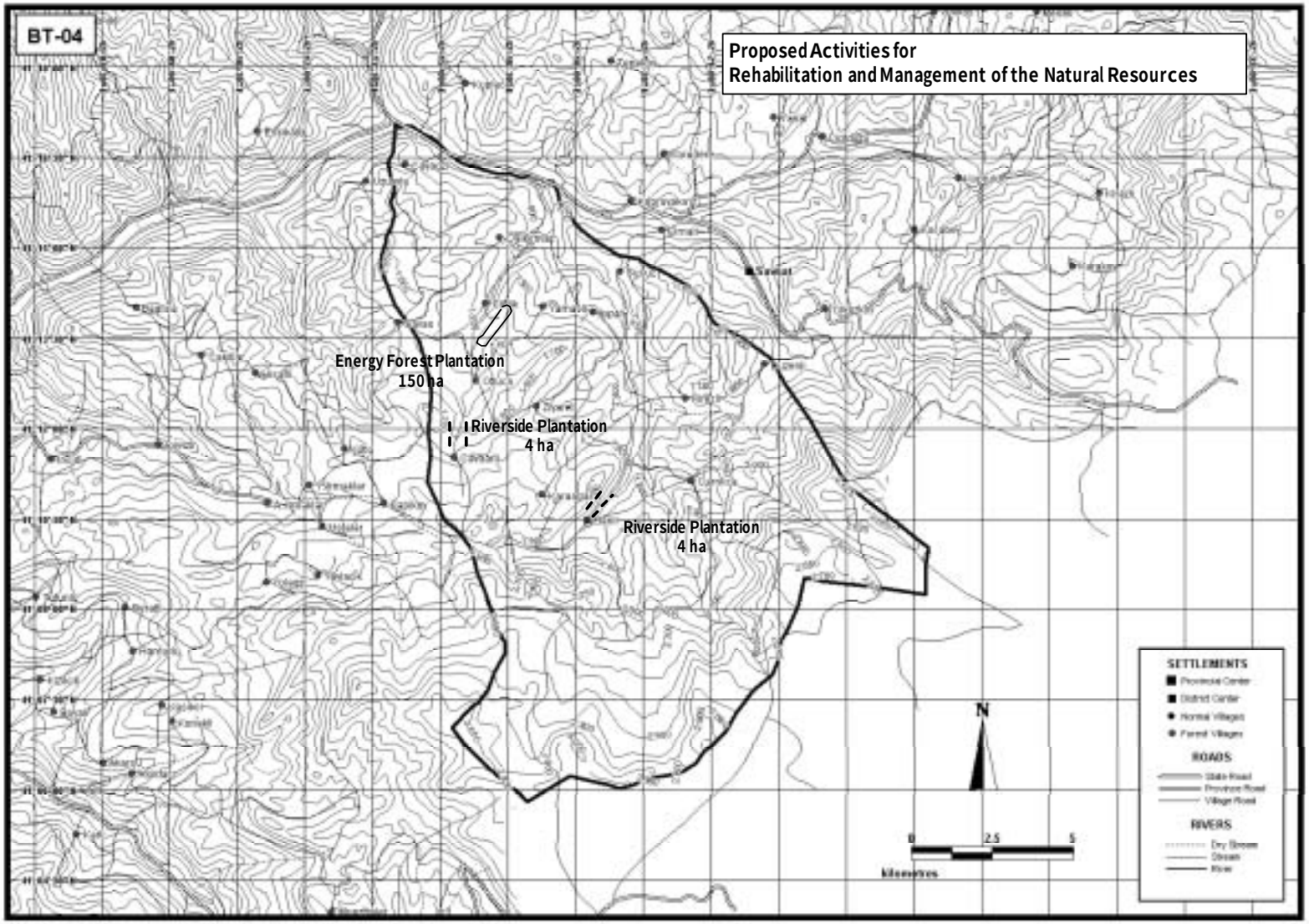
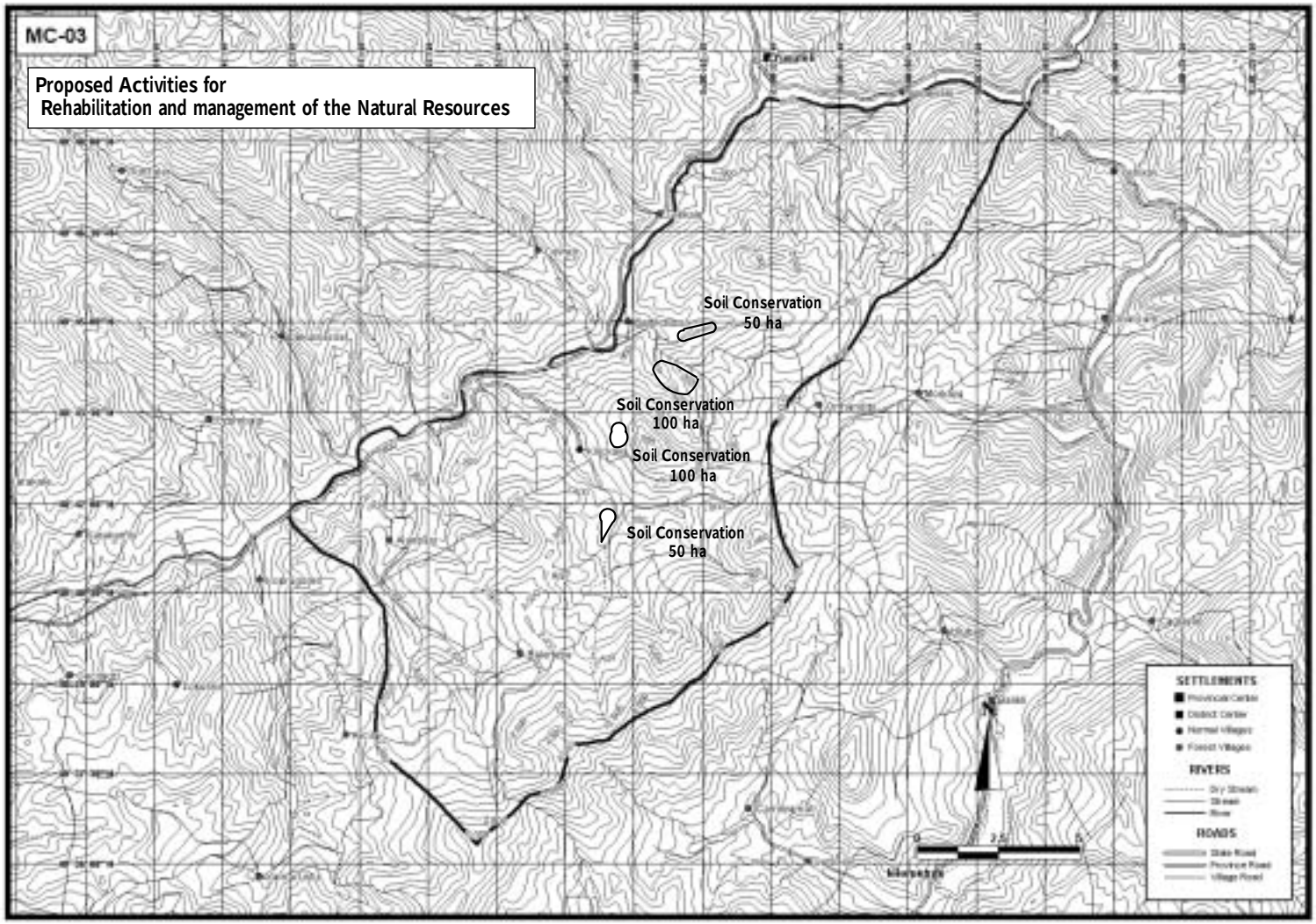
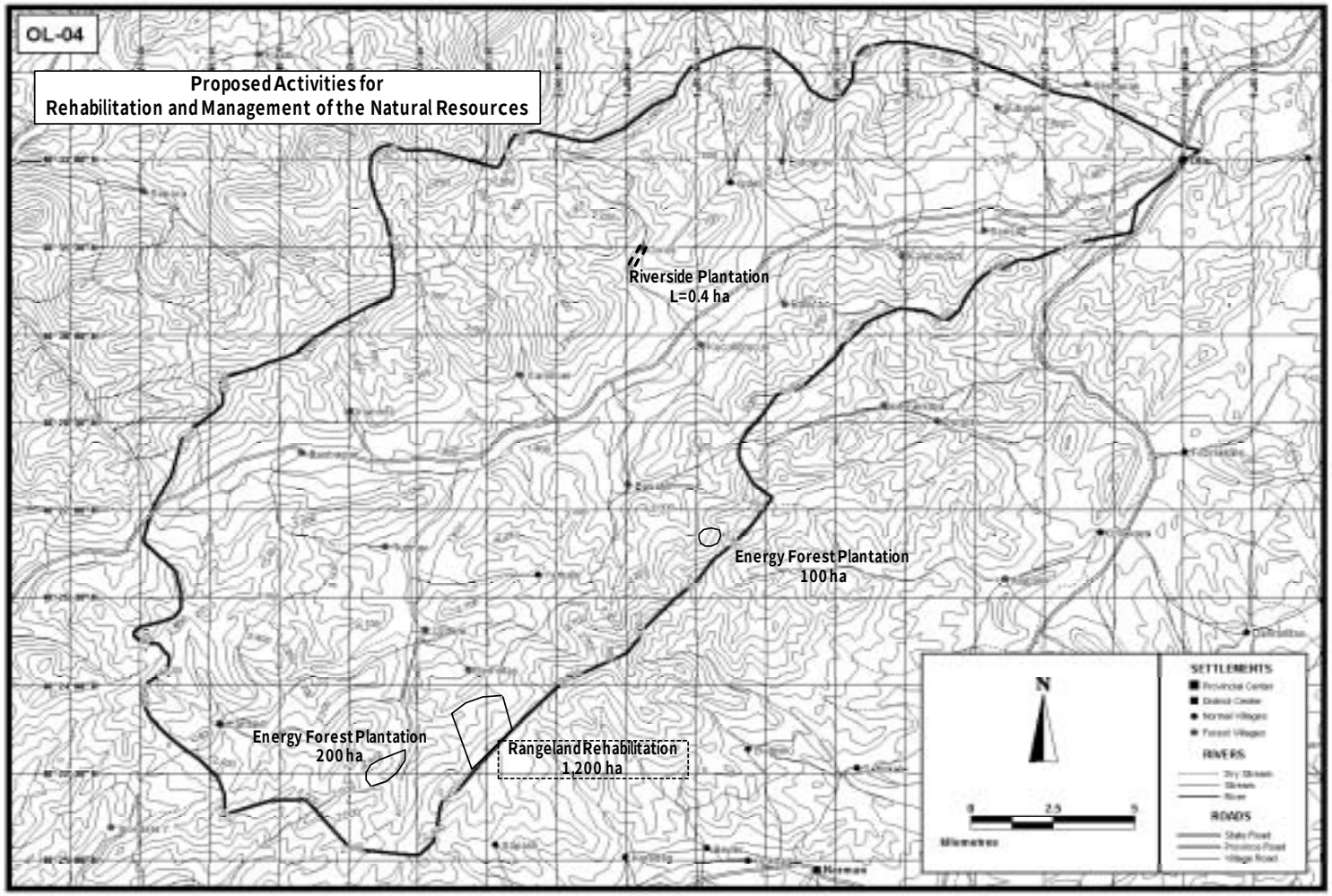
B.APPENDIX

