable items, etc.	: 96 Billion TL
Total Cost of the Study	: 2,763 Billion TL

### **6.6.4 Nursery Expansion and Improvement Project**

#### **(1) Objective**

Six nurseries or two in Artvin (Harmanli, Susuz), three in Erzurum (Erzurum, Horasan, Sarikamis) and one in Bayburt are responsible for providing seedlings for the afforestation and erosion control projects in Coruh river catchment. The capacity of seedling production is

from 1,000,000 seedlings per year at Harmanli up to 5,000,000 seedlings per year at Bayburt. However, the actual production has stayed at about 1/3-1/20 of the capacities due to obsolete facilities, inadequate maintenance, insufficient budget and decrease of demand because of stagnation of forest activities. Under such circumstances, the project aims to enhance nursery facilities and their seedling production capacities, thereby producing and distributing tree seedlings necessary for the execution of the projects such as afforestation, erosion control, energy forest plantation. Among other nurseries, this project targets at Ardanuc and Bayburt nurseries as these two will play a key role in production and supply for the future projects.

## **(2) Target and Project Details**

The target and the project details are as follows.

### a. Strengthening nursery facilities to enable a secure supply of planting materials

- Facilities
  - Nursery facilities (Store house, garage, germination house, nursery beds)
  - Management Research facilities (including seed storage)
- Machineries and Equipments
  - Computer, Vehicles, Tractor etc
- Maintenance, sustainable management and technical assistance
  - Technical expert in Forestry

### b. Research

- Research on introduction of new species or adaptability of tree species to devastated land

## **(3) Project Area**

The study area of the project is proposed as follows:

### Ardanuc Gecici Harmanli Nursery

Address: Harmanli koyu, Ardanuc district, Artvin province

Altitude: 700m

Total area: 39,462 m<sup>2</sup>    Seedling area: 26,100 m<sup>2</sup>

Nursery production capability: 1,000,000~1,500,000 seedlings

Total production as of 1999: 380,850 seedlings

### Bayburt Nursery:

Address: Merkez, Bayburt province

Altitude: 1,550m

Total area: 535,780 m<sup>2</sup>    Seedling area: 439,049 m<sup>2</sup>

Nursery production capability: 5,000,000 seedlings

Total production as of 2000: 263,600 seedlings



#### **(4) Implementation Schedule**

The project period is planned to be 2 years. In the project period, soil preparation, nursery establishment, establishment of research and management facilities, acquisition of seeds, equipment and materials etc will be implemented. To secure sustainability, nursery management, production and distribution of seedlings, and technical assistance of the project should be maintained.

#### **(5) Executing Organization and Related Agencies**

This Project should be implemented by regional OGM office, with cooperation of regional AGM office.

#### **(6) Effects of the Project**

By accomplishing the Project, the major benefits to be attained is sustainable supply of necessary seedlings for the implementation of the Project of afforestation, erosion control and energy forest planation etc which are aimed at rehabilitation or enrichment of degraded area.

#### **(7) Project Cost Estimation**

Project Cost in Ardanuc Harmanli Nursery	: 200 Billion TL
Project Cost in Bayburt Nursery	: 200 Billion TL
Total Project Cost	: 400 Billion TL

### **6.7 Human Resources Development**

#### **6.7.1 Necessity of Human Resources Development**

The categories of natural resources rehabilitation and management, livelihood improvement, and cross-catchment plan each have specific activities such as soil conservation, afforestation, irrigation improvement and livestock improvement in order to realize their objectives. However, the situation is that the personnel, technology and knowledge to implement these activities are insufficient, and there is urgent need for improvement. The category of human resource development consists of programs for training, awareness creation, research, demonstration and technical assistance. In order to accomplish sustainable rehabilitation of the natural resources, these programs aim at: i) education and extension of knowledge on natural resources and environment for forest villagers; ii) the improvement of tree planting and erosion control techniques of the forest engineers and; iii) improvement of production techniques for activities such as irrigated agriculture and animal husbandry.

Human resources development programs are supportive programs aiming at facilitating efficient implementation of natural resources rehabilitation and management, livelihood improvement and cross-catchment plan. Accordingly, the projects costs for these programs will consist of training, various seminars and workshops, materials increasing awareness of

natural resource rehabilitation (videos and pamphlets). Hence, the programs are considered indispensable for realizing sustainable watershed rehabilitation, despite that the benefits from these programs are intangible.

## 6.7.2 Training program

### (1) Objectives

This program aims to raise technical capabilities necessary for natural resource rehabilitation and management. This program includes the following 7 activities: i) Technical study tour for engineers, ii) Training of engineers, iii) Training of nurserymen, iv) Training of forest guards, v) Training for engineers and nurserymen, vi) Study tours for MC villagers, and vii) Training course for hunters.

### (2) Activity and cost

The content of each suggested activity and estimated project cost for its implementation are listed below. The training program includes lectures, workshops and field visits on participatory forest management, and tours to other villages in different MCs. The total project cost estimated for 7 activities is 100 BTL.

Activity	Quantity	Method
1) Technical study tour for engineers	- 1 tour, 2 weeks, 4 engineers	Foreign tour
2) Training of engineers	- 10 people, 1 week	Lecture, workshop and field visits on participatory forest management,
3) Training of nurserymen	- 10 people, 1 week	Lecture, workshop and field visits on participatory forest management
4) Training of forest guards	- 15 forest guards, 3 days	Lecture, workshop and field visits on participatory forest management
5) Training for engineers and nurserymen	- 5 forest engineers and 10 nurserymen, 5 days	Lecture, workshop and field visits
6) Study tours for MC villagers	- 2 tours, 3 days each, 15 villagers per tour	Tour to other villages in different MCs.
7) Training course for hunters	- 20 hunters, one week	Lecture and workshop
Total cost	100 BTL	

### (3) Effects of the projects

The following effects are expected by project implementation.

- i) Capability raising of forest engineers, nurserymen, forest guards
- ii) Capability raising of forest engineers and nurserymen
- iii) Understanding the importance of the natural resources management and livelihoods
- iv) Capability raising of hunters

### 6.7.3 Awareness creation program

#### (1) Objectives

This program aims to raise forest villager awareness of the importance of sustainable natural resource management and environmental conservation. This program includes the following 3 activities: i) Village workshop, ii) Lecture in primary schools, and iii) Material preparation.

#### (2) Activity and cost

The content of each suggested activity and estimated project cost for its implementation are listed below. The awareness creation program includes lectures, workshops and video films, brochures, posters etc. The total project cost estimated for 3 activities is 30 BTL.

Activity	Quantity	Method
1) Village workshop	- 5 villages, one day each, 2 times	Workshop
2) Lecture in primary schools	- 5 schools, one day each, 2 times	Lecture
3) Material preparation	-	Vide films, brochures, posters, etc.
Total cost	30 BTL	

\* The quantity and cost are estimated for 5 villages only.

#### (3) Effects of the projects

The following effects are expected by project implementation.

- i) Increase awareness of local people of the importance of natural resources conservation
- ii) Increase awareness of children of the relationship between nature and human activities
- iii) Facilitate awareness creation

### 6.7.4 Research program

#### (1) Objectives

This program aims to accumulate the fundamental data for sustainable natural resource management and livelihood improvement by conducting researches on disaster mechanism and new energy development. The following 8 activities are suggested:

- i) Research on disaster mechanism: Rainfall pattern, river discharge, discharge of suspended sediment and bedloads,
- ii) Evaluation of past soil erosion control: Measures applied, cost spent, monitoring methods, survival rate of trees, erosion amount
- iii) Research on local plant species: Characteristics of *Populus tremula*, *Ostrya carpinifolia*, native *Quercus* sp., other bush and shrub type plants to be applied for soil conservation measures.
- iv) Rangeland assessment: Prediction of carrying capacity, evaluation of rangeland pasture productivity
- v) Wildlife inventory: Inventory, assessment and planning
- vi) New energy development: Solar energy, wind energy, bio-energy

- vii) Eco-tourism potential: Inventory, assessment and planning
- viii) Non-traditional crops: development of NWFPs

## (2) Activity and cost

The content of each suggested activity and estimated project cost for its implementation are listed below. This research program includes lectures, workshops and video films, brochures, posters etc. The total project cost estimated for 3 activities is 100 BTL.

Activity	Quantity	Method
1. Research on disaster mechanism	2 years,	Measuring equipment; field data collection, hearing,, measurement and analysis
2. Evaluation of past soil erosion control project	6 months	Field investigation, measurement, hearing
3. Research on local plant species	2 years,	Equipment; seed collection, nursery work, measurement, etc.
4. Rangeland assessment	3 years,	Equipment; field test, analysis
5. Wildlife inventory	3 months	Field survey, interview
6. New energy development	2 years,	Demo-plants construction, experiment by demo-plants
7. Eco-tourism potential	1 month	Field visit, interview
8. Non-traditional crop	3 months	Field investigation
Total cost	100 BTL	

## (3) Effects of the projects

The following effects are expected by project implementation.

- i) Provide mechanism of the occurrence of disaster
- ii) Provide ideas for cost-effective yet promising soil erosion control measures
- iii) Provide ideas for effective soil erosion control measures using local plant species
- iv) Provide more accurate carrying capacity of rangeland and sustainable management method
- v) Grasping the number of wild animals
- vi) Understanding the feasibility of introducing new energy
- vii) Provide basic data for tourism development
- viii) Diversification of income sources

### 6.7.5 Demonstrations

#### (1) Objectives

Through field demonstrations, this program aims at technical improvement and its extension for livestock and crop production, which are main agricultural income sources. The following 2 activities are suggested for this purpose.

- i) Field demonstrations on livestock  
Effect of deferred grazing and early withdrawal; forage production under irrigation, timing of cutting, etc.
- ii) Field demonstrations on agriculture

Irrigated agriculture, water management, introduction of new crops, etc

## **(2) Activity and cost**

The content of each suggested activity and estimated project cost for its implementation are as listed below. The demonstration program includes controlled grazing, forage production, New crop cultivation and water management. The total project cost estimated for 3 activities is 50 BTL.

Activities	Quantity	Method
1. Field demonstrations on livestock	4 sites	Controlled grazing, forage production
2. Field demonstrations on agriculture	5 sites	New crop cultivation, water management
Total cost	50 BTL	

\* The quantity and cost are estimated for 5 villages only.

## **(3) Effects of the projects**

The following effects are expected by project implementation.

- i) Understanding the effect of controlled grazing and technique for forage production
- ii) Understanding of various cultivation technologies

### **6.7.6 Technical assistance**

#### **(1) Objectives**

This program aims to technically assist in activities such as soil erosion control, livestock and crop production. The following 4 activities are suggested for this purpose:

- i) Soil erosion control  
Afforestation, terracing, gully plugging
- ii) Agricultural extension  
Water management, crop cultivation, farm management
- iii) Veterinary service  
Vaccination, internal parasite diagnosis, artificial insemination, treatment of other common diseases
- iv) Pasture improvement  
Controlled grazing, pasture improvement

#### **(2) Activity and cost**

The content of each suggested activity and estimated project cost for its implementation are listed below. The technical assistance program includes controlled grazing, forage production, New crop cultivation and water management. The total project cost estimated for 4 activities is 75 BTL.

Activities	Quantity	Method
1. Soil erosion control	5 years	Afforestation, terracing, use of local plants, etc.
2. Agricultural extension	5 years	Water and farm management, crop cultivation
3. Veterinary services	5 years	Vaccination, internal parasite diagnosis, treatment of other common diseases
4. Pasture improvement	5 years	Controlled grazing, pasture improvement
Total cost	75 BTL	

### (3) Effects of the projects

The following effects are expected by project implementation.

- i) Help to execute effective soil erosion control measures
- ii) Help to increase agricultural productivity and income
- iii) Help to increase productivity of livestock and income

### 6.7.7 Implementation Schedule

Human resources development is composed of five programs. These programs will be implemented in six years. Programs of training to national project staff, forest staff, villagers and awareness creation are given priority and executed from first year. These activities are implemented at the early stage because it is important for showing the meaning of rehabilitation and management in MC. Other programs are additionally implemented for the progress of each programs/projects of natural resources rehabilitation and management and livelihood improvement during year second.

ACTIVITY	PRIORITY	PROJECT YEAR 1	PROJECT YEAR 2	PROJECT YEAR 3	PROJECT YEAR 4	PROJECT YEAR 5	PROJECT YEAR 6
<b>Training, Awareness Creation, Capability Raising, Research, Demonstrations, Technical Assistance</b>							
1. Training							
- Training of national project staff	●	█					
- Training of field forestry staff	●	█					
- Training of MC villagers	●	█					
- Training of hunters		█					
2. Awareness creation							
- Natural resources management	●	█	█				
3. Research							
- Disaster mechanism	●		█	█			
- Evaluation of past soil erosion control project	●		█				
- Characteristics of local plants	●		█	█			
- Rangeland assessment	●		█	█	█		
- Wildlife Inventory	●		█				
- Alternative energy development	●		█	█			
- Eco-tourism potential	●				█		
- Non-traditional crops	●		█				
4. Demonstration							
- Rangeland and meadows	●		█	█	█	█	█
- Crop production	●		█	█	█	█	█
5. Technical assistance							
- Soil erosion control	●		█	█	█	█	█
- Agricultural extension	●		█	█	█	█	█
- Pasture improvement extension	●		█	█	█	█	█
- Veterinary services	●		█	█	█	█	█

## **6.8 Expansion of the Results of Micro-Catchment Planning to the Coruh River Catchment**

The 63 MCs of the Coruh River catchment have been classified and then consolidated into six different groups with similar biophysical and socio-economic characteristics, as described in Sections 6.2 – 6.4. Subsequently, “Model” MCs have been selected from each of the six classified groups of MCs, and feasible and effective programs/projects have been formulated in the Model MCs as shown in Section 6.5.

The detailed MC Plans, which were designed in correspondence with the characteristics of the selected MCs can be regarded as “Prototypes”. Programs/projects that are suggested feasible in these Prototype MC Plans are presumably replicable to the other MCs classified into the same group.

The direct project cost for the 6 Model MCs is estimated at 5,197 BTL on average where 6,366 BTL for *BT-04: Group I*, 2,854 BTL for *MC-03: Group II*, 4,673 BTL for *TR-06: Group III*, 6,369 BTL for *UC-14: Group IV*, 2134 BTL for *UC-03: Group V*, 8,784 BTL for *OL-04: Group VI*. The total direct project cost is 35,177 BTL (approx. US\$ 23,000,000), where 16,357 BTL is for natural resources rehabilitation; 12,357 BTL for livelihood improvement ; 2,466 BTL for human resources development and 3,997 BTL for cross-catchment plan.

In the course of extrapolation, the full project cost is estimated by the following calculation: The direct project costs for natural resource rehabilitation and management are extrapolated by expanding those of the six model MCs respectively into those of the other MCs with the identical classification types, using the area ratio (the area of each Model MC: the area of all MCs with the same classification). This is because the Projects have been designed spatially regardless of village boundaries and because the natural resource rehabilitation and management projects should be implemented wherever is at stake. Subsequently, the total direct project cost for natural resource rehabilitation and management in the Coruh River catchment is estimated by summing up the cost of each classification type.

Direct project costs for Livelihood improvement are estimated by multiplying the average project cost per village by the number of forest villages within all the MCs which fall in the same classification type. This is because the Master Plan focuses only on forest villages and because Livelihood Improvement Projects have been elaborated for each forest village through participatory planning workshops, and accordingly, the costs have been estimated village by village. Direct project costs for human resource development are estimated in the same way.

The iterative implementation of MC Plans to MCs with similar characteristics is feasible in terms of implementing the right programs for the right MC, and securing sustainability of implementation. The iterative implementation will enable the achievement of the goal of the

Master Plan in many MCs in the Catchment. Consequently, the comprehensive results of implementation, including forest management, soil erosion control and poverty alleviation will form the Master Plan for Participatory Watershed Rehabilitation in the Coruh River.

When expanded to the whole Coruh River catchment in the above mentioned method, the estimated direct project cost is 68,571 BTL for *Group I*, 91,569 BTL for *Group II*, 38,849 BTL for *Group III*, 28,826 BTL for *Group IV*, 33,377 BTL for *Group V* and 99,971 BTL for *Group VI*. 191,761 BTL is needed for natural resources rehabilitation and management, 138,132 BTL for livelihood improvement, 3,997 BTL for cross-catchment planning and 31,270 BTL for human resources development. Accordingly, the direct project cost for the Coruh River catchment is estimated as 365,160 BTL in total (approx. US\$ 243,000,000).

**Table 6.8-1 Direct Project Cost in the Coruh River Catchment**

Unit: Billion TL

	<b>Group I</b>	<b>Group II</b>	<b>Group III</b>	<b>Group IV</b>	<b>Group V</b>	<b>Group VI</b>	<b>Total</b>
<b>Direct Cost in Model MCs</b>							
Model MCs	BT-04	MC-03	TR-06	UC-14	UC-03	OL-04	
Area (ha)	19,203	22,643	31,240	31,934	21,758	38,603	165,381
Number of Forest Villages	14	3	5	8	5	14	49
i) Natural Resource Rehabilitation and Management	2,038	1,238	1,528	3,877	1,046	6,630	16,357
ii) Livelihood Improvement	3,829	1,261	2,790	2,089	733	1,655	12,357
iii) Cross-Catchment	Plan will be implemented in specific areas						3,997
iv) Human Resource Development	499	355	355	403	355	499	2,466
<b>Direct Cost in Model MCs</b>	<b>6,366</b>	<b>2,854</b>	<b>4,673</b>	<b>6,369</b>	<b>2,134</b>	<b>8,784</b>	<b>35,177</b>



## Chapter 7 The Master Plan for Participatory Watershed Rehabilitation in the Coruh River

## **CHAPTER 7**

### **THE MASTER PLAN FOR PARTICIPATORY WATERSHED REHABILITATION IN THE CORUH RIVER**

#### **7.1 Overall Understanding of the Master Plan**

The Coruh River catchment has been divided into 63 MCs and has been classified into six groups with regard to their features and packages of strategies to be implemented. Subsequently, six Model MCs representing the features of the respective groups have been selected as “Prototypes” of MC Planning such that the implementation of watershed rehabilitation activities must correspond to the features of the respective MCs. The MC Plans prepared for these Model MCs are replicable to other MCs of the respective groups. Iterative application and expansion of these MC Plans are expected to cover the Coruh River catchment and will contribute to preventing further progression of the vicious spiral of poverty and natural resource degradation.

In this context, the Master Plan for Participatory Watershed Rehabilitation in the Coruh River consists of a large number of MC Plans expanded up to an appropriate scale. In addition, cross-catchment activities applied to specific areas of the whole catchment are also necessary components of the Master Plan. Furthermore, human resource development should always be strengthened in any places along with all the watershed rehabilitation activities.

In the implementation of the Master Plan, the Prototype MC plans can be regarded as basic units, and should be given priority among implementation, since they will work as model cases which can provide monitoring results of the implemented activities and implementation structures. This will enable ample and efficient examination when planning for the subsequent rounds of MC Plans. Moreover, the implementation of Prototype MC Plans will also work as demonstrations, raising the interest of the stakeholders and leading to smooth implementation of the Master Plan.

#### **7.2 Implementation Plan of the Master Plan**

##### **7.2.1 Project Cost-sharing Arrangement**

For the implementation of the Master Plan, the programs/projects (covering i) Natural resource rehabilitation and management, ii) Livelihood improvement, iii) Cross-catchment plan, and iv) Human resource development) are not only within the mandate of MEF but also of MARA, GDRS and other agencies. Therefore ample coordination among these responsible Ministries is necessary for effective and sustainable implementation of the Master Plan. As the leading implementation agency, MEF will also bear the costs for the projects under the mandate of other agencies such as irrigation improvement and technical assistance, etc.

MEF intends to bear 100% of the project costs for natural resource rehabilitation and management and cross-catchment planning. However forest villagers should actively participate in natural rehabilitation projects, sharing the rehabilitation efforts including labor contribution. For example, energy forest plantations will be managed as their own community forests after they are installed. The management of riverside plantations after planted, will be entrusted to forest villagers for training their awareness of disaster control.

On the other hand, MEF will bear 90% of the project costs for livelihood improvement projects, while local villagers must bear 10% of the investment cost. However operation and maintenance cost (O&M) for irrigation channels and ponds will be fully covered by the beneficiaries.

Furthermore, MEF will bear 100% of the project costs for human resource development. Government agencies such as MEF, MARA and GDRS will provide the necessary personnel and equipment. However, the benefiting farmers must bear costs for attending technical extension seminars and workshops.

### **7.2.2 Rational Implementation Arrangement of the Master Plan**

MEF regards “the Master Plan” as a 6 ~ 7 year Action Plan with a total cost of US\$ 20 ~ 30 million, although a Master Plan usually means a fundamental plan which will guide future bio-physical and socio-economic development of the region over a few decades.

In planning 6 Model MCs, about US\$ 3.5 million are estimated per MC with an average size of 27,000 ha. Then the suggested programs/projects are expected to be expanded into 63 MCs in Coruh River catchment (distributed in 3 provinces), as mentioned in Section 6.8. Considering the definition of “the Master Plan”, it is obvious that not all the MCs can be implemented due to budgetary and temporal constraints in addition to other factors such as institutional insufficiency.

On the other hand, in Eastern Anatolia Watershed Rehabilitation Project (EAWRP), its original design embraced 54 MCs in 3 provinces, and then the project expanded up to 88 MCs in 11 provinces in 1999. Average size of MCs at the time of appraisal is about 7,400 ha, and US\$ 1.6 million of project cost per MC is estimated for the watershed rehabilitation and income-generating activities under MEF, GDRS and MARA. Three MCs per year in each province are scheduled to be selected, planned and then implemented. However, this planning and implementation schedule was too tight to be achieved due to insufficient and/or immature capacity of the provincial agencies and/or attitude of the MC communities. Therefore this tight schedule was reviewed and a much longer timeframe was recommended.

Therefore, the Master Plan proposes the following planning and implementation schedule, defining the reasonable schedule as “One MC per year in one province” or “Three MCs per year in the Coruh River catchment” in terms of financial and institutional constraints. 6 MCs

are prioritized for implementation.

In the first year (YEAR 1), three MC plans (OL-04, BT-04 and UC-03) will be formulated, and in the second year (YEAR 2) two MC plans (UC-14 and MC-03) will be commenced. Lastly in the third year (YEAR 3) MC plan (TR-06) will be formulated.

**Table 7.2-1 Proposed Implementation Schedule of the Master Plan**

Province-MC	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8
Erzurum-OL04	█							
Erzurum-UC14		█						
Erzurum-TR06			█					
Artvin-BT04	█	█	█	█	█	█		
Artvin-MC03		█	█	█	█	█		
Bayburt-UC03	█	█	█	█	█	█		

In the limited framework of this Master Plan, 6 model MC plans are prioritized and to be implemented. However, immediate implementation of these 6 model MC plans is expected to contribute to the iterative application of the programs/projects and expansion to the other MCs, thereby realizing the overall planning goal of the Master Plan. Responsible agencies and all the stakeholders should examine the implementation of the subsequent rounds of the MC plans if they afford to be done, referring to the experiences gained and lessons learned from the first implementation.

**7.2.3 Estimated Project Cost of the Master Plan**

As above mentioned, beneficiaries are supposed to bear 10% of project costs for livelihood improvement, and MEF will bare the rest of project costs or 100% of the project costs for natural resource rehabilitation, cross-catchment planning and human resource development, and 90 % of livelihood improvement. Under this cost-sharing condition, the direct project cost to be borne by the MEF is estimated as 33,942 BTL.

The actual project cost for the Master Plan consists of: “Direct Costs”, “Engineering and Consulting Services Fees”, and “Contingency” (Physical Contingency and Price Contingency). Premising that the “Engineering and Consulting Services Fees” are 10% of the “Direct Costs”, while “Contingency” is 20% (Physical Contingency10%, Price Contingency 10% )of all other costs, the estimated actual project cost for the six MCs and cross-catchment planning totals 44,028 BTL ( approx. US\$ 29,400,000 ). (Table. 7.2-2)

The proportion of each project cost by kind are as follows:

- i) Natural Resource Rehabilitation (including cross-catchment Plans) : 60 %
- ii) Livelihood Improvement : 33 %
- iii) Human Resource Development : 7 %

**Table 7.2-2 Estimated Project Cost for the Master Plan Borne by MEF**

	Unit: Billion TL						
	Group I Savsat (BT-04)	Group II Yusufeli (MC-03)	Group III Uzundere (TR-06)	Group IV Ispir (UC-14)	Group V Bayburt (UC-03)	Group VI Oltu (OL-04)	Total 6-MCs
1. Natural Resource Rehabilitation and Management	2,038	1,238	1,528	3,877	1,046	6,630	16,357
2. Livelihood Improvement (90%)	3,446	1,135	2,511	1,880	660	1,490	11,122
3. Cross-Catchment Planning	Plan will be implemented in specific areas						3,997
4. Human Resource Development	499	355	355	403	355	499	2,466
<b>Direct Project Cost in Model MCs</b>	<b>5,983</b>	<b>2,728</b>	<b>4,394</b>	<b>6,160</b>	<b>2,061</b>	<b>8,619</b>	<b>33,942</b>
5. Engineering and Consulting Services (10 % of 1+2)	548	237	404	576	171	812	2,748
<b>6. Sub-total (1+2+3+4+5)</b>	<b>6,531</b>	<b>2,965</b>	<b>4,798</b>	<b>6,736</b>	<b>2,232</b>	<b>9,431</b>	<b>36,690</b>
7. Contingency (20% of 6)	1,306	593	960	1,347	446	1,886	7,338
<b>Grand Total (6+7)</b>	<b>7,837</b>	<b>3,558</b>	<b>5,758</b>	<b>8,083</b>	<b>2,678</b>	<b>11,317</b>	<b>44,028</b>

This cost borne by MEF is equivalent to only 5 % of the annual budget of MEF for FY2002 (830,000 BTL). Also, MEF's burden for livelihood improvement project costs is less than 10% of the annual ORKOY credits used for livelihood improvement (130,000BTL).

### 7.3 Implementation Organization

In order to accomplish the aforesaid, the following hierarchical structures for implementation of the Master Plan are proposed for central, provincial and Village and MC levels organizations.

#### 7.3.1 Headquarters (Central) Level

##### Central Project Management Group (CMG)

The group will consist of the staff of AGM, ORKOY, OGM and DKMP assigned specifically for the management and monitoring of the project on behalf of their general directorates, at Ankara level. AGM representative will be the coordinator of the group. CMG's responsibilities will include:

- i) Preparation of work plans and programs of the project, management of project budget at the headquarters level.
- ii) Monitoring, assessment and supervision of the project implementations.
- iii) Providing necessary backstopping to the field implementation units of the project.
- iv) Regularly reporting to higher level authorities (e.g. the Minister, SPO, Treasury, Central Steering Committee.) about the technical, financial and administrative performance and progress of the project.
- v) Establishing necessary contacts and collaboration with the foreign donor/partner side.

##### Central Steering Committee (CSC)

This committee will consist of higher level representatives of the different units of MEF (AGM, OGM, ORKOY, DMPG, APK Board, Foreign Relations Department, Research and

Development Department), representatives of SPO, Treasury. Participation of the representatives of NGOs and other relevant government agencies (e.g. DSI, GDRS, MARA) should be provided, if possible. Coordinator of the CMG will be the member and secretary of CSC. The group meeting at least twice a year, will assess the project performance, identify major problems and constraints, provide higher level support, and advise their solutions and successful conduct of the project.

### **7.3.2 Provincial Level**

#### Provincial Project Management Group (PPMG)

This Group will consist of the chief engineers (division directors) of AGM, ORKOY, DMPG and District Director of OGM (forest chief at Bayburt). AGM chief engineer will be the coordinator of PPMG. The group will be responsible for:

- i) Planning, monitoring, assessment of the project implementations at the provincial level.
- ii) Providing necessary technical and administrative support for MC level implementation units (MCIGs and VCs).
- iii) Periodic reporting of the field level monitoring and assessment results to the headquarters (Ankara) and Provincial Advisory Committee.

#### Provincial Advisory Committee (PAC)

The members of the committee will include Provincial Director of Environment and Forestry, Regional Director of OGM, representatives of local NGOs, research institutions and universities in the province. Participation of the representatives of the other relevant government agencies (e.g. MARA, GDRS, DSI) should be provided, if possible. Coordinator of the PPMG will be a member and serve as the secretary of the committee. PAC should meet at least twice a year to review of the project progress and provide relevant advice and higher level support for solving the encountered problems and for smooth performance of the project.