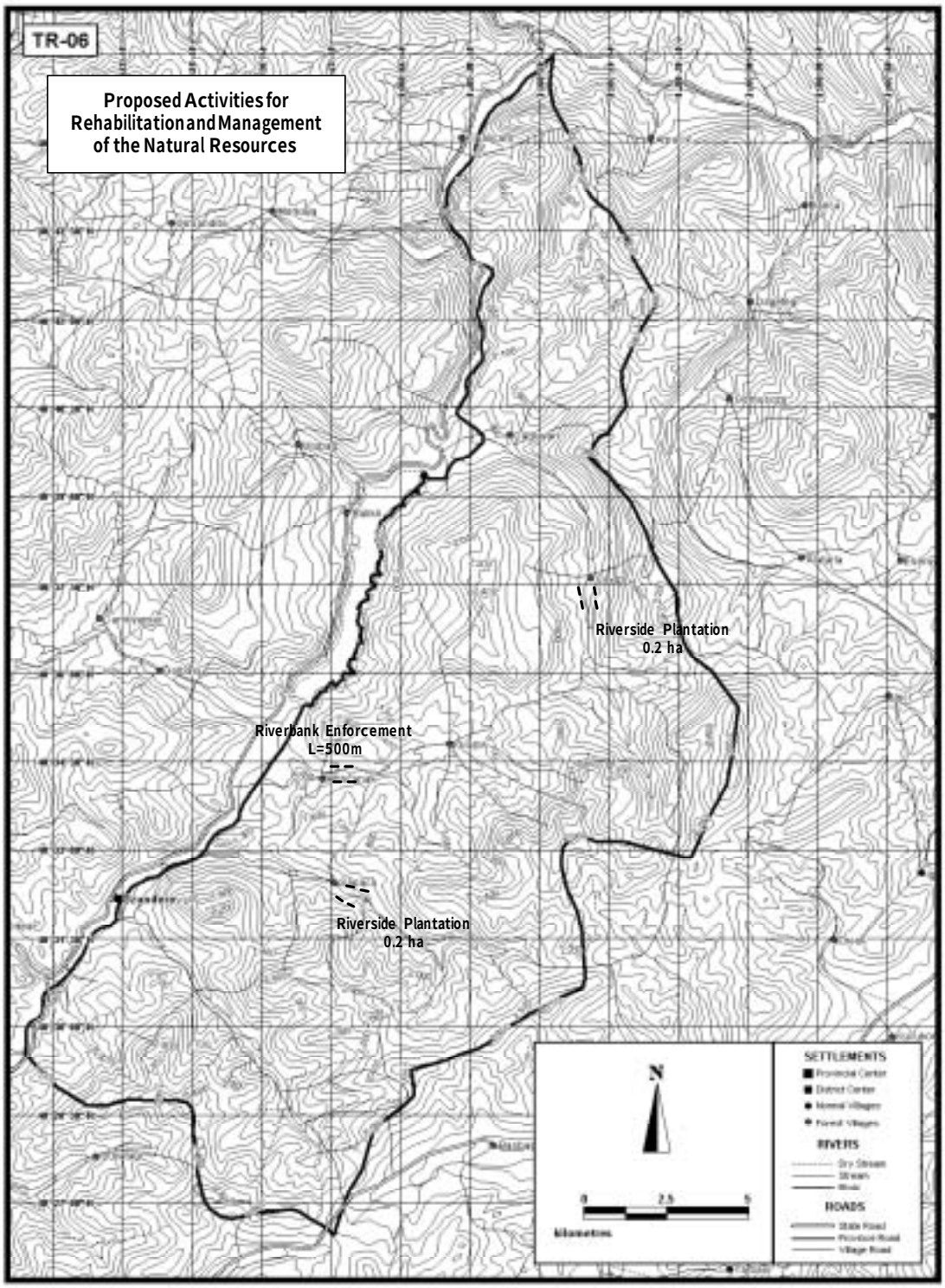
APPENDIX-B.1 PROPOSED ACTIVITIES FOR REHABILITATION AND MANAGEMENT OF THE NATURAL RESOURCES

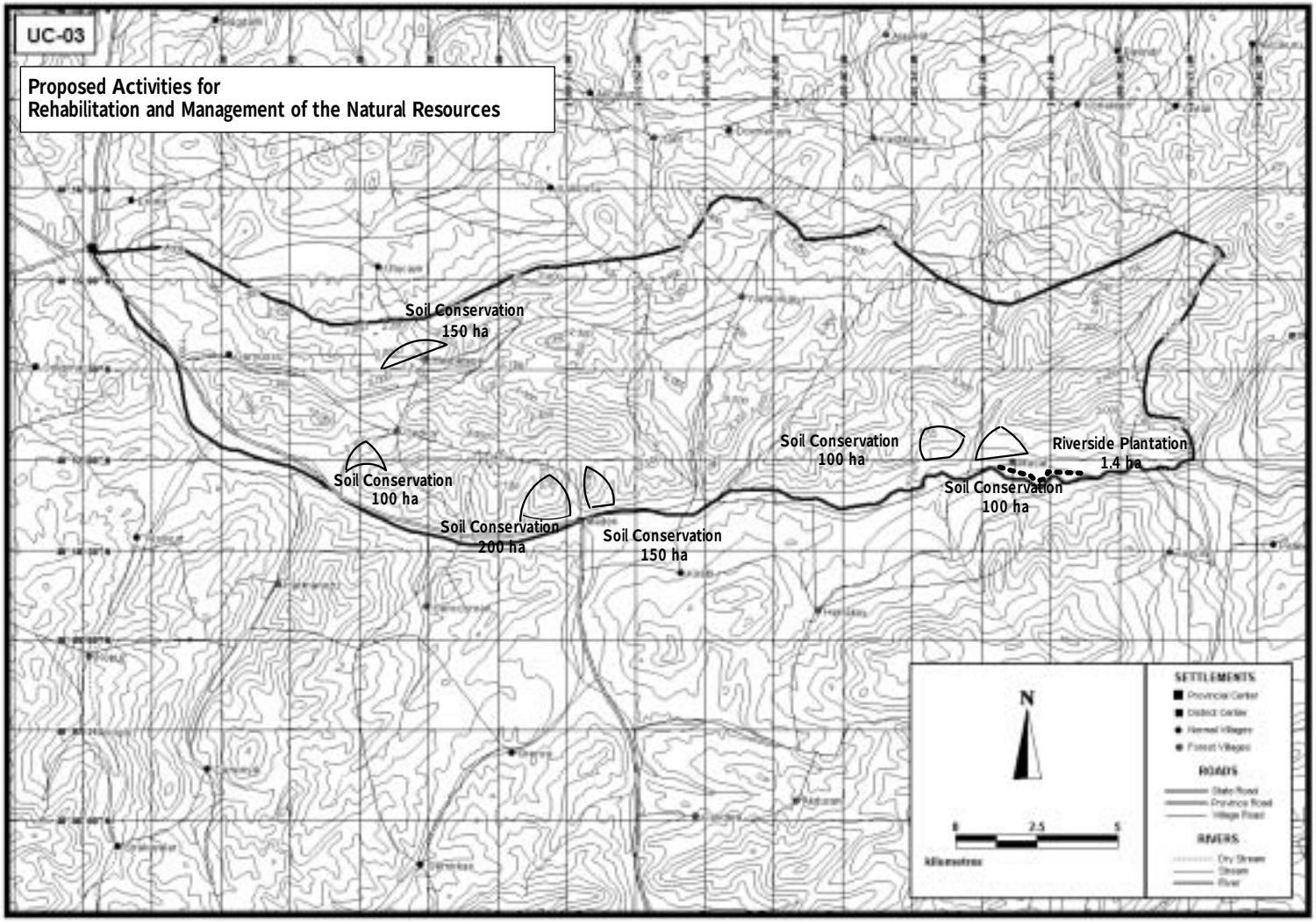
Illustrate proposed activities for rehabilitation and management of the Natural resources in each MC's.

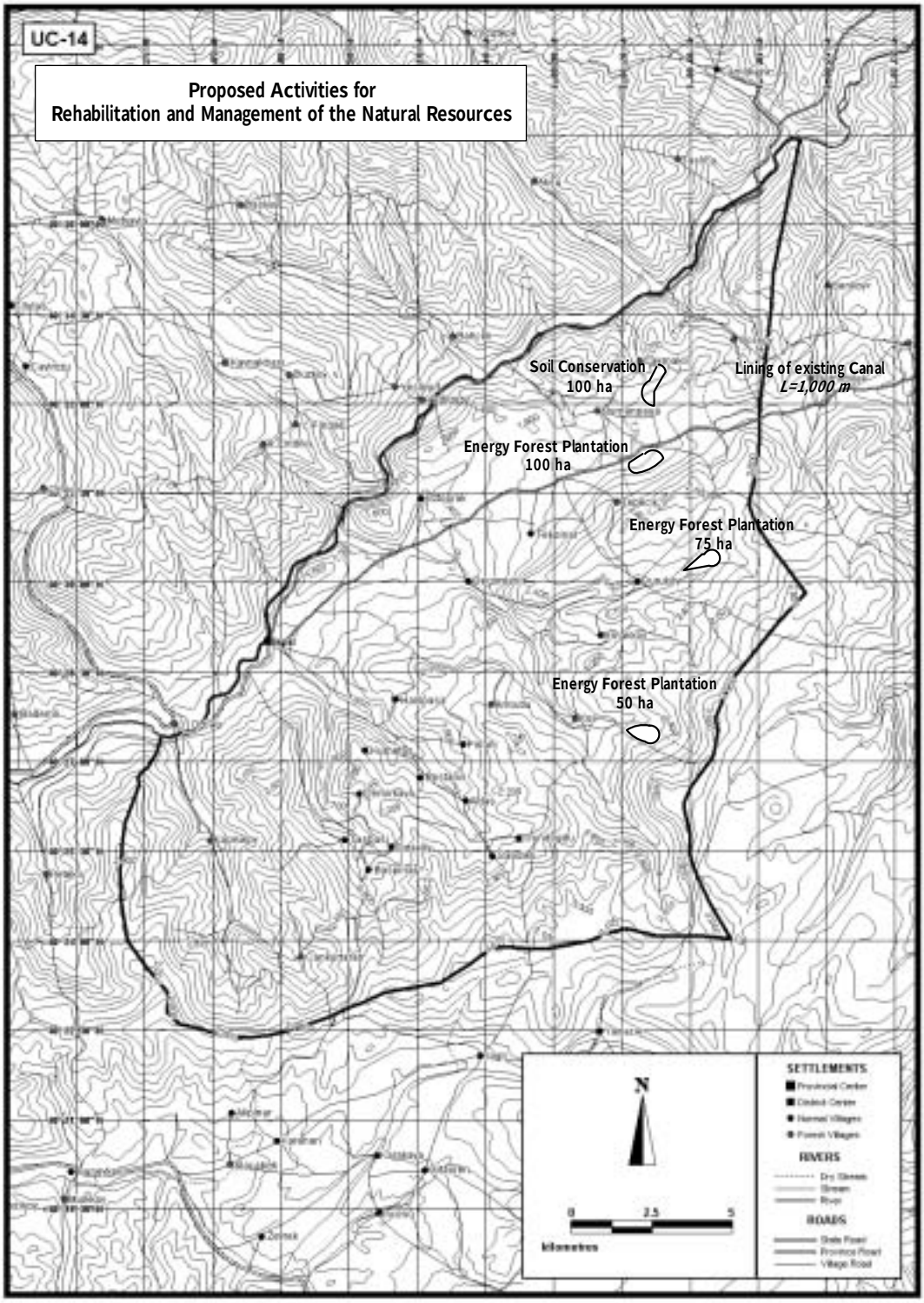

BT-04
Proposed Activities for
Rehabilitation and Management of the Natural Resources
Energy Forest Plantation
150 ha
Riverside Plantation
4 ha
Riverside Plantation
4 ha
N
SETTLEMENTS
ROADS
RIVERS


MC-03
Proposed Activities for
Rehabilitation and management of the Natural Resources
Soil Conservation
50 ha
Soil Conservation
100 ha
Soil Conservation
100 ha
Soil Conservation
50 ha
SETTLEMENTS
RIVERS
ROADS


OL-04
Proposed Activities for
Rehabilitation and Management of the Natural Resources
Riverside Plantation
L=0.4 ha
Energy Forest Plantation
100 ha
Energy Forest Plantation
200 ha
Rangeland Rehabilitation
1,200 ha
N
SETTLEMENTS
RIVERS
ROADS


TR-06
Proposed Activities for Rehabilitation and Management of the Natural Resources
Riverside Plantation 0.2 ha
Riverbank Enforcement L=500m
Riverside Plantation 0.2 ha
N
SETTLEMENTS
RIVERS
ROADS


UC-03
Proposed Activities for
Rehabilitation and Management of the Natural Resources
Soil Conservation
150 ha
Soil Conservation
100 ha
Soil Conservation
200 ha
Soil Conservation
150 ha
Soil Conservation
100 ha
Soil Conservation
100 ha
Riverside Plantation
1.4 ha
N
0
2.5
5
Kilometres
SETTLEMENTS
Provincial Center
District Center
Kemad Villages
Forest Villages
ROADS
State Road
Province Road
Village Road
RIVERS
Dry Stream
Stream
River


UC-14
Proposed Activities for
Rehabilitation and Management of the Natural Resources
Soil Conservation
100 ha
Lining of existing Canal
L=1,000 m
Energy Forest Plantation
100 ha
Energy Forest Plantation
75 ha
Energy Forest Plantation
50 ha
N
SETTLEMENTS
RIVERS
ROADS

APPENDIX-B.2 SOURCE MATERIALS FOR COST ESTIMATEMATION

Estimated necessity cost for each activity, and compiled unit cost each activities and its backgrounds.

UNIT COST

ACTIVITY	UNIT	COST (Mil TL)
1. Soil Conservation		
1.1 Natural regeneration	Ha	64
1.2 Afforestation (type-1)	Ha	1,806
1.3 Afforestation(type-2)	Ha	2,060
1.4 Re-greening (type-1)	Ha	2,892
1.5 Re-greening (type-2)	Ha	2,615
1.6 Gully protection (Gabion type)	10 Units	5,418
1.7 Gully protection (Brush type)	10 Units	3,628
2. Rehabilitation of Degraded High Forest		
2.1 Natural regeneration	Ha	64
2.2 Rehabilitation	Ha	1,254
3. Rehabilitation of Degrade Coppice Forest		
3.1 Natural regeneration	Ha	64
3.2 Rehabilitation	Ha	1,096
4. Energy Forest Plantation	Ha	1,686
5. Rangeland Rehabilitation		
5.1 Natural regeneration	Ha	64
5.2 Rangeland improvement	Ha	520
5.3 Gully protection (Gabion type)	10 Units	5,418
5.4 Gully protection (Brush type)	10 Units	3,628
6. Riverside Plantation	Ha	6,610

PROGRAM PROFILE

1. Project No.	**2. Project Title : Natural Regeneration**	
3. Project Location	**4. Target Beneficiaries** Forest Villagers	**5. Project Duration** 5 years
6. Implementing Agency / Body Ministry of environment and Forestry ; AGM		
7. Summary of Objective To increase flora for prevent soil erosion in the rangeland, at the same time to increase biodiversity**.**		
8. Justification Encourage natural regeneration, if necessary with fencing. This will contribute to the increased potential of soil protection, biodiversity by the reasonable budget.		
9. Expected Benefits/Outputs **-** Decreasing soil erosion - Increasing vegetation coverage - Increasing biodiversity - Ensuring better conditions for wildlife - Ensuring employment - Improving water balance - Increasing aesthetic value of the landscape.	**10. Verifiable Indicator** - Increases in vegetation cover area - Increases in density of vegetation	
11. Important Assumptions / Conditions for the project **-** Demands for activities in Forest, OT and MERA area by forest villagers and MEF - Effectives for soil erosion conservation		
12. Project Linkage / Other Sector Linkage **-** Coherence with “Forest Management Plan”	**13. Relevant Agencies to be Coordinate**	

13. Major / Key Activities	**14. Major Inputs**			**15. Estimated Cost (Mil TL / Ha)**
	Personnel	**Materials**	**Construction**	
Fencing	x	x		23
Protection of project site by village community (5 years)	x			30
Overhead (20%)				11
16. Estimated Total Cost				64

17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for rehabilitation		x	x	
Technical cooperation for rehabilitation measures	x			

1. Project No.	2. Project Title : Afforestation (type-1)	
3. Project Location	**4. Target Beneficiaries** Forest Villagers	**5. Project Duration** 5 years

6. Implementing Agency / Body

Ministry of environment and Forestry ; AGM & OGM

7. Summary of Objective

To increase flora for prevent soil erosion in the forest villages which are the degradation of natural resources base, at the same time to increase biodiversity.

8. Justification

Type of the afforestation that is applied the forest villagers which is planted forest tree species aimed soil protection and to prevent soil erosion in the forest villages. This will contribute to the increased potential of soil protection and biodiversity.