### **7.3.3 Village and MC levels**

#### MC Implementation Group (MCIG)

This group will consist of local AGM, ORKOY, OGM, DMPG engineers. An AGM engineer will be the group coordinator.

#### Village Project Implementation Group (VIG)

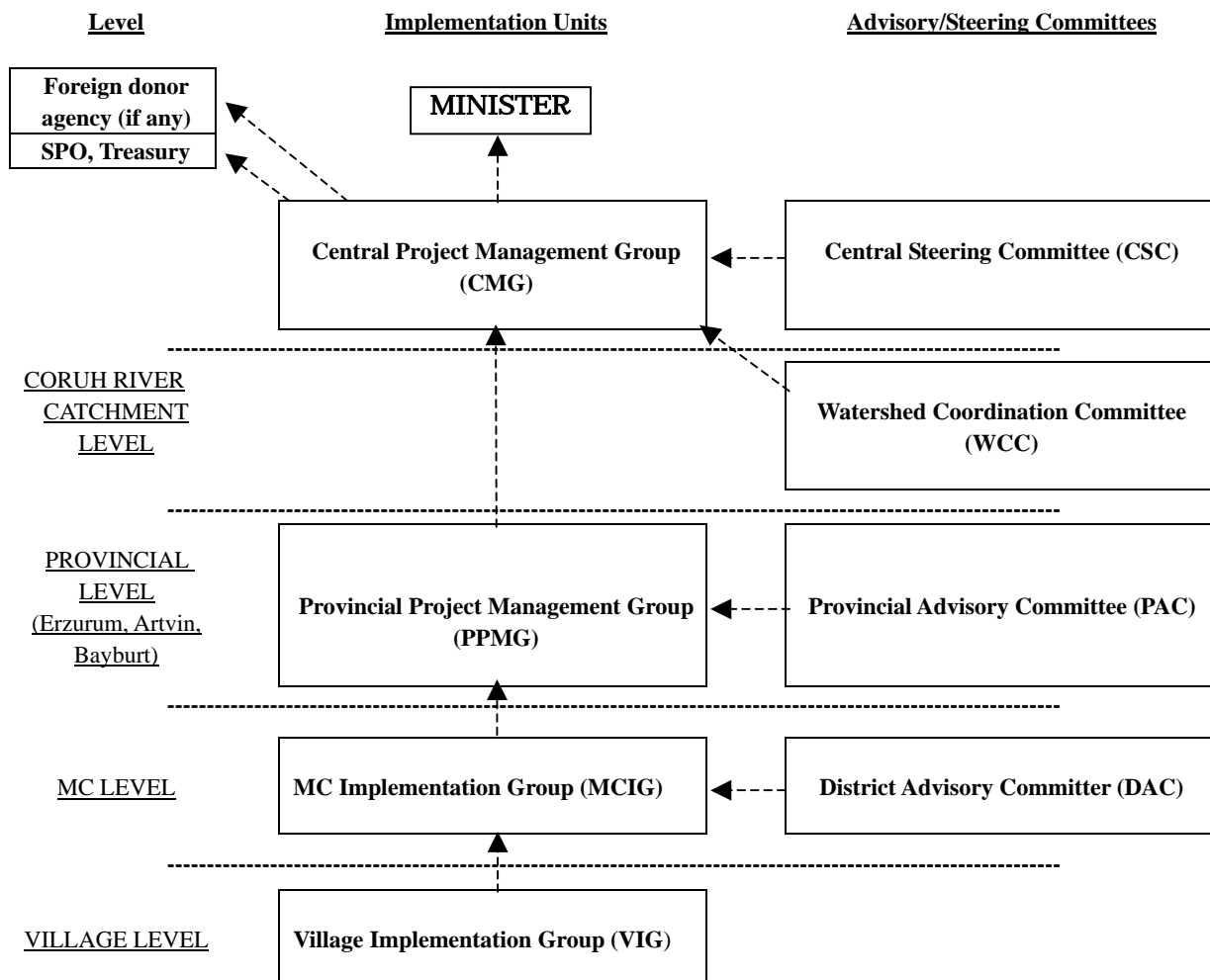
This committee will comprise, under the head of village (muhtar), the representatives of different interest groups in the village (e.g. livestock group, beekeepers, irrigated land owners, cooperative representative, village women, etc.), and will be in charge of active participation of the village community in planning, implementation, monitoring and assessment stages of MC Plan. Selected persons from each group should be identified as contact persons and should cooperate and collaborate with MEF staff during project implementations in the village.

District Advisory Committee (DAC)

OGM District Director, representatives of the other government agencies, NGOs and mayors at the district are to be the members of this committee. DAC is to be headed by the district governor. Local AGM engineer will act as the secretary of DAC.

**7.3.4 Coordination and Collaboration between the Provinces**

This will be provided by the Watershed Coordination Committee (WCC) which will include the PPMG members of the three provinces of Coruh River catchment. WCC will meet alternately at one of the project provinces at least twice a year. WCC meeting will be coordinated by the head of the PPMG of the hosting province and chaired by the CMG representative participating at the meeting. WCC meetings should be combined with the field trips to jointly examine and assess the project progress and exchange reports of experiences gained. Findings and recommendations of WCCs will be reported to the headquarters unit (CPMG). Participation of the members of the CMG at these meetings is recommended.



**Figure 7.3-1 Suggested Implementation Structure for the Master Plan**

### **7.3.5 Monitoring Systems**

The objective of monitoring is to check on the progress of various projects and to modify the project activities as necessary. Data collection is required for confirming the outputs of project activities and for making accurate decisions based on these outputs. Therefore monitoring activities should be performed by organizations “directly” involved in project implementation. In the projects including the six Model MCs and other MC projects planned in accordance with this Master Plan, the monitoring should be performed by the project advisory committees or groups in the aforementioned project management system.

To be specific, MCIG (along with VIG) shall regularly collect/record relevant data/information and periodically (twice a year) assess the project implementations at the MC levels in accordance to relevant performance criteria to be developed. These results shall be regularly reported to PPMG. Furthermore a provincial-level participatory assessment meeting shall be organized once a year, under the coordination of PPMG with participation of the representatives selected from relevant MCIGs. The results of these activities shall be periodically reported to CMG and CSC.

The evaluation of the monitoring results mainly focuses on the effects of the projects, rather than its process (how it was implemented). Evaluation is performed to ascertain the project impacts and achievements, and make recommendations and draw lessons on the future management system and project activities. Since evaluation sometimes requires a more objective perspective, the mission requires a third party, which is independent from the planning and implementing organizations.

To be specific, evaluation should be done by CSC or other groups including VIG, MCIGs and third parties such as donor agencies.

## **7.4 Financial Resources**

### **7.4.1 Financial Resources**

The programs/projects included in the Master Plan components are divided into two types: investment and financing. In consideration of the limited Government budget and public enterprise investment, it is necessary to examine the possibility of utilizing external resources to the maximum possible extent.

Among the proposed programs/projects, public and quasi-public works must be executed with government agencies such as MEF, MARA and GDRS. At the stage of precise planning and implementation, detailed design must be done for the proposed programs/projects, and funding must be examined in consideration of various financial sources including the annual budget of MEF and funding by international organizations.



The utilization of credits are indispensable for implementation of livelihood improvement projects, and credits provided by ORKOY and TKK (Agricultural Credit Cooperation) are considered suitable. Although ORKOY credits maintain low interest rates (annual rate of 8-10%), this financial source is insufficient and needs to be expanded. The credits provided by TKK, which owns a nation wide system, have higher interest rates (35%) compared to ORKOY, but is still lower than commercial banks (70%). From this viewpoint, the expansion of TKK credit for forest villagers should be promoted.

The keys to ensure credit repayment are irrigation facility installation, introduction of high profitable crops (fodder crops, vegetables) and improvement of livestock productivity, which are programs/projects proposed for livelihood improvement. Also, for its realization, the active support, development and extension of techniques such as irrigation, crop production and animal husbandry/breeding by the relevant agencies (MARA, GDRS), which are proposed for human resource development, are essential.

#### **7.4.2 International Financing**

There are various international organizations that may support the implementation of the Master Plan. These include multilateral financial agencies such as IBRD; international programs for financial cooperation such as IFAD and GEF; bilateral financial institutions such as the Japan Bank for International Cooperation (JBIC); and other external cooperation organizations. In the case of bilateral financing, it is necessary to consider a possible loan framework of the government for obtaining the national guarantee for receiving loans. Although there are systems of national finance, this Master Plan proposes consideration of international resources with lower interest rates and longer grace periods.

In addition, the scales of the interventions funded by credit or loan from international agencies should be carefully considered, since a specific government agency obtaining "large" sums of resources (many millions of US dollars) is likely to easily generate inter-agency jealousies and arguments. These frictions are always counter-productive for project execution. "Small" sums of resources (a few thousand US dollars), carefully allocated as grants in small amounts and on a decreasing scale each year, are likely to be more productive in forest villages, and attract less competition and jealousy among the relevant agencies.

### **7.5 Evaluation of the Master Plan**

#### **7.5.1 Economic Evaluation**

##### **(1) Evaluation method**

The conditions applied to economic evaluation are as follows:

- i) The values adopted as the values of project costs at economic prices are estimated through the following modifications. First, the values of market prices are divided into raw material and equipment costs and labor cost. Second, the value added tax (18% of

market prices) is subtracted from the raw material and equipment costs at market prices, and social insurance, etc., (30% of wage) is subtracted from the labor cost at financial prices. The values of the benefits have already been expressed at economic prices because they are expressed at farm gate prices.

- ii) Economic evaluation of projects examines the economic input efficiency of the projects from the perspective of the socioeconomic perspective of the region. The input efficiency is expressed in the form of EIRR (economic internal rate of return) and the efficiency is evaluated on the social discount rate in Turkey, i.e., 10% per annum.

## **(2) Project costs and benefits**

The project costs and benefits adopted in the economic evaluation are as follows:

- Project costs:
- i) Costs for natural resources management
  - ii) Costs for livelihood improvement
  - iii) Costs for human resources development.

Project benefits:

Project benefit is generated only by livelihood improvement. The content of benefit is as follows: increase in farmer net income, increase in stockbreeder net income, and increase in apiarist net income.

## **(3) Result of analysis**

The EIRR calculated from all project costs and tangible benefits at economic prices is 4.5 %. This figure is below the social discount rate (10%) and thus the projects are judged to be economically invalid. However, ample effects are expected, considering intangible benefits brought by the implementation of the Master Plan.

### **7.5.2 Socio-Economic Impact**

Apart from the tangible benefits from the activities for livelihood improvement, the Master Plan will also have intangible benefits from the activities for natural resource rehabilitation and management including cross-catchment planning, and human resources development. Moreover, expected secondary benefits and indirect benefits are also important in examining the validity of project implementation.

As activities for natural resource rehabilitation and management in the six Model MCs, this Master Plan proposes: soil conservation (total: 7,300 ha/5MCs, average: 1,460 ha/MC), afforestation (total: 690 ha/3MCs, average: 230 ha/MC), rehabilitation of degraded high forest (total: 1,510 ha/3MCs, average: 500 ha/MC), rehabilitation of degraded coppice forest (total: 950 ha/2MCs, average: 470 ha/MC), energy forest plantation (total: 2,620 ha/3MCs, average: 870 ha/MC) and rangeland rehabilitation (total: 7,680 ha/5MCs, 1,540 ha/MC). Moreover, multipurpose forest management planning (230,000 ha), and National Parks and protected areas management (67,500 ha) are planned as cross-catchment planning, and the

implementation of these activities will largely contribute to the achievement of the overall goal of the Master Plan through the realization of rehabilitation of degraded forest areas and appropriate management of forest resources.

The main items of intangible benefits are as follows:

- a. This Master Plan can be applied to other areas and catchments as a watershed rehabilitation model utilizing measures such as soil conservation, rehabilitation of degraded coppice forest, energy forest plantation, and rangeland rehabilitation. Moreover, combined with the activities for livelihood improvement, it is capable of preventing further progression of the “vicious spiral of poverty and natural resource degradation”.
- b. Through practice of natural resource rehabilitation and management, soil erosion will decrease and forests will be regenerated. This will improve the water holding capabilities of the catchment and reduce flood damages, as well as its contribution in lengthening the lifespan of the dams being constructed in the Study Area.
- c. With the implementation of measures such as afforestation, rehabilitation of degraded forest, multipurpose forest management planning, and National Parks and protected areas management, the degraded situation of the forest areas will be improved, and the natural environment will be improved with the increase of biomass. This will contribute, through its ripple effect, in maintaining and conserving the diversity of the ecosystem and its species.
- d. The activities for livelihood improvement will reduce the excessive dependency of forest villagers on natural resources, and it will improve living standards through increased income. Moreover, increased employment opportunities will reduce poverty of forest villages by maintaining the local community through reduced outmigration.
- e. The implementation of human resources development will achieve items such as: strengthening of organizations/agencies relevant to watershed rehabilitation; improvement of capability of organizational adjustments; development of staff capabilities and; efficient extension works. This will facilitate the implementation of programs/projects for watershed rehabilitation by improving the capabilities of planning, technology development and implementation/management for watershed rehabilitation.
- f. Human resources development will reduce the social/human pressures on forest resources by decreasing the causes of soil erosion and forest degradation through increasing the villager awareness for conservation/protection of the surrounding environment. On the other hand, the training and extension of agricultural production techniques will secure the outputs for livelihood activities which are tangible benefits.
- g. The Master Plan adopts villager participation in all stages (planning, implementation and operation/management) of watershed rehabilitation. Thus it will contribute to future activities of relevant organizations/agencies as a sustainable participatory watershed rehabilitation model.

### **7.5.3 Environmental Impacts**

#### **(1) Positive environmental impacts of the Master Plan**

The programs/projects proposed in this Master Plan mainly aim at the rehabilitation of the degraded natural resources of the Coruh River catchment, and generally are considered to have more positive impacts to the environment than negative. The presumed positive environmental impacts of the programs/projects under the respective categories are described below.

##### Natural resource rehabilitation and management

Programs/projects under this category will have positive impacts on factors such as: accumulation of sediment and coarse rocky debris; mass earth movements and; prevention of various natural disasters. The programs/projects will also contribute in increasing productivity of rangelands, agricultural lands and forest areas by preventing land degradation. Regeneration of green coverage through natural regeneration and planting local species will improve the natural habitats of flora and fauna as well as conserving bio-diversity. Furthermore, natural resources rehabilitation and management activities of will provide employment opportunities contributing to income improvement of local villagers.