9. Expected Benefits/Outputs	**10. Verifiable Indicator**
- Decreasing soil erosion - Increasing vegetation coverage - Increasing both quality and quantity of tree stock - Increasing biodiversity - Ensuring better conditions for wildlife - Ensuring employment - Improving water balance - Increasing aesthetic value of the landscape.	- Increases in forest area - Increases in density of standing tree volume - Increases in crown density forests

11. Important Assumptions / Conditions for the project

- Demands for afforestation of OT area by forest villagers and MEF
- Effectives for soil erosion conservation

12. Project Linkage / Other Sector Linkage	**13. Relevant Agencies to be Coordinate**
- Coherence with “Forest Management Plan”	

13. Major / Key Activities	**14. Major Inputs**			**15. Estimated Cost (Mil TL/Ha)**
	Personnel	**Materials**	**Construction**	
Preparation and making Terraces by labor	x			464
Planting of seedlings	x			335
Seedling cost (1,500 seedling)		x		450
Replacement planting	x	x		45
Fencing	x	x		23
Protection of project site by village community (5 years)	x			30
Other expenditures				15
Maintenance (3 years)	x			143
Overhead (20%)				301
16. Estimated Total Cost				1,806
17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for rehabilitation		x	x	
Technical cooperation for rehabilitation measures	x			

1. Project No.	2. Project Title : Afforestation (type-2)	
3. Project Location	**4. Target Beneficiaries** Forest Villager	**5. Project Duration** 5 years

6. Implementing Agency / Body

Ministry of Environment and Forestry ; AGM & OGM

7. Summary of Objective

To increase flora for prevent soil erosion in the forest villages which is the degradation of natural resources base, at the same time to increase biodiversity.

8. Justification

Type of the afforestation that is applied the forest villagers which are planted local tree species aimed soil protection and to prevent soil erosion in the forest villages. This will contribute to the increased potential of soil protection and biodiversity.

9. Expected Benefits/Outputs	**10. Verifiable Indicator**
- Decreasing soil erosion - Increasing vegetation coverage - Increasing both quality and quantity of tree stock - Increasing biodiversity - Ensuring better conditions for wildlife - Ensuring employment - Improving water balance - Increasing aesthetic value of the landscape.	- Increases in forest area - Increases in density of standing tree volume - Increases in crown density forests

11. Important Assumptions / Conditions for the project

- Demands for afforestation of OT area by forest villagers and MOF
- Effectives for soil erosion conservation

12. Project Linkage / Other Sector Linkage	**13. Relevant Agencies to be Coordinate**
- Coherence with “Forest Management Plan”	

13. Major / Key Activities	**14. Major Inputs**			**15. Estimated Cost (Mil TL/Ha)**
	Personnel	**Materials**	**Construction**	
Preparation of hole by labor	x			300
Planting of seedlings	x			466
Seedling cost (2,000 seedling)		x		700
Replacement planting	x	x		45
Fencing	x	x		23
Protection of project site by village community (5 years)	x			30
Other expenditures				15
Maintenance (3 years)	x			143
Overhead (20%)				344
16. Estimated Total Cost				2,066
17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for rehabilitation		x	x	
Technical cooperation for rehabilitation measures	x			

1. Project No.	2. Project Title : Re-greening (type-1)	
3. Project Location	4. Target Beneficiaries Forest Villagers	5. Project Duration 5 years

6. Implementing Agency / Body

Ministry of Environment and Forestry ; ACM

7. Summary of Objective

To increase flora for prevent soil erosion in the forest villages which are the degradation of natural resources base, at the same time to increase biodiversity.

8. Justification

Type of the re-vegetation that is applied the forest villagers which is planted local shrub and grass species aimed soil protection and to prevent soil erosion in the forest villages. This will contribute to the increased potential of soil protection and biodiversity.

9. Expected Benefits/Outputs	10. Verifiable Indicator
- Decreasing soil erosion - Increasing vegetation coverage - Increasing biodiversity - Ensuring better conditions for wildlife - Ensuring employment - Improving water balance - Increasing aesthetic value of the landscape.	- Increases in vegetation cover area - Increases in density of vegetation

11. Important Assumptions / Conditions for the project

- Demands for re-vegetation of OT area by forest villagers and MEF
- Effectives for soil erosion conservation

12. Project Linkage / Other Sector Linkage	13. Relevant Agencies to be Coordinate
- Coherence with “Forest Management Plan”	

13. Major / Key Activities	14. Major Inputs			15. Estimated Cost (Mil TL / Ha)
	Personnel	Materials	Construction	
Preparation of hole by labor	x			450
Planting of seedlings	x			699
Seedling cost (3,000 seedling)		x		1,050
Fencing	x	x		23
Protection of project site by village community (5 years)	x			30
Other expenditures				15
Maintenance (3 years)	x			143
Overhead (20%)				482
16. Estimated Total Cost				2,892

17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for rehabilitation		x	x	
Technical cooperation for rehabilitation measures	x			

1. Project No.	2. Project Title : Re-greening (type-2)	
3. Project Location	4. Target Beneficiaries Forest Villagers	5. Project Duration 5 years

6. Implementing Agency / Body

Ministry of Environment and Forestry; AGM

7. Summary of Objective

To increase flora for prevent soil erosion in the forest villages which is the degradation of natural resources base, at the same time to increase biodiversity.

8. Justification

Type of the re-vegetation that is applied the forest villagers which are sowed *Quercus* seed in the planting base block aimed soil protection and to prevent soil erosion in the forest villages. This will contribute to the increased potential of soil protection and biodiversity.

9. Expected Benefits/Outputs	10. Verifiable Indicator
- Decreasing soil erosion - Increasing vegetation coverage - Increasing biodiversity - Ensuring employment - Improving water balance - Increasing aesthetic value of the landscape.	- Increases in forest area - Increases in density of standing tree volume - Increases in crown density forests

11. Important Assumptions / Conditions for the project

- Demands for re-vegetation of OT area by forest villagers and MEF
- Effectives for soil erosion conservation

12. Project Linkage / Other Sector Linkage	13. Relevant Agencies to be Coordinate
- Coherence with “Forest Management Plan”	

13. Major / Key Activities	14. Major Inputs			15. Estimated Cost (Mil TL /Ha)
	Personnel	Materials	Construction	
Preparation of hole by labor	x			450
Block setting and Seed sowing	x			563
Seed cost (US$500/ton-60kg)		x		45
Tending, thinning	x			60
Fencing	x	x		23
“Nurse Block” making (3,000 units)	x	x		225
Press machine and Soil amendments		x		625
Protection of project site by village community (5 years)	x			30
Other expenditures				15
Maintenance (3 years)	x			143
Overhead (20%)				436
16. Estimated Total Cost				2,615

17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for rehabilitation		x	x	
Technical cooperation for rehabilitation measures	x			

1. Project No.	2. Project Title : Degraded High Forest Rehabilitation	
3. Project Location	**4. Target Beneficiaries** Forest Villagers	**5. Project Duration** 5 years

6. Implementing Agency / Body

Ministry of environment and Forestry ; OGM

7. Summary of Objective

By rehabilitating these degraded high forests to transform them to a productive condition, so that they may achieve their ecological, economic and social functions.

8. Justification

In the Study area, some of the forested area located near villages has been degraded as a result of clearing land for crops, illegal grazing and illicit cutting for construction and fuelwood. These degraded high forests are rehabilitated by using silvicultural activities. This will contribute to the increased potential of soil protection and biodiversity.

9. Expected Benefits/Outputs	10. Verifiable Indicator
- Decreasing soil erosion - Increasing both quality and quantity of tree growing stock - Ensuring better conditions for wildlife - Ensuring employment - Improving water balance - Increasing aesthetic value of the landscape.	- Changes in normal high forest area - Changes in density of standing tree volume - Changes in crown density forests

11. Important Assumptions / Conditions for the project

- Demands for rehabilitation of degraded high forest by forest villagers and MEF
- Effectives by rehabilitation of degraded forest for soil erosion conservation

12. Project Linkage / Other Sector Linkage	13. Relevant Agencies to be Coordinate
- Coherence with “Forest Management Plan”	

13. Major / Key Activities	14. Major Inputs			15. Estimated Cost (Mil TL/Ha)
	Personnel	Materials	Construction	
Rejuvenation cutting	x			218
Soil preparation by labor	x			266
Seedling cost (US$5,000/ton -2kg/ha)		x		15
Seed sawing	x			113
Tending, thinning, pruning	x			222
Fencing	x	x		23
Protection of project site by village community (5 years)	x			30
Other expenditures				15
Maintenance (3 years)	x			143
Overhead (20%)				209
16. Estimated Total Cost				1,254
17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for rehabilitation		x	x	
Technical cooperation for rehabilitation measures	x			

1. Project No.	2. Project Title : Degraded Coppice Forest Rehabilitation	
3. Project Location	**4. Target Beneficiaries** Forest Villagers	**5. Project Duration** 5 years

6. Implementing Agency / Body

Ministry of environment and Forestry ; OGM

7. Summary of Objective

By rehabilitating these degraded coppice forests to transform them to a productive condition, so that they may achieve their ecological, economic and social functions.

8. Justification

In the Study area, there area some native oak species. But most of oak coppice forests are degraded and unproductive as a result of illegal grazing, illegal using of leaves and branches for domestic animal feeding and illicit cutting for fuelwood. These degraded coppice forests may be transformed to productive forest by rehabilitation. This will contribute to the increased potential of soil protection and biodiversity.