##### Livelihood improvement

Programs/projects under this category mostly consisting of rehabilitation and enhancement of existing facilities and activities, is considered to have significant to moderate positive impacts to livelihood improvement of the local villagers. The combination of natural resource rehabilitation and management with livelihood improvement as incentives will promote smooth and efficient implementation of the programs/projects, and will contribute to the rehabilitation of the catchment area.

##### Cross Micro-Catchment Planning

Projects under this category support the appropriate and efficient management of the natural resources in the whole catchment. Particularly the National parks and protected areas management project will enable effective and appropriate conservation, management and utilization of important flora/fauna species and biodiversity.

##### Human resource development

Human resource development is for enabling efficient implementation of the Master Plan and will contribute to the rehabilitation of the natural resources and in maintaining the sustainability of the Master Plan through programs/projects under the abovementioned categories.

#### **(2) Adverse environmental impacts of the Master Plan**

As aforementioned, the activities proposed in the Master Plan are considered to have positive environmental impacts, some very strong ones. Very few of the activities will have negative environmental impacts, and then only at minor levels of severity. It is expected that any such

impacts can be mitigated through careful project design and implementation. The following description assesses the possibilities of adverse environmental impacts on some major issues and necessary considerations to be made.

#### Life of local residents

In regard to income improvement programs/projects, it should be carefully considered in the stage of detailed design that the benefits are not mal-distributed in order to avoid frictions between villagers. Furthermore, as commercial nomadic grazing were seen in parts of the Study Area, ample consensus building should be made with the nomads by treating them as one of the stakeholders.

#### Demographic features

The implementation of the projects/programs proposed in the Master Plan is considered to alleviate the state of out-migration and promote the return of migrants. However, this is improving the demographic situation of the depopulated forest villages, and is considered not to have significant adverse impact.

#### Health and hygiene

Increase in use of agrochemicals may occur. Appropriate kinds and amounts of agrochemicals to be used should be carefully considered and villagers should be trained in the course of extension. The conversion from grazing to stall feeding may result in increased animal excrements in the villages. Appropriate utilization and management methods shall also be taught to the villagers.

#### Historical sites, cultural heritages and landscape

Historical sites, where their values are not amply investigated, spread scattered within the Study Area. Although the proposed projects/programs are to be generally implemented in areas already utilized, the existence of such sites should be taken into account at the stage of detailed design.

#### Important flora/fauna species and biodiversity

Projects/programs for livelihood improvement will not have major impacts on flora, as they are mostly implemented along existing land use. The impacts of projects/programs for natural resource rehabilitation and management on flora is considered to be relatively small, as natural regeneration is emphasized for re-greening, and re-greening by planting will be done to the largest extent possible with local species. These considerations will also contribute to biodiversity conservation. Furthermore, afforestation in degraded forest areas where the present state is grassland will not have significant effect considering the large extent of grasslands in the Study Area.

In the above mentioned context, the habitats of important wild life species are also considered not to be largely affected. Projects under cross MC planning realizes effective and appropriate conservation, management and utilization of natural resourced, including important flora/fauna species and biodiversity.

#### Land/soil resources

Extension of agricultural techniques may lead to changes of agrochemical and water usage,

and appropriate management plans should be carefully considered at the stage of detailed design to prevent soil pollution/degradation.

#### Hydrology, water quality

Implementation of the programs/projects is considered to improve the hydrological features of the catchment, alleviating natural disasters. However, as agrochemical usage may increase, appropriate management plans should be considered at the stage of detailed design to prevent water pollution.

### **(3) Necessity of environmental impact assessment**

The Turkish Environmental Impact Assessment Regulation points out in its Annexes I and II, various sorts of obligated activities for Environmental Impact Assessment (EIA) and Initial Environmental Examinations (IEE). In regard to the activities pointed out in Annex I of the Regulations, the activities proposed in the Master Plan are not obligated under procedures of EIA. On the other hand, Annex II, which lists obligated activities for IEE includes the following activities:

- i) Reconstruction of agricultural lands
- ii) Projects with the aim of utilizing agricultural or non-agricultural lands for intensive agriculture
- iii) Water management projects for agricultural purposes
- iv) Projects with the aim of transforming forest areas into areas with other purposes

However, the criteria mentioned above are rather of general statements, and neither specific magnitudes nor kind of the activity are identified. There is to some extent ambiguousness among what are the actual conditions for a projects to be regarded (e.g. from what viewpoint is agricultural practice regarded as “intensive” agriculture). From this viewpoint, officers from the General Directorate of EIA and Planning insisted in the possibility of considering the necessity of procedures of small scale projects, assuming that the components of the plans are consulted.

As the projects proposed in the Mater Plan includes activities such as the introduction of agro-chemicals, and small-scale irrigation, some of the items described in Annex II of the Regulations may be applied. However, considering that the proposed projects are relatively of small-scale, and that most of them will have positive effects on the environment in some manner, it is recommended that consultations based on detailed plans are made with the General Directorate of EIA and Planning for final decisions.

#### **7.5.4 Risk Assessment**

All projects are vulnerable to numerous risks, ranging from risks at one end of the spectrum which are so improbable that they may safely be disregarded under normal circumstances, to

risks at the other end of the spectrum which are highly likely to be encountered during project implementation. Competent project design must consider this latter class of risks and will plan and organize project implementation in such ways as to mitigate them effectively. The risks identified to be significant in terms of the aforesaid parameters, and measures for their mitigation are listed below.

(1) Institutional risks

Inadequate institutional capacity of ORKOY to undertake rural development activities

The risk has moderate likelihood of occurrence and potential moderate impact on the Master Plan. ORKOY will play an important role in the implementation of programs and projects for livelihood improvement and human resource development, and the inadequate capacity of ORKOY may be a serious constraint. However, this risk is considered manageable, as it can be mitigated by the employment of qualified ORKOY staff using the project budget.

Inability and/or unwillingness of other Government agencies to cooperate in project implementation

The risk has moderate likelihood of occurrence and potential high impact on the Master Plan. In consideration of the mandate and capacity of MEF, the cooperation of relevant government agencies is essential for the successful implementation of the Master Plan. Especially the cooperation of MARA is of importance in terms of livelihood improvement projects. Although the risk can be mitigated by establishing effective dialogue and cooperation between relevant agencies, it is considered that strong efforts must be made to realize this situation in regard to the current situation where dialog is far from satisfactory.

(2) Social risks

Lack of confidence and trust between villagers and MEF (and other) Government staff

The risk has moderate likelihood of occurrence and potential moderate impact on the Master Plan. Since villager participation is one of the basis of this Master Plan, the lack of trust between the villagers and MEF will work as constraints for the Master Plan, and will have significant effects on its sustainability. However, in regard to the high interest of local villagers observed in the participatory workshops, the risk is considered manageable, and can be mitigated by establishing confidence and trust through income generating activities and natural resource management.

Out-migration from the villages, leading to insufficient young laborers for project implementation

The risk has moderate likelihood of occurrence and potential moderate impact on the Master Plan. The out-migration from the villages is a general trend in the Study Area. However, discussions with villagers revealed that many of the young villagers preferred to stay if there were sufficient employment opportunities. Thus, this risk is considered manageable, and can be mitigated by creating employment and income opportunities.

Inability and unwillingness of the villagers, including the different types of stakeholders in the village, to participate and cooperate effectively in project implementation.

The risk has low likelihood of occurrence and potential high impact on the Master Plan. However, as discussions in participatory workshops with villagers revealed their willingness for cooperation, the risk is considered manageable, and can be mitigated by creating awareness, undertaking participatory planning and implementation and providing many different forms of training especially in income generating activities.

### (3) Economic and financial risks

Unconvincing profitability (cost-benefit ratios) of livelihood improvement activities, and long payback periods for natural resource management activities.

The risk has moderate likelihood of occurrence and potential moderate impact on the Master Plan. Project success depends partly upon demonstrating that the proposed new activities are profitable for villagers. If the villagers are not convinced this is so, they might be less willing to be involved in some project activities. The risk can be mitigated by participatory planning and implementation, integrating natural resource management and livelihood improvement, and is considered manageable.

## **7.5.5 Comprehensive Evaluation**

The realization of natural resource management and livelihood improvement in the course of the implementation of the Master Plan will enable sustainable watershed management and degraded forest rehabilitation in the Coruh River catchment, in harmony with environmental conservation and economic activities of the forest villagers. Moreover, the implementation of the programs/projects of the Master Plan will largely contribute to environmental conservation, poverty alleviation of the forest villagers and the stabilization of the social welfare.

Consequently, it is estimated that further progression of the degradation of the catchment will be reduced through ripple effects. The EIRR calculated from all project costs and tangible benefits at economic prices is 4.5 %. This figure is below the social discount rate (10%) and thus the projects are judged to be economically invalid. However, ample effects are expected for socio-economic factors when considering intangible benefits brought by the implementation of the Master Plan. Moreover, as major adverse environmental impacts were not identified in its assessment, the Maser Plan can be evaluated as a plan aiming at environmental improvement/conservation. The risks for project implementation are also considered manageable, and the plan is also valid in terms of technical feasibility and in organizational institutions. Thus the implementation of this Master Plan is judged to be valid.



# Chapter 8 Conclusions and Recommendations

## CHAPTER 8

### CONCLUSIONS AND RECOMMENDATIONS

#### 8.1 Conclusions

Forest lands in Turkey total 20.7 million ha, accounting for 26% of the area of the country, have about 8 million people, or 12% of the total population, living in forest villages located inside or near forest areas. However, employment opportunities as well as resource capacity in the forest villages are insufficient, and the income level of the inhabitants is generally very low. To meet their daily needs, people often encroach into the forest areas to graze animals, collect non-wood forest products and cut trees in an unsustainable manner. Hence, the forest areas in the Coruh River catchment are under rapid degradation. The Coruh River catchment lies in the northeast of the eastern Anatolia region, spreading among the three Provinces of Artvin, Erzurum and Bayburt. The area of the catchment reaches some 2,000,000 ha. The natural characteristics include steep topography, harsh climate with seasonal mal-distribution of precipitation, soils and geography showing characteristics of high erodibility, and flash torrents, lead to severe sedimentation in the catchment especially due to floods in the spring season. The forest villagers generally live in poverty due to reasons such as their high dependency on natural resources, low productivity of land, limited economic activities, out-migration and insufficient social infrastructures.

Poverty leads to the degradation of natural and social environment, which consequently propels further poverty. Therefore, a comprehensive watershed rehabilitation plan including environmental conservation and poverty alleviation is needed in order to prevent the further progression of the “vicious spiral of poverty and natural resource degradation”. As the living of forest villagers are deeply related to watershed degradation, adequate watershed rehabilitation is not realizable without their participation. Therefore, it is essential to obtain villagers participation in all the stages of planning, implementation and operation/maintenance through participatory methods. Furthermore, direct measures for watershed rehabilitation must be implemented combined with measures for livelihood improvement in order to promote the participation of local villagers. The conservation of the environment needs to be realized through supporting various livelihood/economic activities to establish a sustainable system for watershed rehabilitation with villager participation, with the vitalization of forest villages as incentives.

On the other hand, the implementation of rehabilitation plans corresponding to the features of the Micro-Catchments (MCs) is necessary for achieving the goal of the Master Plan. Therefore, six Model MCs were selected as “Prototypes” from the groups of MCs classified by their features and the strategies to be implemented. MC Plans were prepared among these selected MCs and the prioritized implementation of these Plans was judged to be valid in terms ability to produce ripple effects.

The implementation of this Master Plan enables the rehabilitation of degraded areas in the Coruh River catchment through sustainable watershed management harmonizing environmental conservation and economic activities of local villagers. Consequently, this will sever both ends of the vicious spiral of poverty and natural resource degradation. Furthermore, the implementation of the MC Plans proposed in this Master Plan will bring about ripple effects and can be expanded to the whole catchment, and will largely contribute to the rehabilitation of the whole Coruh River catchment as a participatory watershed rehabilitation model. Thus, it is important for this Master Plan for participatory watershed rehabilitation to be promptly implemented.

## **8.2 Recommendations**

### **8.2.1 Prompt Implementation of the Master Plan**

The achievement of the expected effects of the Master Plan deeply depends on the active cooperation between MEF and relevant agencies towards implementation of the proposed programs/projects. In order to realize this situation, the Project Implementation Plan (PIP), which is one of the necessary procedures, must be promptly prepared under the responsibilities of MEF. Moreover, issues such as project scale and methods of budget acquisition must be decided in order to start consultation with necessary government organizations such as the Ministry of Treasury and SPO.

The MC Plans formulated for the six MCs aim not only at the rehabilitation and management of the respective MCs, but also at working as “Prototypes” for the group of MCs. Therefore, and also in order to withdraw the expected display effects, implementation of these MC Plans must be prioritized and performed as soon as possible.

### **8.2.1 Cost Procurement**

Considering the limited financial resources of MEF, the Government of the Republic of Turkey needs to consider alternative measures of financing for the implementation of the Master Plan for Participatory Watershed Rehabilitation in the Coruh River. Consideration should be made not only among budgets of relevant Government agencies, but also among loans through bilateral aid or by international organizations. Efficient use of international loans with preferential treatment for the environment sector should be carefully examined.

On the other hand, respective projects with high urgency or priority must be examined for their implementation at early stages. In order to do so, measures for financing such as usage of domestic budgets and or through technical assistance by developed countries should be considered.

### **8.2.3 Strengthening of Implementation Organizations**

In order to realize prompt and efficient implementation of the Master Plan with the MEF as the implementing agency, the Government of the Republic of Turkey must make the necessary adjustments between relevant agencies at central, local, and village levels. Moreover, the cooperation of relevant agencies and organizations such as MARA, GDRS, DSI and NGOs in the respective projects/programs of the Master Plan are essential. Strengthening of personnel relevant to management of the projects/programs, technical assistance and installation of necessary equipment are required in order to enhance the implementing capabilities of these agencies and organizations, and to have them responsibly perform their duties.

### **8.2.4 Human Resource Development and unionization**

Ample abilities of the implementing organization and relevant personnel are essential for the efficient implementation of the Master Plan, and therefore, empowerment must be promoted. Moreover, to place personnel that are capable of making necessary adjustments between the complicated connections of relevant organizations is of importance.

On the other hand, the introduction and fixation of new agricultural techniques are required for introducing new crops for forest villagers who are the main targets for income improvement projects. Therefore, the training of villagers is essential. In order to achieve this situation, active operation of the relevant agencies is necessary. Training of extension officers and acquisition of necessary numbers of personnel must also be done at early stages.

### **8.2.5 Active participation of Local Villagers and Provision of Incentives**

The lifestyles of forest villagers are deeply related to the watershed degradation, and therefore, the problem cannot be solved without the participation of these villagers. The forest villagers must participate in the Master Plan with ample understanding of their roles in watershed management, and in order to achieve this state, awareness must be created within the minds of the villagers through activities such as environmental education.

The basic point of attention from the economic standpoint when formulating “bottom-up” projects is if whether ample incentives can be provided to the stakeholders. For example, when looking at local villagers as the target group, the balance of costs and benefits of the project from the viewpoint of the villagers must be considered. When villagers understand that the benefits derived from the projects exceed the costs, and that it is profitable compared to other activities, they will autonomously participate in the projects by these incentives. On the other hand, if the incentives are not sufficient, the willingness of the villagers for participation will decrease and the project will not be sustainable.

Other factors such as production equipment with flexible functionality, improvement of systems to deliver market information to farmers in order to facilitate their reaction, maintenance of roads for supporting transportation of agricultural products, farmer education, and strengthening the ability of negotiation by forming producer organizations should also be regarded for the incentives provided to the villagers.

On the other hand, the procedure for selecting beneficiaries in the livelihood improvement projects should be carefully examined. The communities, which will have negative effects by application of natural resource rehabilitation projects, should be put as top priority. For example, grazing area will become narrow and animal husbandry will be negatively affected if afforestation projects are implemented. In such a case, the owners of livestock should get benefits as the first priority.

### **8.2.6 Agricultural Credit and Rural Infrastructure**

Activities for improving income of the forest villagers is a precondition for the efficient implementation of the Master Plan. However, as financial abilities of forest villagers are limited, villagers are unable to implement new activities for income improvement with their own funds. Furthermore, existing agricultural credits have difficulties in actual management. Also since the Master Plan includes activities such as orchards, which require long terms to bear benefit, credits corresponding to long-term and low interest-rate is required. Thus, the construction of an agricultural credit system capable of providing loans to forest villagers in advantageous conditions is necessary for the implementation of the Master Plan. The annual farming costs required for new activities for livelihood improvement in the six Model MCs totals 2,296BTL/yr (approx. US\$ 1,533,000).

On the other hand, in order to efficiently implement the project/programs for watershed rehabilitation and income improvement, which are the main constituents of the MC Plans, implementation/ maintenance of rural infrastructures are essential. Infrastructures strongly demanded by the villagers such as rural roads and water supply facilities are of particularly high priority. Active measures are necessary for the implementation/maintenance of these rural infrastructures which is outside of the mandates of MEF.

### **8.2.7 Measures for Cadastral Problems**

The ambiguousness of cadastre in the Coruh River catchment is a setback for the mid/long term investments for the area, and is already working as an obstacle for watershed rehabilitation. Therefore, appropriate measures for addressing this problem must firstly be taken for the implementation of watershed rehabilitation. The formulation of a “cadastral information/ boundary database” will enable the provision of basic conditions for the implementation of the programs/projects, and thus is very important. Therefore, prompt action to solve land tenure problems is required for the implement of the Master Plan. The

installation of necessary equipment and technical assistance of system construction and management is of particular importance.

### **8.2.8 Possibilities for Continuous Research and Development and Technical Assistance**

As rangelands, which hold a large portion of the Coruh River catchment, are one of the major factors contributing to soil erosion, continuous research and development of appropriate management techniques for rangelands is important. Techniques should be developed for management requiring low economic and labor inputs, appropriate grazing methods, low cost fences that enable rotational grazing, and methods for economically viable utilization of rangelands. Moreover, it is also necessary to promote measures such as diversification of pasture grass including annual species for facilitating the introduction of leguminous pasture grass for rotation, post harvest technology for pasture grass, and improvement of marketing systems.

Extension of new conservation techniques and measures through preparation of soil erosion control manuals and technical training courses are also necessary. Development, extension and guidance of practical applied technologies that lead to increased productivity are also important. In this context, technical cooperation from developed countries with ample experience is desirable.

# ANNEXES

### List of the JICA Study Team Members

Position	Name
Team Leader	Yutaka NOZAKI
Watershed Management/ Vegetation/ Afforestation	Hisanori TASHIMA
Soil Conservation	Peter Raglan STEVENS
Agriculture/ Small-scale Irrigation	Tetsuo MIZOBE
Livestock/ Pastureland Management	Hasan GENCAGA
Socio-economy/ Community Development	Takashi KIMIJIMA
Organization/ Extension	Masayuki TAKAZAWA
GIS/ Remote Sensing	Syunsuke TOMIMURA
Project Evaluation/ Monitoring	Yoshiteru SUNAGO
Environmental Assessment	Naohito WATANABE
Coordinator	Kenjiro SUZUKI

### List of Turkish MEF counterpart personnel

Institution	Name	Position
Ministry of Environment and Forestry	Dr.Hasan Z. Sarıkaya Dr. Nuri Uslu Mr.Yavuz Yüksel Dr.Erkan Ispirli  Dr. Ahmet Şenyaz	Undersecretary Deputy Undersecretary Former Deputy Undersecretary Former Head of Foreign Relations and EU Department Head of Research and Development
General Directorate of Reforestation and Erosion Control	Mr. Mustafa Yüksek Mr.Hanifi Avcı Mr. İsmail Küçükkaya  Mr. İsmail Belen Mr. Yılmaz Altaş  Mr. Tuncay Öztekin  Mr. Halit Babalık  Mr. Ünal Özdoğru  Mr. Erdogan Ozevren	Director General of AGM Assistant Director General of AGM Former Assistant Director General of AGM Head of Planing Department Head of Erosion Control and Range Rehabilitation Department Former Head of Erosion Control and Range Rehabilitation Department Former Division Director Of Foreign Financed Projects Division Director of Range Rehabilitation Division Director of Erosion Control
General Directory Of Forestry	Mr. Ali Temerit  Mr. Atilla Kurmuş	Division Director Of Foreign Financed Projects Division Director Of Silviculture Department
General Directory of Forest Village Relations	Mr. Mustafa Bayrak	Division Director
General Directory of Nature Conservation and National Parks	Mr. Hüseyin Aytaç Ms Suade Arançlı	Division Director Division Director
Erzurum	Mr.Ekrem Taftali  Mr.Gürel Şirin  Mr.Abdulkadir Eroğlu	Former ministreal Regional Directory of Erzurum Regional Directory of Forestry, Erzurum Deputy regional Director

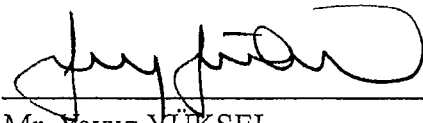


	<p>Mr. Baki Ekinci  Mr. Faruk K�ksoy  Mr.Muamer Toraman  Mr.Selami �ks�z  Mr.G�ksel �uen  Mr.Mehmet Bozgan  Mr.Mehmet G�ven  Mr.Tekin MemiŐođlu  Mr. N. Tuncay Kutay  Mr.Mustafa Őent�rk  Mr. Temel Ustaoglu  Mr.G�khan Yildirimli</p>	<p>Director of Planing ,OGM  Chief Engineeer Of AGM  Chief Engineer of National Park  Chief Engineer of ORK�Y  Nursery Director  Director of Cadastre,OGM  Director of Forest Research  Engineer of AGM  Engineer of AGM  Engineer of Nursery  Directory of Forestry, Oltu  Engineer of National Park</p>
Artvin	<p>Mr. İsmail H. Albayrak  Mr.Ethem Boz  Mr. Ersin DurmuŐ</p> <p>Mr. Mustafa Temel  Mr. Őevket Alkan  Mr. Ayhan G�nd�z  Mr. Cemal Aydın  Mr. Muhammer Kara  Mr.Turgut Demir  Ms.Leyla �zkan  Mr. Murat Sezer</p>	<p>Assistant Regional Director,OGM  AGM . Chief Engineer  Deputy Chief Engineer Of National  Parks  Engineer of ORK�Y  Former Division Director of OGM  Chief Engineer of ORK�Y  Directory of Forestry, Yusufeli  Engineer of AGM, Yusufeli  Engineer of OGM, TepebaŐı  Engineer of OGM , Yayla  Engineer of OGM, ŐavŐat</p>
Bayburt	<p>Mr. Orhan Ően  Mr. Alparslan Katircı</p>	<p>Engineer of OGM, Bayburt  Nursery Director, AGM, Bayburt</p>

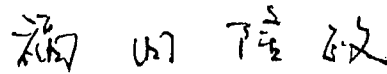
SCOPE OF WORK  
FOR  
THE MASTER PLAN STUDY  
ON  
PARTICIPATORY WATERSHED REHABILITATION  
IN  
CORUH RIVER  
IN  
THE REPUBLIC OF TURKEY

AGREED UPON BETWEEN  
MINISTRY OF FORESTRY  
OF  
THE REPUBLIC OF TURKEY  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

ANKARA, APRIL 19, 2002



Mr. Yavuz YÜKSEL  
Deputy Undersecretary  
Ministry of Forestry,  
Republic of Turkey



Mr. Takamasa FUKUDA  
Team Leader  
Preparatory Study Team  
Japan International Cooperation Agency,  
Japan

## I. INTRODUCTION

In response to the request of the Government of the Republic of Turkey, the Government of Japan has decided to conduct the Master Plan Study on Participatory Watershed Rehabilitation in Coruh river in the Republic of Turkey (hereinafter referred to as "the Study") together with the Government of the Republic of Turkey in accordance with the relevant laws and regulations in force in Japan

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Government of Turkey.

The present document sets forth the Scope of Work with regard to the Study.

## II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. To formulate Master Plan on Participatory Watershed Rehabilitation in Coruh river in the Republic of Turkey in order to contribute to natural resources management, erosion control and improvement of livelihood of local people.
2. To transfer relevant technology to the counterpart personnel through on-the-job training in the course of the Study.

## III. OUTLINE OF THE STUDY

### 1. Study Area

The Study area shall cover Coruh river watershed with a total area of approximately 1,170,000 hectares as shown in Annex 1.

### 2. Scope of the Study

In order to achieve the above objectives, the Study shall cover the following items;

- (1) To prepare a land-use and vegetation map of the study area with a scale of 1 to 100,000, based on the satellite data analysis and the field survey.
- (2) To collect and review the existing data and information relevant to the Study on the following items;
  - 1) Natural conditions
  - 2) Socio-economic conditions/gender
  - 3) Forestry conditions
  - 4) Agriculture and livestock conditions
  - 5) Agricultural and social infrastructure
  - 6) Activities of people's and public organizations and NGO's
  - 7) Existing development and conservation projects and programs



- (3) To prepare an inventory of forest villages.
- (4) To identify major problems and development potential of watershed conservation.
- (5) To formulate the master plan for integrated watershed rehabilitation for the Study area which includes the followings;
  - 1) Land-use
  - 2) Erosion control
  - 3) Reforestation / Regreening and improvement of degraded forests
  - 4) Rangeland management
  - 5) Forest pests and disease control
  - 6) Agriculture, livestock and agro-forestry
  - 7) Wildlife management and biodiversity
  - 8) Poverty alleviation (creation of income generating activities and employment opportunities including utilization of non-wood forest products)
  - 9) Strengthening the institutional capacity
  - 10) Participatory approach
  - 11) Implementation plan and preliminary design of small scale structures
  - 12) Monitoring and evaluation system
  - 13) Estimation of project cost and benefit
  - 14) Environmental assessment
- (6) To formulate GIS database which is consolidated with information acquired from land use/ vegetation map, an inventory of forest villages and micro-catchment rehabilitation plan.
- (7) To evaluate and assess the social and economic value of the participatory watershed rehabilitation plan.

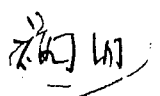
#### **IV. STUDY SCHEDULE**

The Study will be carried out during a period of fifteen (15) months approximately, in accordance with the tentative work schedule attached as Annex 2).

#### **V. REPORTS**

JICA shall prepare and submit the following reports in English to the Government of the Republic of Turkey :

1. Inception Report  
Thirty (30) copies and a set of CD-ROM at the beginning of the study in Turkey.
2. Interim Report  
Thirty (30) copies and a set of CD-ROM at the middle of the study in Turkey.
3. Draft Final Report  
Thirty (30) copies and a set of CD-ROM at the end of study in Turkey. The government of the Republic of Turkey will provide JICA with its comments on Draft Final Report within one (1) month after receipt of the Draft Final Report.



#### 4. Final Report

Fifty (50) copies and a set of CD-ROM within two (2) months after receipt of the comments on the Draft Final Report from the Government of the Republic of Turkey.

### VI. UNDERTAKING OF THE MINISTRY OF FORESTRY

1. To facilitate smooth conduct of the Study, the Ministry of Forestry shall take all necessary measures, including the following, in accordance with relevant laws and regulations in force in the Republic of Turkey:

(1) to secure the safety of the Japanese study team (hereinafter referred to as "the Team");

(2) to permit the members of the Team to enter, leave and sojourn in the Republic of Turkey for the duration of their assignment therein, and offer the convenience for procedures of foreign registration requirements;

(3) to undertake the payment of taxes, customs duties and other charges, if any, to be levied against the members of the Team, imposed on equipment, machinery and other materials which are brought into and out of the Republic of Turkey for the conduct of the Study;

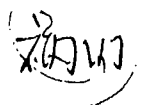
(4) to undertake the payment of income taxes and charges of any kind, if any, to be levied against the members of the Team, imposed on or in connection with any emoluments or allowance paid to the members of the Team for their services in connection with the implementation of the Study;

(5) to provide necessary facilities to the Team for the remittance as well as utilization of the fund introduced into the Republic of Turkey from Japan in connection with the implementation of the Study;

(6) to make all necessary arrangements for permission for entry into all areas, excluding military restricted areas, for the implementation of the Study;

(7) to make all necessary arrangements for permission, which will be granted by relevant authorities of the Ministry of Forestry for the Team, for taking all data and documents (including maps and photographs) related to the Study out of the Republic of Turkey to Japan; and

(8) to provide medical services as needed, expenses of which will be chargeable on the members of the Team.