9. Expected Benefits/Outputs	**10. Verifiable Indicator**
- Decreasing soil erosion - Increasing both quality and quantity of tree growing stock - Ensuring better conditions for wildlife - Ensuring employment - Improving water balance - Increasing aesthetic value of landscape	- Changes in normal coppice forest area - Changes in density of standing tree volume - Changes in crown density forests

11. Important Assumptions / Conditions for the project

- Demands for rehabilitation of degraded coppice forest by forest villagers and MEF
- Effectives by rehabilitation of degraded forest for soil erosion conservation

12. Project Linkage / Other Sector Linkage	**13. Relevant Agencies to be Coordinate**
- Coherence with “Forest Management Plan”	

13. Major / Key Activities	**14. Major Inputs**			**15. Estimated Cost (Mil TL /Ha)**
	Personnel	**Materials**	**Construction**	
Rejuvenation cutting	x			218
Soil preparation by labor	x			266
Seed cost (US$500/ton -60kg/ha)		x		45
Seed sawing	x			113
Tending, thinning	x			60
Fencing	x	x		23
Protection of project site by village community (5 years)	x			30
Other expenditures				15
Maintenance (3 years)	x			143
Overhead (20%)				183
16. Estimated Total Cost				1,096
17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for rehabilitation		x	x	
Technical cooperation for rehabilitation measures	x			

1. Project No.	2. Project Title : Energy Forest Plantation	
3. Project Location	**4. Target Beneficiaries** Forest Villagers	**5. Project Duration** 5 years

6. Implementing Agency / Body

Ministry of Environment and Forestry ; OGM

7. Summary of Objective

To plant trees for corresponding to a lack of quantity of firewood of forest village. At the same time, to increase flora for prevent soil erosion and biodiversity.

8. Justification

Type of the afforestation that is applied the forest villagers which is planted first-growing tree species aimed fuelwood production for villagers. This may contribute to the increased potential of soil protection and biodiversity, too.

9. Expected Benefits/Outputs	10. Verifiable Indicator
- Decreasing soil erosion -Increasing both quality and quantity of tree stock -Increasing quantity of firewood subsidy -Decreasing illicit cutting for firewood -Ensuring employment -Improving water balance -Increasing aesthetic value of the landscape.	- Increases in forest area - Increases in density of standing tree volume - Increases in crown density forests - Increases in fuel wood production and decreases expenses for purchase fuelwood

11. Important Assumptions / Conditions for the project

- Demands for afforestation of Forest, OT area by forest villagers and MEF
- Effectives for soil erosion conservation

12. Project Linkage / Other Sector Linkage	**13. Relevant Agencies to be Coordinate**
- Coherence with “Forest Management Plan”	

13. Major / Key Activities	**14. Major Inputs**			**15. Estimated Cost (Mil TL/Ha)**
	Personnel	**Materials**	**Construction**	
Preparation of hole by labor	x			375
Planting of seedling	x			558
Seedling cost (2,500 seedling)		x		1,500
Replacement planting	x	x		45
Fencing	x	x		23
Protection of project site by village community (5 years)	x			30
Other expenditures				15
Maintenance (3 years)	x			143
Overhead (20%)				538
16. Estimated Total Cost				3,227
17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for plantation		x	x	
Technical cooperation for plantation works	x			

1. Project No.	2. Project Title : Rangeland Improvement	
3. Project Location	**4. Target Beneficiaries** Forest Villagers	**5. Project Duration** 3 years

6. Implementing Agency / Body

Ministry of Environment and Forestry ; AGM or/and ORKOY

7. Summary of Objective

By rehabilitating these rangelands to transform them to a productive condition, so that they may achieve their ecological, economic and social functions.

8. Justification

In the Study area, some of the rangeland degraded as a result of clearing land for crops, over grazing. These degraded rangeland forests are rehabilitated by fertilizer application and re-seeding activities. This will improve quantity and quality of feeding, as the same may increase potential of soil protection and biodiversity.

9. Expected Benefits/Outputs	**10. Verifiable Indicator**
- Declining soil erosion - Increasing vegetation coverage - Increasing fodder production - Ensuring better conditions for wildlife - Ensuring employment - Increasing aesthetic value of landscape	- Increases fodder production

11. Important Assumptions / Conditions for the project

- Demands for rehabilitation of rangeland by forest villagers and MEF
- Cooperation by MARA should be able to received

12. Project Linkage / Other Sector Linkage	**13. Relevant Agencies to be Coordinate**
- Coherence with program such as " Rangeland management program"	- Rangeland management plan prepared by MARA

13. Major / Key Activities	**14. Major Inputs**			**15. Estimated Cost (Mil TL/Ha)**
	Personnel	**Materials**	**Construction**	
Seed cost		x		120
Seed sawing	x			30
Fertilizer cost (N-50kg/ha, P-43kg/ha)		x		200
Fertilizer application	x			30
Spreader (1unit/25ha-700Mil TL)		x		28
Watering troughs (1units/150ha-200Mil TL)			x	2
Salt troughs (1units/150ha-100 Mil TL)			x	1
Rubbing post (1units/150ha-100 Mil TL)			x	1
Other expenditures (5%)				21
Overhead (20%)				87
16. Estimated Total Cost				520
17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for this activities		x	x	
Technical cooperation for this activities	x			

1. Project No.	2. Project Title : Riverside Plantation	
3. Project Location	**4. Target Beneficiaries** Forest Villagers	**5. Project Duration** 1 years
6. Implementing Agency / Body Ministry of Environment and Forestry ; AGM		
7. Summary of Objective To stabilize soils and riverbank which is zigzag planted poplars, willows and other suitable tree species.		
8. Justification Type of the afforestation that is applied the forest villagers which is planted first-growing tree species along the river aimed protect farmland and settlements from flooding disaster. This may contribute to the fuelwood, too.		
9. Expected Benefits/Outputs -Protection of inhabitant's livelihood and farmland -Environmental improvement -Ensuring employment -Increasing aesthetics value of the landscape.	**10. Verifiable Indicator** - Increases in forest area - Increases in density of standing tree volume - Decreases expenses for purchase fuelwood - Decreases expenses for clean up after disaster	
11. Important Assumptions / Conditions for the project - Demands for afforestation by forest villagers and MEF - Effectives for soil stabilization - Cooperation by GDRS and/or DSI should be able to received		
12. Project Linkage / Other Sector Linkage -Coherence with program such as " Rehabilitation plan for river"	**13. Relevant Agencies to be Coordinate** - River rehabilitation plan by GDRS or DSI	

13. Major / Key Activities	**14. Major Inputs**			**15. Estimated Cost (Mil TL/Ha)**
	Personnel	**Materials**	**Construction**	
Preparation of hole by labor	x			1,500
Planting of seedling	x			2,230
Seedling cost (10,000 seedling)		x		1,500
Replacement planting	x	x		90
Protection of project site by village community (5 years)	x			30
Other expenditures				15
Maintenance (3 years)	x			143
Overhead (20%)				1,102
16. Estimated Total Cost				6,610
17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for plantation		x	x	
Technical cooperation for plantation works	x			

1. Project No.	2. Project Title : Gully Protection (Gabion type)	
3. Project Location	4. Target Beneficiaries Forest Villagers	5. Project Duration 5 years
6. Implementing Agency / Body Ministry of Environment and Forestry ; AGM		
7. Summary of Objective To prevent soil erosion from the mountainous areas by construct gully plugging using gabion walls with erosion control measures by vegetative works.		
8. Justification This will be decreased outflow from the mountains areas.		
9. Expected Benefits/Outputs - Decreasing soil erosion - Increasing vegetation growing chance - Ensuring employment	10. Verifiable Indicator - Increases in quantity of sedimentation (deposition)	
11. Important Assumptions / Conditions for the project - Demands for activities in Forest, OT and MERA area by forest villagers and MEF - Effectives for soil erosion conservation		
12. Project Linkage / Other Sector Linkage - Coherence with “Forest Management Plan”	13. Relevant Agencies to be Coordinate	

13. Major / Key Activities	14. Major Inputs			15. Estimated Cost (Mil TL/10Unit)
	Personnel	Materials	Construction	
Gabion fabricate material (without stone)		x		3,300
Gabion fabricate by labor	x			450
Gabion setting	x			450
Leveling by labor	x			150
Other expenditures (materialx5%)				165
Overhead (20%)				903
16. Estimated Total Cost				5,418
17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for rehabilitation		x	x	
Technical cooperation for rehabilitation measures	x			

1. Project No.	2. Project Title : Gully Protection (Bush type)	
3. Project Location	4. Target Beneficiaries Forest Villagers	5. Project Duration 5 years
6. Implementing Agency / Body Ministry of Environment and Forestry ; AGM		
7. Summary of Objective To prevent soil erosion from the mountainous areas by construct gully plugging using brush walls with erosion control measures by vegetative works.		
8. Justification This will be decreased outflow from the mountains areas.		
9. Expected Benefits/Outputs - Decreasing soil erosion - Increasing vegetation growing chance - Ensuring employment	10. Verifiable Indicator - Increases in quantity of sedimentation (deposition)	
11. Important Assumptions / Conditions for the project - Demands for activities in Forest, OT and MERA area by forest villagers and MEF - Effectives for soil erosion conservation		
12. Project Linkage / Other Sector Linkage - Coherence with “Forest Management Plan”	13. Relevant Agencies to be Coordinate	