2. The Ministry of Forestry shall bear claims, if any arise against the members of the Team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Team.
3. The Ministry of Forestry shall act as a counterpart agency to the Team and also a coordinating body in relations with other governmental and non-governmental organizations concerned for in the Republic of Turkey for the smooth implementation of the Study.
4. The Ministry of Forestry shall, at its own expense, provide the Team with the followings, in cooperation with other organizations concerned in the Republic of Turkey:
  - (1) available data and information related to the Study,
  - (2) counterpart personnel necessary for the Study,
  - (3) suitable office space with necessary equipment in Ankara, Artvin, Bayburt and Erzurum
  - (4) credentials or identification cards.

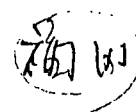
## VII. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following measures:

- (1) to dispatch, at its own expense, the Team to the Republic of Turkey, and
- (2) to pursue technology transfer to the Turkish counterpart personnel in the course of the Study.

## VIII. CONSULTATION

The Ministry of Forestry and JICA shall consult with each other in respect of any matter that may arise from or in connection with the Study.



## TENTATIVE SCHEDULE

Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
The Study in Japan	<input type="checkbox"/>				<input type="checkbox"/>							<input type="checkbox"/>			
The Study in Turkey	<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		
Reports	<input type="checkbox"/> △ Ic/R							△ It/R						△ Df/R	◎ F/R

(Remarks)

- Ic/R        Inception Report
- It/R        Interim Report
- Df/R        Draft Final Report
- ◎            Comments on Df/R by the Government of Turkey
- F/R         Final Report

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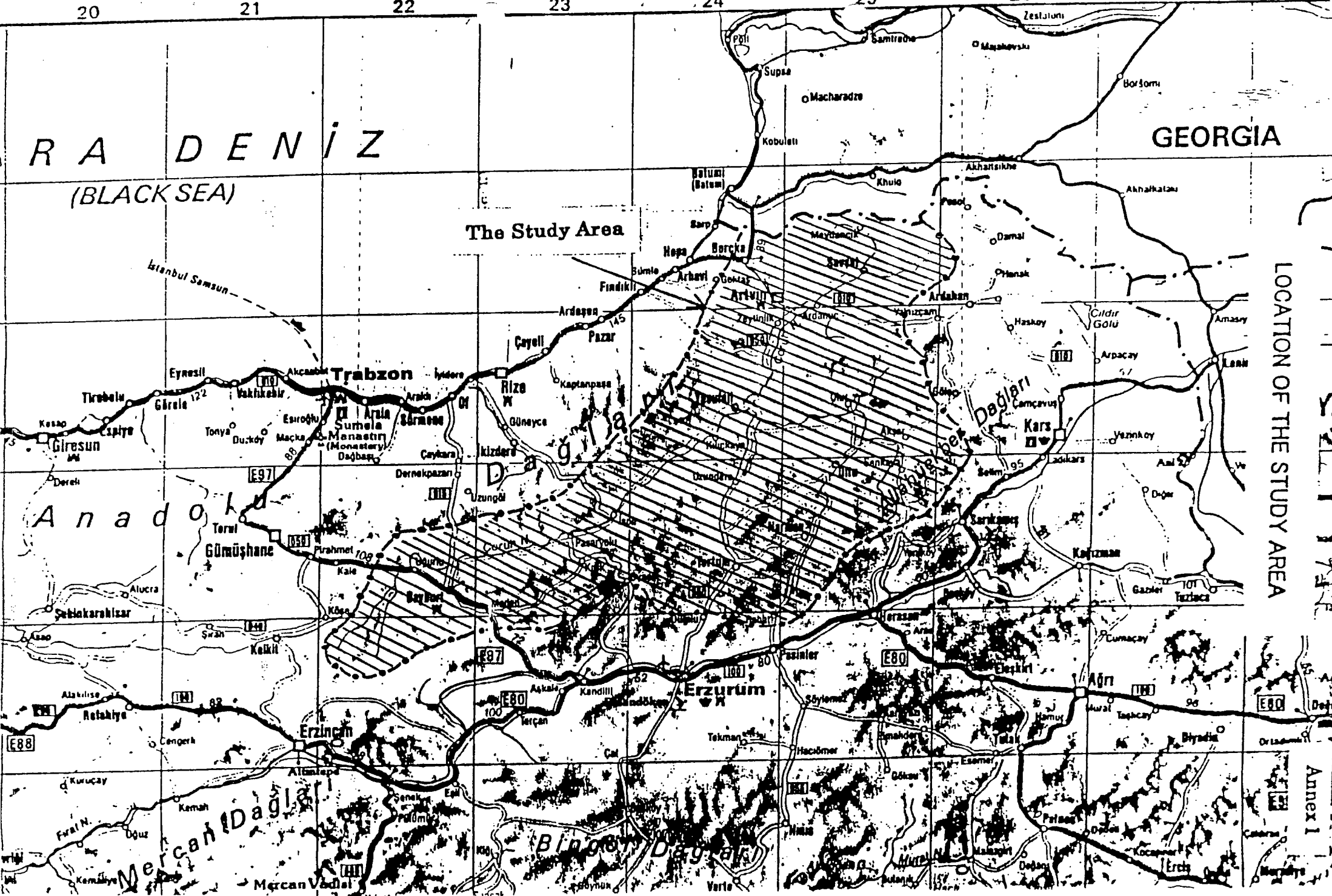
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R A D E N İ Z  
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GEORGIA

The Study Area

LOCATION OF THE STUDY AREA



Annex I



**MINUTES OF MEETING**  
**ON**  
**SCOPE OF WORK FOR**  
**THE MASTER PLAN STUDY**  
**ON**  
**PARTICIPATORY WATERSHED REHABILITATION**  
**IN CORUH RIVER**  
**IN**  
**THE REPUBLIC OF TURKEY**

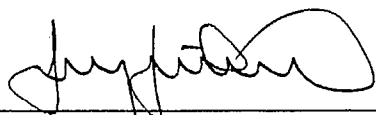
The Preparatory Study Team (hereinafter referred to as “the Team”) organized by the Japan International Cooperation Agency (hereinafter referred to as “JICA”) headed by Mr. Takamasa Fukuda visited the Republic of Turkey from April 8 to April 20, 2002 for the purpose of discussing and confirming the Scope of Work for the Master Plan Study on Participatory Watershed Rehabilitation in Coruh River in the Republic of Turkey (hereinafter referred to as “the Study”).

The Team had a series of discussions with officials from the Ministry of Forestry and other relevant organizations on the Scope of Work for the Study. The list of participants in the meetings is attached as Annex I.

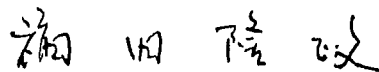
Based on the discussions, Ministry of Forestry and the Team agreed upon the Scope of Work for the Study.

The main issues discussed by both sides in relation to the Scope of Work for the Study are shown in the document attached hereto.

ANKARA, APRIL 19, 2002



Mr. Yavuz YUKSEL  
Deputy Undersecretary  
Ministry of Forestry,  
Republic of Turkey



Mr. Takamasa FUKUDA  
Team Leader  
Preparatory Study Team  
Japan International Cooperation Agency,  
Japan

Attached Document

## 1. STUDY AREA

Both sides agreed to choose Coruh river watershed covered with three (3) provinces (Artvin, Bayburt and Erzurum) as the Study Area based on the following reasons.

- 1) Three multipurpose dams which are currently under construction urgently require watershed rehabilitation in Coruh river watershed so that siltation to dam lakes will be limited.
- 2) Coruh river watershed is one of the poorest and most severely degraded regions due to it's characteristic topography and harsh climate.
- 3) Avoiding unsustainable natural resource exploitation by poor forest villagers whose existence heavily rely on forest and agricultural resources is a highly prioritized policy of the Turkish government.

## 2. STUDY PROCESS

The Study will be conducted as the following process by Japanese master plan study team (hereinafter referred to as "Japanese Study Team") with close collaboration with Turkish side.

The First Step; Basic Survey

Natural conditions, socio-economic condition/gender, forest conditions, agriculture and livestock , inventory of forest villages\*, etc.

The Second Step; Zoning of the Study Area

Zoning (middle size watersheds) based on socio-economic conditions and watershed analysis (flood, soil erosion, land slide, etc.)

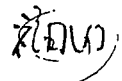
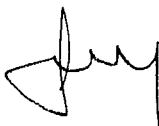
The Third Step; Preparation of Micro-catchment Rehabilitation Plan

Preparation of integrated watershed rehabilitation plan in several micro-catchments selected based on criteria to be given in the 2<sup>nd</sup> step.

The Forth Step; Formulation of Master Plan

Formulation of Master Plan based on the micro-catchment rehabilitation plans prepared in the 3<sup>rd</sup> step.

\*: Inventory of forest villages will be made based on the available data and information of forest villages in the Study area in the 1<sup>st</sup> step and a detailed inventory on the forest villages within the selected micro-catchments will be made to assess the environmental and socio- economic conditions in the 3<sup>rd</sup> step.



### **3. COUNTERPART PERSONNEL**

Both sides confirmed the necessity of expertise in the following areas to conduct the Study;

- a) watershed management, b) flora/ silviculture, c) soil conservation, d) agriculture/ small scale irrigation , e) livestock/ rangeland management, f) socio-economic/ rural development, g) GIS/remote sensing, h) institutional development/ extension, i) project evaluation/ monitoring, j) environmental assessment

The Turkish side shall assign necessary number of qualified counterpart personnel in Ankara, Artvin, Bayburt and Erzurum. Turkish side shall provide a necessary budgetary measure such as a travel allowance for them to contribute to the Study.

### **4. ESTABLISHMENT OF STEERING COMMITTEE**

Both sides agreed to establish a Steering Committee for the smooth conduction of the Study. The steering committee is to be a body comprising relevant headquarters to secure internal coordination within the Ministry of Forestry and each General Directorate in order to facilitate necessary activities required by Japanese Study Team. The Japanese Study Team will explain the reports to the steering committee.

### **5. DATA AND INFORMATION**

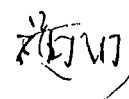
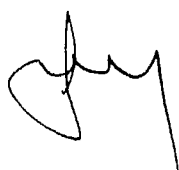
Both sides confirmed that Turkish side will provide the Study Team with data and information related to the Study that may be taken from Turkey to Japan under the conditions of the undertaking described in the Scope of Work signed by both sides.

### **6. OFFICE ACCOMMODATION**

Ministry of Forestry will provide office space suitable enough to accommodate members of the Japanese Study Team in Ankara, Artvin, Bayburt and Erzurum during the term of the study in Turkey.

### **7. STATUS OF THE FINAL REPORT**

Both sides agreed that the Final Report would be available to the public.



## **8. TRAINING OF COUNTERPART PERSONNEL IN JAPAN**

Ministry of Forestry has shown their intention to submit official request to send their counterpart personnel for training in Japan via diplomatic channel.

The Team has identified the importance of the Turkish counterpart personnel training in Japan to achieve an effective technology transfer.

## **9. TRANSPORTATION OF THE STUDY TEAM**

Transportation for Japanese Study Team during the term of the study in Turkey will be prepared by JICA.

## **10. REPORTS**

Main text of the Draft Final Report and Final Report will be written in both English and Turkish. Costs for translation from English to Turkish, printing and binding will be born by JICA.



## ANNEX I

### Turkish Side

#### Ministry of Forestry (MOF)

Mr. Harun Ozturk	Undersecretary
Mr. Yavuz Yuksel	Deputy Undersecretary
Mr. Dursun Çetin	Chairman of Research, Planning and Coordination Board
Dr. Erkan Ispirli	Head of Foreign Relations and EU Department

#### General Directorate of Reforestation and Erosion Control, MOF

Mr. Erdogan Özer	Director General,
Mr. Ali Cengiz Keskin	Deputy Director General
Mr. Ismail Kütükkaya	Deputy Director General
Mr. Ersen Tipi	Head of Planning and Coordination Department
Mr. Halit Babalik	Division Director of Foreign Financed Projects
Mr. Yilmaz Altas	Division Director of Erosion Control

#### General Directorate of Forestry, MOF

Mr. Atilla Kurmus	Director of Forest Maintenance and Energy Forests, Silviculture Department
Mr. Ali Temerit	Division Director of Foreign Financed Projects, Research, Planning and Coordination Dept.