13. Major / Key Activities	14. Major Inputs			15. Estimated Cost (Mil TL/10Unit)
	Personnel	Materials	Construction	
Brush type gully plug (10 ㎥)	x	x		3,000
Other expenditures				23
Overhead (20%)				605
16. Estimated Total Cost				3,628
17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for rehabilitation		x	x	
Technical cooperation for rehabilitation measures	x			

1. Project No.	2. Project Title : Meteorological Station		
3. Project Location 1 Sub-Micro catchment	**4. Target Beneficiaries**	**5. Project Duration** 3 years	
6. Implementing Agency / Body Ministry of Environment and Forestry ; AGM			
7. Summary of Objective Collection of micro- climate (rainfall) data in the micro-catchment			
8. Justification In the Study area, soil erosion is a one of big problem, but there is no useful information to elucidate the cause. This proposed activity can grasp the rainfall characteristic to be related to soil erosion.			
9. Expected Benefits/Outputs - Elucidates a cause of soil erosion - Contributes to planning for soil erosion control	**10. Verifiable Indicator** - Collected micro-climate information		
11. Important Assumptions / Conditions for the project - Understanding and cooperation of the villagers			
12. Project Linkage / Other Sector Linkage - Existing meteorological station	**13. Relevant Agencies to be Coordinate** Meteorological observation project prepared by DSI		

13. Major / Key Activities	**14. Major Inputs**			**15. Estimated Cost (Mil TL/Km)**
	Personnel	**Materials**	**Construction**	
Hyetometer (5 Units)		x		16,410
Data logger (5 Units)		x		2,063
Personal Computer (1 Units)		x		3,150
Other expenditures (5%)				1,080
16. Estimated Total Cost				22,703
17. Necessary External Inputs / Assistance / Arrangement				
Finance cooperation for construction of stations		x	x	

UNIT COST UNDERTAKING WATERSHED REHABILITATION WORKS

	Activity	Unit	Unit Cost (1000TL)	Remarks		
1	**Soil Conservation Afforestation**					
1.1	– Preparation of terraces by labour	Ha	463,500			
1.2	– Planting of seedlings	Ha	189,000			
1.3	– Seedling cost (1500 seedling per Ha as an average)	Ha	90,000			
1.4	– Gully plugging	Ha	30,000			
1.5	– Fencing	Ha	22,500			
1.6	– Preparation of access roads	Ha	7,500			
1.7	– Replacement planting	Ha	45,000			
1.8	– 1st year tending (weeding, hoeing, terrace repair)	Ha	52,500			
1.9	– 2st year tending (weeding, hoeing, terrace repair)	Ha	45,000			
1.10	– 3st year tending (weeding, hoeing, terrace repair)	Ha	45,000			
1.11	– Protection of afforestation sites by forest guard	Ha/Year	15,000			
1.12	– Protection of afforestation sites by village community	Ha/Year	6,000			
1.13	–Overheads (rough estimates for supervision, administarative, planning, etc. expenditures)	Ha	99,000			
2	**Rehabilitation / Revegetation by Conservation (on high slope- difficult sites)**					
2.1	–Seed sowing	Ha	30,000			
2.2	–Gully plugging	Ha	30,000			
2.3	–Fencing	Ha	22,500			
2.4	–Other expenditures	Ha	15,000			
2.5	– Protection of afforestation sites by forest guard	Ha/Year	15,000			
2.6	– Protection of afforestation sites by village community	Ha/Year	6,000			
3	**Rehabillitation of Degraded Oak Coppice Forests**					
3.1	–Conservation of natural oak vegetation	Ha	6,000			
3.2	–Rejuvenation cutting	Ha	217,500			
3.3	–Soil preparation by labor	Ha	265,500			
3.4	–Seed sowing	Ha	112,500			
3.5	–Seed	Ton	750,000			
3.6	–Tending, thinning	Ha	60,000			
3.7	–Fencing	Km	1,462,500			
3.8	–Gully plugging	m^3	15,000			
3.9	–Construction of service road	Km	6,750,000			
3.10	–Maintenance of service road	Km	750,000			
4	**Rehabilitation of Degraded High Forest**					
4.1	–Protection	Ha	6,000			
4.2	–Rejuvenation cutting	Ha	217,500			
4.3	–Soil preparation by labor	Ha	265,500			
4.4	–Seed sowing	Ha	112,500			
4.5	–Seed	Tton	750,000			
4.6	–Tending	Ha	132,000			
4.7	–Fencing	Km	1,462,500			
4.8	–Planting	Ha	189,000			
4.9	–Seedling	1000	51,000			
4.10	–Pruning	Ha	52,500			
4.11	–Thinning	Ha	37,500			
5	**Soil Conservation Afforestation (by labor)**			Slope(%)	Stoniness(%)	Soil Texture
5.1	Making of terraces	Km	12,000			
5.2	Preparation of terraces	Km	235,000	<40	<25	Light/Medium
5.3	Preparation of terraces	Km	359,000	41-60	>25	Light/Medium
5.4	Preparation of terraces	Km	430,000	41-61	<25	Heavy
5.5	Srush enforces terrace making	Km	669,000			
5.6	Distribution of seedlings at site (bare root coniferous)	1000	1,000			
5.7	Distribution of seedlings at site (bare root broadleaf)	1000	1,000			
5.8	Distribution of seedlings at site (plastic tubed)	1000	20,600			
5.9	Distribution of seedlings at site (enso-type)	1000	2,500			
5.10	Planting bare root coniferous seedlings	1000	140,000		>25	Light/Medium
5.11	Planting bare root broadleaf seedlings	1000	168,000		>26	Light/Medium
5.12	Planting plastic tubed seedlings	1000	212,000		>27	Light/Medium
5.13	Planting enso-type containerized seedlings	1000	125,000		>28	Heavy

6	Weeding, hoeing, terrace repair (on time)	Km	57,000			
7	Seed sowing (large seed)	Ha	64,000			
8	Seed sowing (small seed)	Ha	24,000			
9	Small stone check dam construction for gully plugging	m^3	15,700			
10	Brush fence construction for gully plugging	m^3	3,600			
11	Gully plugging by using stone / soil filled sacks	m^3	8,500			
12	**Rangeland Rehabilitation**					
12.1	Re-seeding	Ha	31,000			
12.2	Fertilization (organic)	Ha	25,000			
12.3	Fertilization (chemical)	Ha	31,000			
12.4	Cleaning of unwanted grasses	Ha	39,000			
13	Protection by forest guard (500ha/one guard)	Month	425,000			
14	Protection of erosion control site by village	Ha/Year	15,000			
15	Preparation of erosion controal implimentation project	Ha/Year	8,500			

source; estimated by MEF based on its implimentation results during previous years

2003 SSALE PRICES OF SEEDLINGS

1000TL/per seedling

No.	Species	Class	Bare root			Containores root			Plastic bag		
			1+0, 0+1	2+0, 0+2	3+0, 0+3	1+0, 0+1	2+0, 0+2	3+0	1+1	1+2, 2+1	2+2, 1+3
1	Pinus nigra	I		80	110	200	270	350			850
	Pinus sylvestris	II		65	90	180	230	300			750
2	Abies sp.	I			80		280	250			
	Picea orientalis	II			65		180	200			
3	Acer sp., Fraxinus sp., Fagus sp.,	I	120	170	250	250	350	450			
	Robinia pseudacasia,	II	95	150	200	200	300	400			
4	Betula sp., Tilia sp.,	I	150	250	360	300	450	600			
	Aesculus sp.	II	120	200	300	250	400	550			
5	Juglans regia, Quercus sp.,	I	200	350	500	350	500	600			
	Prunus amygdalis,	II	175	300	400	300	450	550			
6	Salix.sp.	I	250	350	450	400	500	600	600	800	900
		II	200	300	400	350	450	550	550	700	800
7	Kapari	I	250	350	500	400	550	650			
	Risa canina	II	200	300	400	300	450	550			
8	Enso-pot coniferous (Pinus, etc)	I				220	300		750	900	1100
		II				200	250		700	850	950
9	Enso-pot broadleaves	I				300					
		II				250					
10	Eucalyptus sp.	I				300	450		600	900	
		II				250	400		500	750	
11	Poplus nigra	I	600	750							
		II		600							
12	Hybrid poplar	I	650	900							
		II		650							

source ; JICA Study Team based on AGM data

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CALCULATION SHEET OF EACH MC

BT-04

Sub-MC (Forest Village)		Acreage (Ha)	Total Cost (Mil TL)	Remarks
Cavdarli stream (Cavdarli)		133	226,804	
Cavdarli stream (Ciftlik)		150	469,500	
Aradall stream (Hanli)		50	31,699	
Aradall strem (Kirecli)		361	264,915	
Cavdarli stream (Savaskoy)				
Civik stream, Karaagac stream		171	99,524	
MC TOTAL		865	1,092,442	

Activity		Acreage (Ha)	Total Cost (Mil TL)	Remarks
1. Soil Conservation				
2. Afforestation		133	224,105	
3 Rehabilitation of Degraded High Forest				
4 Rehabilitation of Degraded Coppice Forest		273	158,512	
5. Energy forest plantation		190	594,700	
6. Rangeland Rehabilitation		269	109,727	
7. Riverside plantation		0.8	5,398	
TOTAL COST (Mil TL)		865	1,092,442	