#### General Directorate of Forest Village Relations, MOF

Mr. Necati Uyar	Director General,
Mr. Cahit Nasirli	Deputy Director General
Mr. Muhammet Bayburtlu	Head of Planning & Coordination Department
Mr. T. Mustafa Bayrak	Division Director of Coordination and Evaluation

#### General Directorate of National Parks, Game and Wildlife, MOF

Mr. Hüseyin Aytaç	Division Director of National Parks
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#### General Directorate of Reforestation and Erosion Control, Artvin Province, MOF

Mr. Gençali Özden	Deputy Regional Director in Trabzon
Mr. Yedigir Aydin	Division Director of Reforestation in Trabzon
Mr. Ethem Boz	Chief Engineer in Artvin
Mr. Nuri Salamsoy	Engineer in Artvin

#### General Directorate of Forestry, Artvin Province, MOF

Mr. Fikret Koçak	Regional Director
Mr. Nazim Avci	Deputy Regional Director
Mr. Ismail Albayrak	Deputy Regional Director
Mr. Özcan Birol	Forest District Director
Mr. Suat Yildiz	Director of Finance Section
Mr. Sevket Alkan	Forest Protection Section Director

#### General Directorate of Forest Village Relations, Artvin Province, MOF

Mr. Ayhan Gündüz	Chief Engineer
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#### General Directorate of National Parks, Game and Wildlife, Artvin Province, MOF

Mr. Casim Cihan	Chief Engineer of National Parks and Game-Wildlife
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#### General Directorate of Reforestation and Erosion Control, Erzurum Province, MOF

Mr. Necati Ürüsan	Regional Director of East Anatolia
Mr. Ekrem Taftali	Deputy Regional Director
Mr. Selani Öksüz	Chief Engineer of Projects and Survey

#### General Directorate of Forest Village Relations, Erzurum Province, MOF

Mr. Metin Meral	Chief Engineer
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#### General Directorate of National Parks, Game and Wildlife, Erzurum Province, MOF

Mr. Muammer Toraman	Chief Engineer
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General Directorate of Forestry, Erzurum Province, MOF

Mr. Gürel Sirin Regional Director  
Mr. Abdulkadir Eroglu Deputy Regional Director

Japanese Side

Preparatory Study Team

Mr. Takamasa Fukuda Leader  
Mr. Yasuhisa Tanaka Member  
Mr. Tsutomu Handa Member  
Mr. Isao Dojun Member  
Mr. Masaru Honda Member  
Dr. Nurettin Elbir Interpreter

Embassy of Japan

Mr. Yuichi Odawara Second Secretary  
Mr. Yoshihito Kageyama Second Secretary

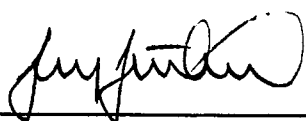
JICA Turkish Office

Mr. Yasushi Inaba Resident Representative  
Mr. Seiichi Koike Deputy Resident Representative  
Ms. Yukari Saito Assistant Resident Representative  
Mr. Ali Bekin Staff

MINUTES OF MEETING  
ON  
THE INCEPTION REPORT  
FOR  
THE MASTER PLAN STUDY ON  
PARTICIPATORY WATERSHED REHABILITATION  
IN CORUH RIVER IN THE REPUBLIC OF TURKEY

AGREED UPON BETWEEN  
MINISTRY OF FORESTRY  
OF  
THE REPUBLIC OF TURKEY  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

ANKARA, 4 October, 2002



Mr. Yavuz YÜKSEL  
Deputy Undersecretary  
Ministry of Forestry,  
Republic of Turkey



Mr. Yutaka NOZAKI  
Team Leader  
JICA Study Team

(witnessed by)



Mr. Kimiaki JIN  
Advisory Team  
JICA

The Study Team organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA Study Team") for The Master Plan Study on Participatory Watershed Rehabilitation in Coruh River in the Republic of Turkey (hereinafter referred to as "the Study"), headed by Mr. Yutaka NOZAKI, officially submitted thirty (30) copies of the Inception Report and a set of files (CD-ROM) to the Ministry of Forestry, in accordance with the Scope of Work for the Study signed between the Ministry of Forestry and JICA on April 19, 2002.

The Meeting on the Inception Report was held on October 1 to 3, 2002. In the meeting, the JICA Study Team explained the contents of the Inception Report to the Ministry of Forestry, and a series of discussions were held. The list of participants is attached in Appendix- I . As a result, the Inception Report was basically accepted by the Ministry of Forestry. Both sides have been satisfied with the improvement of the inception stage of the Study.

The results of the main issues discussed by both sides, are as follows.

### ***1. Confirmation of the Study Area***

The area of 1.17 million hectares mentioned in the Scope of Work covers middle part of the watershed selected as a priority area based on the available information on the physical, natural and socio-economic conditions of watershed and the institutional capacity of Turkish side.

However, both sides discussed and understood that it was necessary to study the whole basin of the Coruh river including the preparation of land use / vegetation map and construction of GIS database.

Finally, both sides agreed that the study area would cover the whole watershed of the Coruh river with an area of some 2 million hectares(Appendix- II ).

### ***2. Holding of periodical meetings***

Both sides agreed that the JICA Study Team and the Turkish counterparts would hold periodical meetings for the smooth implementation of the Study.





3. *Explanation to relevant organizations*

Both sides agreed that the Ministry of Forestry would explain about the Study to relevant organizations and request their support to the Study.

4. *Preparation of office space*

Both sides agreed that the Ministry of Forestry would provide suitable office space with necessary equipment and furniture, as mentioned in the Scope of Work.

5. *Nomination of counterpart personnel*

The Ministry of Forestry nominated counterpart personnel for each member of the JICA Study Team as listed in Appendix-III.

6. *Counterpart training*

The Ministry of Forestry strongly requested to conduct counterpart training in Japan for several staffs, and the JICA Study Team promised to convey that request to the JICA headquarters.

A handwritten signature in black ink, appearing to be 'JICA' followed by a stylized name or initials.

**List of Participants**

**Turkish Side**

**Ministry of Forestry (MOF)**

Mr. Yavuz Yüksel	Deputy Undersecretary
Dr. Erkan Ispirli	Head of Foreign Relations and EU Department
Dr. Ahmet Şenyaz	Division Director of Foreign Financed Projects

**General Directorate of Reforestation and Erosion Control, MOF**

Mr. İsmail Küçükaya	Deputy Director General
Mr. Tuncay Öztekin	Head of Erosion Control
Mr. Halit Babalık	Division Director of Foreign Financed Projects
Mr. Yılmaz Atlas	Division Director of Erosion Control
Mr. Ünal Özdoğru	Division Director of Range Management

**General Directorate of Forestry, MOF**

Mr. Atilla Kurmus	Director of Forest Maintenance and Energy Forests, Silviculture Department
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**General Directorate of Forest Village Relations, MOF**

Mr. T. Mustafa Bayrak	Division Director of Coordination and Evaluation
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**General Directorate of National Parks, Game and Wildlife, MOF**

Mr. Hüseyin Aytaç	Division Director of National Parks
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**Japanese Side**

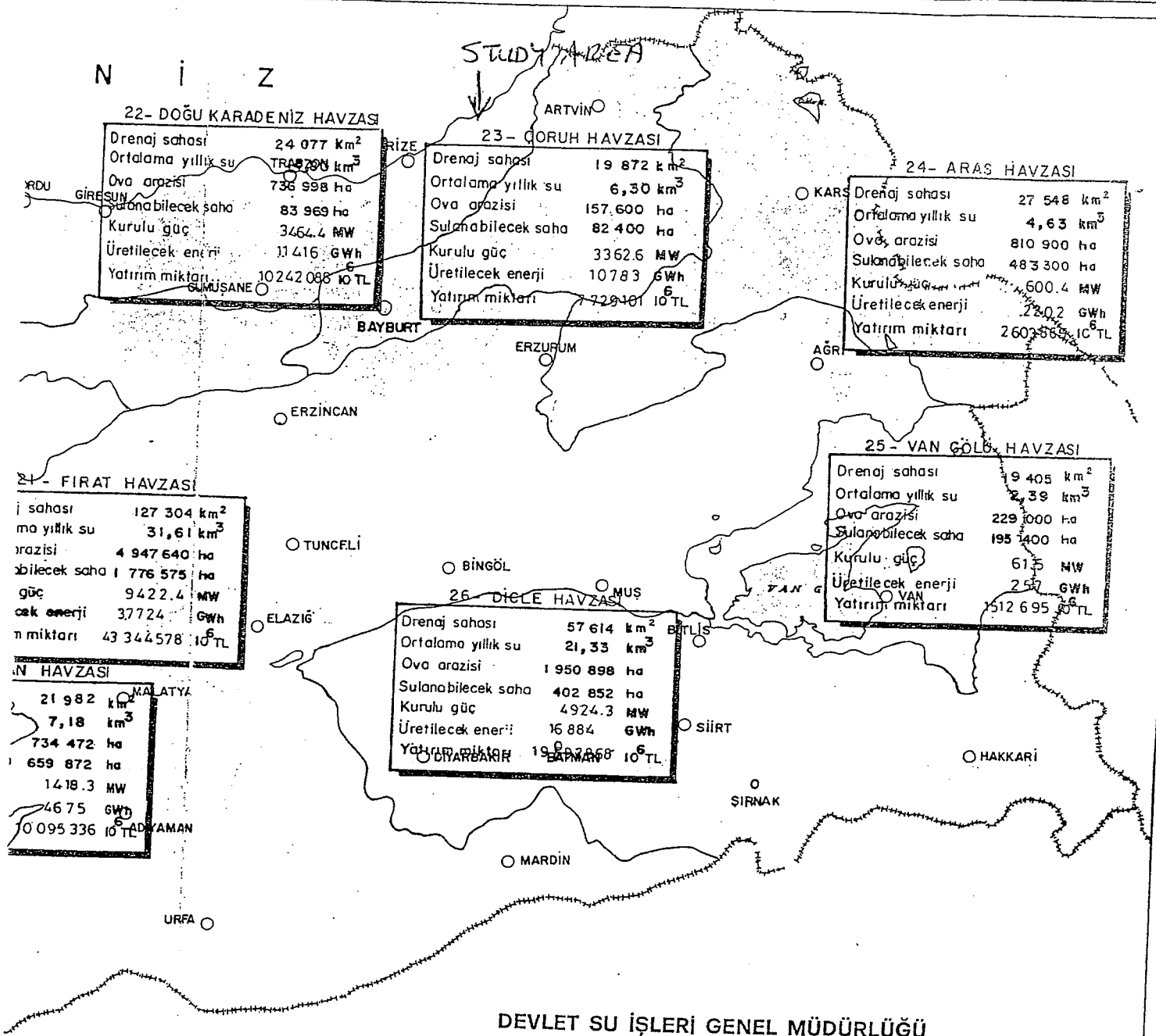
**JICA Study Team**

Mr. Yutaka Nozaki	Team Leader
Mr. Hisanori Tashima	Member
Dr. Tetsuo Mizobe	Member
Mr. Takashi Kimijima	Member
Mr. Naohito Watanabe	Member
Mr. Kenjiro Suzuki	Member

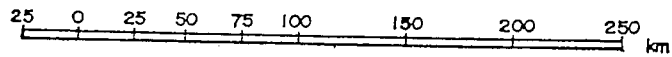
**JICA Headquarters in Tokyo**

Mr. Kimiaki Jin	Advisory Team
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*shy G noz.*



DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ

TÜRKİYE'NİN TOPRAK VE SU KAYNAKLARI  
POTANSİYEL HARİTASI

İŞARETLER:

Ön incelemeleri tamamlanmış havzalar  
Yatırım miktarı 1990 yılı fiyatlarıyla

*Şey 67 Noz.*

TABLO EK 1. TÜRKİYE'NİN SU VE TOPRAK KAYNAKLARI POTANSİYELİ

NO	HAVZA ADI	HAVZA		HAUZADAKİ ORTALAMA SU			HAUZADA SU DEPOSU		HAUZADA TOPRAK KAYNAKLARI		DEVELOPMANIN GERÇEKLEŞMESİ İÇİN GEREKLİ YATIRIM (1998 yılı fiyatları) (milyon TL)	DEVELOPMAN SONU ELDE EDİLECEK FAYDALAR					
		1997 YILI NÜFUSU	YÖZÖLÇÖMÜ (km <sup>2</sup> )	YILLIK ORTALAMA YAĞIŞ (mm)	YILLIK HAUZA YERİMİ (l/ha.km <sup>2</sup> )	YILLIK TOPLAM AKIŞ (km <sup>3</sup> )	BARAJ Adet	EDİLEN SU (hm <sup>3</sup> )	TARIM ALANI (ha)	SULANABİLİR ALAN (ha)		SULAMA (ha)	TAŞKIN KORUMA (ha)	KURUTMA (ha)	ENERJİ		İÇMESUYU (hm <sup>3</sup> /yıl)
															KURULU GÜÇ (MW)	ORTALAMA ÜRETİM (GWh)	
1	MERİÇ ERGENE	1 056 473	14 560	604,0	2,9	1,33	21	1 817,0	1 095 320	1 077 992	253 692 265	163 625	82 277	9 018			21,4
2	MARMARA	11 329 437	24 180	728,7	11,0	8,33	58	2 894,5	865 704	729 957	1 168 832 476	123 228	7 866		0,3	2 506,2	
3	SUSURLUK	2 674 579	22 399	711,6	7,2	5,43	26	3 848,0	850 046	755 934	558 072 513	183 809	41 528		507,0	1 602	461,0
4	KUZEY EGE	617 011	10 003	624,2	7,4	2,09	15	797,0	367 479	316 348	225 167 292	90 937	720		16,2	42	154,0
5	GEDİZ	2 327 897	18 000	603,0	3,6	1,95	16	3 565,9	667 207	623 403	232 082 653	174 204	74 321		94,0	243	
6	K.MENDERES	1 972 770	6 907	727,4	5,3	1,19	17	1 697,7	222 437	194 799	642 821 353	45 681	21 500		48,0	143	685,8
7	B.MENDERES	1 975 402	24 976	664,3	3,9	3,03	22	2 739,9	1 044 296	907 383	805 153 225	324 798	55 851		221,1	831	70,6
8	BATI AKDENİZ	890 441	20 953	875,8	12,4	8,93	25	1 830,0	437 356	406 601	465 775 865	133 724	8 203	4 723	673,6	2 534	106,8
9	ANTALYA	1 558 219	19 577	1 000,4	24,2	11,06	14	2 858,0	451 224	448 111	448 314 783	149 901	18 631	15 994	1 432,8	5 163	320,6
10	BURDUR GÖLLER	200 200	6 374	446,3	1,8	0,50	9	161,7	251 403	249 484	88 063 611	43 037					
11	AKARÇAY	665 447	7 605	451,8	1,9	0,49	3	172,0	364 411	359 938	51 936 016	33 380	12 000		0,3		
12	SAKARYA	5 703 375	58 160	524,7	3,6	6,40	45	6 827,9	2 814 341	2 681 137	1 966 088 519	377 514	68 657	46 939	1 095,7	2 373	1 578,8
13	BATI K.DENİZ	1 892 776	29 598	811,0	10,6	9,93	28	2 784,0	855 008	640 557	360 303 235	101 934	10 132	308	624,0	2 176	1 389,2
14	YEŞİLIRMAK	2 290 024	36 114	496,5	5,1	5,80	44	6 194,9	1 617 206	1 401 213	936 015 451	343 219	80 852		1 259,0	5 297	169,5
15	KIZILIRMAK	3 963 186	78 180	446,1	2,6	6,48	78	23 774,3	4 049 796	3 761 142	1 411 762 258	623 981	57 762	12 119	2 093,5	6 320	94,2
16	KONYA KAPALI	2 430 709	53 850	416,8	2,5	4,52	25	2 800,8	2 182 762	2 134 915	809 505 879	426 439		1 600	32,1	104	37,8
17	DOĞU AKDENİZ	2 051 695	22 048	745,0	15,6	11,07	11	10 173,5	438 281	327 790	705 554 425	99 969	3 350	5 265	1 389,5	5 029	328,2
18	SEYHAN	1 695 572	20 450	624,0	12,3	8,01	18	6 124,5	764 673	714 014	703 522 810	310 940	42 440	60	2 000,8	7 571	681,5
19	ASI	1 277 313	7 796	815,6	3,4	1,17	8	1 086,5	376 240	331 719	233 407 428	97 881	33 000	20 000	37,3	102	17,7
20	CEYHAN	1 418 391	21 982	731,6	10,7	7,18	27	8 229,3	779 792	713 670	1 202 697 026	515 642	79 622	11 300	1 413,2	4 652	567,9
21	FIRAT	7 199 119	127 304	540,1	8,3	31,61	89	112 193,2	4 293 793	4 111 316	7 163 774 901	1 869 660		9 648,3	37 961	395,3	
22	DOĞU KARADENİZ	2 494 663	24 077	1 198,2	19,5	14,90	41	1 491,4	712 575	350 717	1 297 333 256		1 792	3 307,5	11 062	127,7	
23	ÇORUH	467 718	19 872	629,4	10,1	6,30	21	7 467,3	326 220	303 362	2 107 024 050	42 535	624	3 133,9	10 540		
24	ARAS	889 157	27 548	432,4	5,3	4,63	20	4 085,2	642 017	641 137	530 897 401	279 165	3 740	587,9	2 287	17,8	
25	VAN KAPALI	1 005 209	19 405	474,3	5,0	2,39	7	608,7	436 485	433 319	202 454 322	90 027	3 000	61,9	257		
26	DİCLE	2 818 791	57 614	807,2	13,1	21,33	42	30 630,5	1 148 238	1 137 628	3 371 718 502	609 224		5 050,8	16 751	124,3	
	TOPLAM	62 865 574	779 452	642,6	209,3	186,05	730	246 853,9	28 054 310	25 753 586	27 938 971 515	7 254 454	704 868	130 326	34 728,7	123 040	9 856,3
		(XX)	(X)														

Not: (x) Ortalama değer, (xx) Akarsu havzalarının Türkiye dışındaki alanları dahil edilmemiştir.