Computation Table

I. Project Location	MC ; BT-04	Sub-MC ; Cavdarli stream (Cavdarli)			
II. Title of Activities	Afforestation				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64			
1.2 Afforestation (type-1)	Ha	1,685			
1.3 Afforestation (type-2)	Ha	1,766			
1.4 Re-greening (type-1)	Ha	2,172			
1.5 Re-greening (type-2)	Ha	1,009			
1.6 Gully protection (Gabion type)	10 Units	3,853			
1.7 Gully protection (Brush type)	10Units	1,828			
Sub-Total					
2. Afforestation	Ha	1,685	133	224,105	
3. Rehabilitation of Degraded High Forest					
3.1 Natural regeneration	Ha	64			
3.2 High forest rehabilitation	Ha	1,082			
Sub-total					
4. Rehabilitation of Degraded Coppice Forest					
4.1 Natural regeneration	Ha	64			
4.2 Coppice forest rehabilitation	Ha	924			
Sub-total					
5. Energy forest plantation		3,130			
6. Rangeland Rehabilitation					
6.1 Natural regeneration	Ha	64			
6.2 Rangeland Improvement	Ha	244			
6.3 Gully protection (Gabion type)	10 Units	3,853			
6.4 Gully protection (Brush type)	10Units	1,828			
Sub-total					
7. Riverside plantation	Ha	6,748	0.4	2,699	
TOTAL COST (Mil TL)			133	226,804	

Computation Table

I. Project Location		MC ; BT-04		Sub-MC ; Cavdarli stream (Ciftik)		
II. Title of Activities		Energy Forest Plantation				
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64			
	1.2 Afforestation (type-1)	Ha	1,685			
	1.3 Afforestation (type-2)	Ha	1,766			
	1.4 Re-greening (type-1)	Ha	2,172			
	1.5 Re-greening (type-2)	Ha	1,009			
	1.6 Gully protection (Gabion type)	10 Units	3,853			
	1.7 Gully protection (Brush type)	10Units	1,828			
	Sub-Total					
2. Afforestation		Ha	1,685			
3. Rehabilitation of Degraded High Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
4. Rehabilitation of Degraded Coppice Forest						
	4.1 Natural regeneration	Ha	64			
	4.2 Coppice forest rehabilitation	Ha	924			
	Sub-total					
5. Energy forest plantation		Ha	3,130	150	469,500	
6. Rangeland Rehabilitation						
	6.1 Natural regeneration	Ha	64			
	6.2 Rangeland Improvement	Ha	244			
	6.3 Gully protection (Gabion type)	10 Units	3,853			
	6.4 Gully protection (Brush type)	10Units	1,828			
Sub-total						
7. Riverside plantation		Ha	6,748			
TOTAL COST (Mil TL)				150	469,500	

Computation Table

I. Project Location		MC ; BT-04		Sub-MC ; Aradall stream (Hanli)		
II. Title of Activities		Rehabilitation of Degraded Coppice Forest & Riverbank Enforcement				
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64			
	1.2 Afforestation (type-1)	Ha	1,685			
	1.3 Afforestation (type-2)	Ha	1,766			
	1.4 Re-greening (type-1)	Ha	2,172			
	1.5 Re-greening (type-2)	Ha	1,009			
	1.6 Gully protection (Gabion type)	10 Units	3,853			
	1.7 Gully protection (Brush type)	10Units	1,828			
	Sub-Total					
2. Afforestation		Ha	1,685			
3. Rehabilitation of Degraded High Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
4. Rehabilitation of Degraded Coppice Forest						
	4.1 Natural regeneration	Ha	64	20	1,280	

Computation Table

I. Project Location		MC ; BT-04		Sub-MC ; Aradall stream (Kirecli)		
II. Title of Activities		Rehabilitation of Degraded Coppice Forest & Rangeland Rehabilitation				
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64			
	1.2 Afforestation (type-1)	Ha	1,685			
	1.3 Afforestation (type-2)	Ha	1,766			
	1.4 Re-greening (type-1)	Ha	2,172			
	1.5 Re-greening (type-2)	Ha	1,009			
	1.6 Gully protection (Gabion type)	10 Units	3,853			
	1.7 Gully protection (Brush type)	10Units	1,828			
	Sub-Total					
2. Afforestation		Ha	1,685			
3. Rehabilitation of Degraded High Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
4. Rehabilitation of Degraded Coppice Forest						
	4.1 Natural regeneration	Ha	64	21	1,344	
	4.2 Coppice forest rehabilitation	Ha	924	31	28,644	
	Sub-total			52	29,988	
5. Energy forest plantation			3,130	40	125,200	
6. Rangeland Rehabilitation						
	6.1 Natural regeneration	Ha	64	108	6,912	
	6.2 Rangeland Improvement	Ha	244	161	39,284	
	6.3 Gully protection (Gabion type)	10 Units	3,853	*7*	26,971	
	6.4 Gully protection (Brush type)	10Units	1,828	*20*	36,560	
Sub-total				269	109,727	
7. Riverside plantation		Ha	6,748			
TOTAL COST (Mil TL)				361	264,915	

Computation Table

I. Project Location		MC ; BT-04		Sub-MC ; Civik stream, Karaagac stream		
II. Title of Activities						
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64			
	1.2 Afforestation (type-1)	Ha	1,685			
	1.3 Afforestation (type-2)	Ha	1,766			
	1.4 Re-greening (type-1)	Ha	2,172			
	1.5 Re-greening (type-2)	Ha	1,009			
	1.6 Gully protection (Gabion type)	10 Units	3,853			
	1.7 Gully protection (Brush type)	10Units	1,828			
	Sub-Total					
2. Afforestation		Ha	1,685			
3. Rehabilitation of Degraded High Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
4. Rehabilitation of Degraded Coppice Forest						
	4.1 Natural regeneration	Ha	64	68	4,352	

MC-03

Sub-MC (Forest Village)		Acreage (Ha)	Total Cost (Mil TL)	Remarks
Sekisel, Balsuyu stream (Celtikduzu)		150	111,705	
Kilickaya stream (Kilickaya)		150	111,705	
Hapishor stream (Alambasi)		1,763	865,786	
Hapishor stream (Bakirtepe)				
MC TOTAL		2,063	1,089,196	

Activity		Acreage (Ha)	Total Cost (Mil TL)	Remarks
1. Soil Conservation		831	647,604	
2. Rehabilitation of Degraded High Forest		838	266,394	
3. Rehabilitation of Degraded Coppice Forest				
4. Energy forest plantation				
5. Rangeland Rehabilitation		394	175,198	
6. Riverside plantation				
TOTAL COST (Mil TL)		2,063	1,089,196	

Computation Table

I. Project Location	MC ; MC-03	Sub-MC ; Selisel, Balsuyu stream (Celtikduzu)			
II. Title of Activities	Soil Conservation				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64	113	7,232	
1.2 Afforestation (type-1)	Ha	1,685		0	
1.3 Afforestation (type-2)	Ha	1,766		0	
1.4 Re-greening (type-1)	Ha	2,172	15	32,580	
1.5 Re-greening (type-2)	Ha	1,009	22	22,198	
1.6 Gully protection (Gabion type)	10 Units	3,853	*11*	42,383	
1.7 Gully protection (Brush type)	10Units	1,828	*4*	7,312	
Sub-Total			150	111,705	
2. Rehabilitation of Degraded High Forest					
2.1 Natural regeneration	Ha	64			
2.2 High forest rehabilitation	Ha	1,082			
Sub-total					
3. Rehabilitation of Degraded Coppice Forest					
3.1 Natural regeneration	Ha	64			
3.2 Coppice forest rehabilitation	Ha	924			
Sub-total					
4. Energy forest plantation		3,130			
5. Rangeland Rehabilitation					
5.1 Natural regeneration	Ha	64			
5.2 Rangeland Improvement	Ha	244			
5.3 Gully protection (Gabion type)	10 Units	3,863			
5.4 Gully protection (Brush type)	10Units	1,828			
Sub-total					
6. Riverside plantation	Ha	6,748			
TOTAL COST (Mil TL)			150	111,705	

Computation Table

I. Project Location		MC ; MC-03		Sub-MC ; Kilickaya stream (Kilickaya)		
II. Title of Activities		Soil Conservation				
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64	113	7,232	
	1.2 Afforestation (type-1)	Ha	1,685		0	
	1.3 Afforestation (type-2)	Ha	1,766		0	
	1.4 Re-greening (type-1)	Ha	2,172	15	32,580	
	1.5 Re-greening (type-2)	Ha	1,009	22	22,198	
	1.6 Gully protection (Gabion type)	10 Units	3,853	*11*	42,383	
	1.7 Gully protection (Brush type)	10Units	1,828	*4*	7,312	
	Sub-Total			150	111,705	
2. Rehabilitation of Degraded High Forest						
	2.1 Natural regeneration	Ha	64			
	2.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
3. Rehabilitation of Degraded Coppice Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 Coppice forest rehabilitation	Ha	924			
	Sub-total					
4. Energy forest plantation			3,130			
5. Rangeland Rehabilitation						
	5.1 Natural regeneration	Ha	64			
	5.2 Rangeland Improvement	Ha	244			
	5.3 Gully protection (Gabion type)	10 Units	3,863			
	5.4 Gully protection (Brush type)	10Units	1,828			
Sub-total						
6. Riverside plantation		Ha	6,748			
TOTAL COST (Mil TL)				150	111,705	