09/10/2003

mf

## Study Team Members and Responsibility

Responsibility	Japanese Side	Turkish Side	Unit
Team Leader	Yutaka NOZAKI	İsmail KÜÇÜKKAYA	AGM
		Ahmet ŞENYAZ	MOF
Water Management /Vegetation/Afforestation	Hisanori TASHIMA	Yılmaz ALTAŞ	AGM
Soil Conservation	Peter Raglan STEVENS	Yılmaz ALTAŞ	AGM
Agriculture/Small Scale Irrigation	Tetsuo MIZOBE	Mustafa BAYRAK	ORKÖY
Livestock/Pastureland Management	Hasan GENÇAGA	Yılmaz ALTAŞ	AGM
Socio-economy/Community Development	Takashi KIMIJIMA	Mustafa BAYRAK	ORKÖY
Organization/Extension	Masayuki TAKAZAWA	Halit BABALIK	AGM
GIS/Remote Sensing	Syunsuke TOMIMURA	Atila KURMUŞ	OGM
Project Evaluation/ Monitoring	Yoshiteru SUNAGO	Yılmaz ALTAŞ	AGM
Environment Assessment	Naohito WATANABE	Hüseyin AYTAÇ	MPGM
Coordinator	Kenjiro SUZUKI	Halit BABALIK	AGM

Hy @ Noz.


MINUTES OF MEETING  
ON  
THE INTERIM REPORT  
FOR  
THE MASTER PLAN STUDY ON  
PARTICIPATORY WATERSHED REHABILITATION  
IN CORUH RIVER IN THE REPUBLIC OF TURKEY

AGREED UPON BETWEEN  
MINISTRY OF ENVIRONMENT AND FORESTRY  
OF  
THE REPUBLIC OF TURKEY  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

ANKARA, 20 MAY, 2003

---

  
Mr. Mustafa Yüksek  
Director General  
Ministry of Environment and Forestry,  
The Republic of Turkey

  
Mr. Yutaka NOZAKI  
Team Leader  
JICA Study Team

(witnessed by)

  
Mr. Kimiaki JIN  
Monitoring Team  
JICA

The Study Team organized by the Japan International Cooperation Agency (hereinafter referred to as “JICA Study Team”) for The Master Plan Study on Participatory Watershed Rehabilitation in Coruh River in the Republic of Turkey (hereinafter referred to as “the Study”), headed by Mr. Yutaka NOZAKI, officially submitted thirty (30) copies of the Interim Report and a set of files (CD-ROM) to the Ministry of Environment and Forestry, in accordance with the Scope of Work for the Study signed between the former Ministry of Forestry and JICA on April 19, 2002.

The Meeting on the Interim Report was held on May 13 to 14, 2003. The list of participants is attached in Appendix- I . In the meeting, the JICA Study Team explained to the Ministry of Environment and Forestry about the contents of the Interim Report including present condition, problems and potentials of the Study area, basic strategies of the Master Plan, selection of Micro-Catchments and contents of the further studies, and had a series of discussions. As a result, the Interim Report was accepted by the Ministry of Environment and Forestry.

The results of the main issues discussed by both sides, are as follows.

1. Among the explanation of the selection of six Model Micro-Catchments by the Study Team, the Ministry of Environment and Forestry basically approved the selection. Both sides confirmed that the selection would be finalized as soon as possible with the confirmation of the Ministry of Environment and Forestry.
2. The outline of components and methodology of the Rural Socio-Economic survey to be conducted during Field Survey (2) was explained by the Study Team, and the Ministry of Environment and Forestry basically agreed to it.
3. Both sides agreed that Micro-Catchment plans with 1/25,000 scale of maps for the selected Micro-Catchments should be prepared in the Study.
4. The Turkish side declared that there would not be any negative effects to the Study by the amalgamation of the former Ministry of Forestry and the former Ministry of Environment.
5. Both sides agreed that the Ministry of Environment and Forestry would provide suitable office space with necessary equipment and furniture for the Study Team, as mentioned in the Scope of Work.



6. The Ministry of Environment and Forestry strongly requested to conduct counterpart training in Japan for several staffs, and the JICA Study Team promised to convey that request to the JICA headquarters.

During the discussion for the Interim report, the JICA Monitoring Team requested the Ministry of Environment and Forestry to provide comments to the following points.

- a. Basic strategies/tactics of implementing the master plan, especially the possible mobilization of financial sources.
- b. Consensus shared among concerned ministries/organizations on the above implementation process, especially the opinion of State Planning Organization and Ministry of Treasury if the Ministry of Environment and Forestry is expecting to receive foreign financial assistance.
- c. An approximate size (total project cost) and implementation period of the master plan.
- d. Priority area and micro-catchments, which should be focused in the master plan, and their selection criteria.

Besides, in view of smooth implementation of the Master Plan, the JICA Monitoring Team advised the Ministry of Environment and Forestry to start dialogue in early stages with State Planning Organizations and the Ministry of Treasury for project financing and budget allocation.

The comments of the Ministry of Environment and Forestry in response to the request of the JICA Monitoring Team are as indicated below.

- a. The Ministry of Environment and Forestry will undertake necessary initiatives for implementation of the Master Plan, especially for allocation of financial resources from the government budget and when necessary for receiving foreign finance assistance.
- b. Pre-approval of the State Planning Organization was obtained before starting the Master Plan Study on Participatory Watershed Rehabilitation in the Çoruh River. The Ministry of Environment and Forestry believes that after submission of the Master Plan, together with a well-prepared Implementation Plan (Project), both the State Planning Organization and the Undersecretariat of Treasury will support the implementation of the Master Plan.





- c. Approximate period for implementation of the Master Plan (implementation project) is estimated 5-7 years. Reliable cost estimates for Implementation Plan (project) will be available only after completion of the participatory planning for the 6 model micro catchments. However, based on the MOF's previous experiences, minimum cost of the implementation project can be estimated around 15-20 million US Dollars.
- d. The Interim Report provides a set of relevant criteria for identification of the priority watershed areas and micro catchments, which should be focused in the master plan. It is believed that these criteria and their indicators can be slightly improved jointly by the Master Plan team and national experts. In selection of the priority areas and micro catchments, the most important criteria should include the: (i) severity of degradation (level of erosion, sedimentation, deforestation, threats on lives, settlements and infrastructures, etc.); (ii) potential for rehabilitation; (iii) poverty and dependence/pressures on the natural resources. Identification of the potential for rehabilitation should pay attention besides the ecological conditions, also and particularly on the interest and willingness of local communities for participating in the activities. Based on relevant criteria, preliminary prioritization of the catchments areas and micro catchments will be provided by the Ministry of Environment and Forestry during the present mission.



MoF.



## List of Participants

### Turkish Side

#### Ministry of Environment and Forestry (MOEF)

Mr. Mustafa Yüksek	Director General
Dr. Erkan Ispirli	Head of Foreign Relations and EU Department

#### General Directorate of Reforestation and Erosion Control, MOEF

Mr. Ismail Küçukkaya	Deputy Director General
Mr. Ismail Belen	Head of Planning and Coordination Department
Mr. Halit Babalık	Division Director of Foreign Financed Projects

#### General Directorate of Forestry, MOEF

Mr. Ugur Tüfekçioglu	Division Director
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#### General Directorate of Forest Village Relations, MOEF

Mr. Muhammet Bayburtlu	Head of Department
Mr. T. Mustafa Bayrak	Division Director of Coordination and Evaluation

#### General Directorate of Nature Conservation and National Parks, MOEF

Mr. Hüseyin Aytaç	Division Director of National Parks
-------------------	-------------------------------------

### Japanese Side

#### JICA Study Team

Mr. Yutaka Nozaki	Team Leader
Mr. Hisanori Tashima	Member
Mr. Tetsuo Mizobe	Member
Dr. Hasan Gencaga	Member
Mr. Takashi Kimijima	Member
Mr. Naohito Watanabe	Member
Mr. Kenjiro Suzuki	Member
Dr. Muzaffer Dogru	Local Consultant

#### JICA Headquarters in Tokyo

Mr. Kimiaki Jin	Monitoring Team
Mr. Shiro Akamatsu	Monitoring Team
Mr. Akira Shimura	Monitoring Team

**MINUTES OF MEETING  
ON  
THE DRAFT FINAL REPORT  
FOR  
THE MASTER PLAN STUDY ON  
PARTICIPATORY WATERSHED REHABILITATION  
IN CORUH RIVER IN THE REPUBLIC OF TURKEY**

**AGREED UPON BETWEEN  
MINISTRY OF ENVIRONMENT AND FORESTRY  
OF  
THE REPUBLIC OF TURKEY  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY**

**ANKARA, 19 NOVEMBER, 2003**

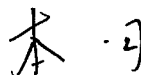


**Dr. Nuri USLU  
Deputy Undersecretary  
Ministry of Environment and Forestry,  
The Republic of Turkey**



**Mr. Yutaka NOZAKI  
Team Leader  
JICA Study Team**

(witnessed by)



**Mr. Masaru HONDA  
Monitoring Team  
JICA**

The Study Team organized by the Japan International Cooperation Agency (hereinafter referred to as “JICA Study Team”) for The Master Plan Study on Participatory Watershed Rehabilitation in Coruh River in the Republic of Turkey (hereinafter referred to as “the Study”), headed by Mr. Yutaka NOZAKI, officially submitted thirty (30) copies of the Draft Final Report, three (3) sets of Thematic Maps at a scale of 1:25,000 and one (1) set of GIS database, to the Ministry of Environment and Forestry, in accordance with the Scope of Work for the Study signed between the former Ministry of Forestry and JICA on April 19, 2002.

The Meeting on the Draft Final Report was held on November 11 and 13, 2003. The list of participants is attached in Appendix- I . In the meeting, the JICA Study Team explained to the Ministry of Environment and Forestry (MEF) about the contents of the Draft Final Report including present condition, problems and potentials of the Study area, detailed Micro-Catchment Plans, the Master Plan, and a series of discussions was made.

The major points of discussion are in the following.

- a) The Draft Final Report was basically accepted by the MEF.
- b) Both sides agreed that specific procedure for selecting beneficiaries in the livestock development project would be proposed by the MEF and that the proposed procedure would be reflected into the Recommendations of the Final Report.
- c) Both sides agreed that the MEF would examine further the role of local implementation structure and that the proposed ideas, if any, would be reflected into the Final Report.
- d) Both sides agreed that the JICA Study Team would re-examine the unit price of energy forest plantation.
- e) While highly appreciating the inclusion of National Parks and Protected Areas Management Project in the Master Plan, the MEF requested the JICA Study Team to emphasize participatory planning process in the project by adding a participatory planning expert in the proposed study team or by adding workshop on participatory planning in the project activity, and the JICA Study Team accepted it.

## **1. Further Comments on the Draft Final Report**

It was decided that the comments on the Draft Final Report should be submitted to the JICA Turkey Office by December 24, 2003.

A handwritten signature in black ink, appearing to be 'Y. Nozaki', is located at the bottom right of the page.

**2. Submission of the Final Report to the MEF**

The JICA Study Team shall finalize the Final Report and send it to the MEF in February, 2004.

**3. Interest in Technical Cooperation**

The MEF has expressed its interest in proceeding further technical cooperation from the Government of Japan.

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**List of Participants**

**Turkish Side**

Ministry of Environment and Forestry (MEF)

Dr. Nuri USLU	Deputy Undersecretary
Mr. Mustafa YÜKSEK	AGM General Director
Mr. Ismail BELEN	Head of Planning Department
Mr. Hanifi AVCI	Assistant Director General of AGM
Mr. Yılmaz ALTAŞ	Head of Erosion Control and Range Rehabilitation
Mr. Hamza ERYİĞİT	Head of Private Afforestation and Projects Department
Mr. M. Hanifi NARLIOĞLU	Head of Afforestation Department
Mr. Erdogan OZEVREN	Division Director of Erosion Control
Ms. Aynur ŞANLITÜRK	Division Director of Survey Project
Mr. T. Mustafa BAYRAK	Division Director of Statistical and Research
Ms. Suade ARANÇLI	Division Director of Foreign Relations, DKMPGM

**Japanese Side**

JICA Study Team

Mr. Yutaka NOZAKI	Team Leader
Mr. Tetsuo MIZOBE	Member
Mr. Takashi KIMIJIMA	Member
Mr. Kenjiro SUZUKI	Member

JICA Monitoring Team

Mr. Masaru HONDA	JICA Headquarters in Tokyo
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JICA Turkey Office

Mr. Yasushi INABA	Resident Representative
Mr. Ali BEKIN	Administrative Officer