Computation Table

I. Project Location		MC ; MC-03		Sub-MC ; Hapishor stream (Alambasi)		
II. Title of Activities		Soil Conservation, rehabilitation of Degraded Coppice Forest & Rangeland Rehabilitation				
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64	398	25,472	
	1.2 Afforestation (type-1)	Ha	1,685		0	
	1.3 Afforestation (type-2)	Ha	1,766	53	93,598	
	1.4 Re-greening (type-1)	Ha	2,172	40	86,880	
	1.5 Re-greening (type-2)	Ha	1,009	40	40,360	
	1.6 Gully protection (Gabion type)	10 Units	3,853	*40*	154,120	
	1.7 Gully protection (Brush type)	10Units	1,828	*13*	23,764	
	Sub-Total			531	424,194	
2. Rehabilitation of Degraded High Forest						
	2.1 Natural regeneration	Ha	64	629	40,256	
	2.2 High forest rehabilitation	Ha	1,082	209	226,138	
	Sub-total			838	266,394	
3. Rehabilitation of Degraded Coppice Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 Coppice forest rehabilitation	Ha	924			
	Sub-total					

Computation Table

I. Project Location		MC ; MC-03		Sub-MC ; Hapishor stream (Bakirtepe)		
II. Title of Activities						
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64			
	1.2 Afforestation (type-1)	Ha	1,685			
	1.3 Afforestation (type-2)	Ha	1,766			
	1.4 Re-greening (type-1)	Ha	2,172			
	1.5 Re-greening (type-2)	Ha	1,009			
	1.6 Gully protection (Gabion type)	10 Units	3,853			
	1.7 Gully protection (Brush type)	10Units	1,828			
	Sub-Total					
2. Rehabilitation of Degraded High Forest						
	2.1 Natural regeneration	Ha	64			
	2.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
3. Rehabilitation of Degraded Coppice Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 Coppice forest rehabilitation	Ha	924			
	Sub-total					
4. Energy forest plantation			3,130			
5. Rangeland Rehabilitation						
	5.1 Natural regeneration	Ha	64			
	5.2 Rangeland Improvement	Ha	244			
	5.3 Gully protection (Gabion type)	10 Units	3,863			
	5.4 Gully protection (Brush type)	10Units	1,828			
Sub-total						
6. Riverside plantation		Ha	6,748			
TOTAL COST (Mil TL)						

TR-06

Sub-MC (Forest Village)		Acreage (Ha)	Total Cost (Mil TL)	Remarks
Armut stream (Caglayan)		577	372,088	
Kilizli stream (Kilizli)		386	187,853	
Kilizli stream (Altincanak)		279	210,252	
Cevizli stream (Cevizli)			1,350	
Sapaca Stream (Sapaca)		365	277,342	
MC TOTAL		1,607	1,048,884	

Activity		Acreage (Ha)	Total Cost (Mil TL)	Remarks
1. Soil Conservation		1,160	877,589	
2. Rehabilitation of Degraded High Forest		172	45,620	
3. Rehabilitation of Degraded Coppice Forest				
4. Energy forest plantation				
5. Rangeland Rehabilitation		275	121,626	
6. Riverside plantation		1	4,049	
TOTAL COST (Mil TL)		1,607	1,048,884	

Computation Table

I. Project Location	MC ; TR-06		Sub-MC ; Armut stream (Near Caglayan)		
II. Title of Activities	Soil Conservation & Rehabilitation of Degraded High Forest				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64	324	20,736	
1.2 Afforestation (type-1)	Ha	1,685		0	
1.3 Afforestation (type-2)	Ha	1,766	20	35,320	
1.4 Re-greening (type-1)	Ha	2,172	61	132,492	
1.5 Re-greening (type-2)	Ha	1,009		0	
1.6 Gully protection (Gabion type)	10 Units	3,853	*32*	123,296	
1.7 Gully protection (Brush type)	10Units	1,828	*8*	14,624	
Sub-Total			405	326,468	
2. Rehabilitation of Degraded High Forest					
2.1 Natural regeneration	Ha	64	138	8,832	
2.2 High forest rehabilitation	Ha	1,082	34	36,788	
Sub-total			172	45,620	
3. Rehabilitation of Degraded Coppice Forest					
3.1 Natural regeneration	Ha	64			
3.2 Coppice forest rehabilitation	Ha	924			
Sub-total					
4. Energy forest plantation		3,130			
5. Rangeland Rehabilitation					
5.1 Natural regeneration	Ha	64			
5.2 Rangeland Improvement	Ha	244			
5.3 Gully protection (Gabion type)	10 Units	3,863			
5.4 Gully protection (Brush type)	10Units	1,828			
Sub-total					
6. Riverside plantation	Ha	6,748			
TOTAL COST (Mil TL)			577	372,088	

Computation Table

I. Project Location		MC ; TR-06		Sub-MC ; Kiilizli stream (Kilizli)		
II. Title of Activities		Soil Conservation & Rangeland Rehabilitation				
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64	89	5,696	
	1.2 Afforestation (type-1)	Ha	1,685		0	
	1.3 Afforestation (type-2)	Ha	1,766		0	
	1.4 Re-greening (type-1)	Ha	2,172		0	
	1.5 Re-greening (type-2)	Ha	1,009	22	22,198	
	1.6 Gully protection (Gabion type)	10 Units	3,853	*9*	34,677	
	1.7 Gully protection (Brush type)	10Units	1,828	*2*	3,656	
	Sub-Total			111	66,227	
2. Rehabilitation of Degraded High Forest						
	2.1 Natural regeneration	Ha	64			
	2.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
3. Rehabilitation of Degraded Coppice Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 Coppice forest rehabilitation	Ha	924			
	Sub-total					
4. Energy forest plantation			3,130			
5. Rangeland Rehabilitation						
	5.1 Natural regeneration	Ha	64	220	14,080	
	5.2 Rangeland Improvement	Ha	244	55	13,420	
	5.3 Gully protection (Gabion type)	10 Units	3,863	*22*	84,986	
	5.4 Gully protection (Brush type)	10Units	1,828	*5*	9,140	
	Sub-total			275	121,626	
6. Riverside plantation		Ha	6,748			
TOTAL COST (Mil TL)				386	187,853	

Computation Table

I. Project Location		MC ; TR-06		Sub-MC ; Kilizli Stream (Altincanak)		
II. Title of Activities		Soil Conservation				
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64	223	14,272	
	1.2 Afforestation (type-1)	Ha	1,685		0	
	1.3 Afforestation (type-2)	Ha	1,766	56	98,896	
	1.4 Re-greening (type-1)	Ha	2,172		0	
	1.5 Re-greening (type-2)	Ha	1,009		0	
	1.6 Gully protection (Gabion type)	10 Units	3,853	*22*	84,766	
	1.7 Gully protection (Brush type)	10Units	1,828	*6*	10,968	
	Sub-Total			279	208,902	
2. Rehabilitation of Degraded High Forest						
	2.1 Natural regeneration	Ha	64			
	2.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
3. Rehabilitation of Degraded Coppice Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 Coppice forest rehabilitation	Ha	924			
	Sub-total					

Computation Table

I. Project Location		MC ; TR-06		Sub-MC ; Sapaca stream (Sapaca)		
II. Title of Activities		Soil Conservation				
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64	292	18,688	
	1.2 Afforestation (type-1)	Ha	1,685		0	
	1.3 Afforestation (type-2)	Ha	1,766	73	128,918	
	1.4 Re-greening (type-1)	Ha	2,172		0	
	1.5 Re-greening (type-2)	Ha	1,009		0	
	1.6 Gully protection (Gabion type)	10 Units	3,853	*30*	115,590	
	1.7 Gully protection (Brush type)	10Units	1,828	*7*	12,796	
	Sub-Total			365	275,992	
2. Rehabilitation of Degraded High Forest						
	2.1 Natural regeneration	Ha	64			
	2.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
3. Rehabilitation of Degraded Coppice Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 Coppice forest rehabilitation	Ha	924			
	Sub-total					
4. Energy forest plantation			3,130			
5. Rangeland Rehabilitation						
	5.1 Natural regeneration	Ha	64			
	5.2 Rangeland Improvement	Ha	244			
	5.3 Gully protection (Gabion type)	10 Units	3,863			
	5.4 Gully protection (Brush type)	10Units	1,828			
	Sub-total					
6. Riverside plantation		Ha	6,748	0.2	1,350	
TOTAL COST (Mil TL)				365	277,342	

Computation Table

I. Project Location		MC ; TR-06		Sub-MC ; Cevizli stream (Cevizli)		
II. Title of Activities						
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64			
	1.2 Afforestation (type-1)	Ha	1,685			
	1.3 Afforestation (type-2)	Ha	1,766			
	1.4 Re-greening (type-1)	Ha	2,172			
	1.5 Re-greening (type-2)	Ha	1,009			
	1.6 Gully protection (Gabion type)	10 Units	3,853			
	1.7 Gully protection (Brush type)	10Units	1,828			
	Sub-Total					
2. Rehabilitation of Degraded High Forest						
	2.1 Natural regeneration	Ha	64			
	2.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
3. Rehabilitation of Degraded Coppice Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 Coppice forest rehabilitation	Ha	924			
	Sub-total					

UC-14

Sub-MC (Forest Village)		Acreage (Ha)	Total Cost (Mil TL)	Remarks
Goc stream (Gockoy)		226	256,308	
Bulanik strean (Numanpasa)		200	357,030	
Deglirmexili stream (Durkoy)		168	391,455	
Yayla stream (Kockoy)		50	156,500	
Kopruk stream (Koprukoy)		1,424	924,939	
MC TOTAL		2,068	2,086,232	

Activity		Acreage (Ha)	Total Cost (Mil TL)	Remarks
1. Soil Conservation		728	774,507	
2. Afforestation		93	156,705	
3. Rehabilitation of Degraded High Forest		157	74,182	
4. Rehabilitation of Degraded Coppice Forest		207	85,488	
5. Energy Forest plantation		225	704,250	
6. Rangeland Rehabilitation		658	291,100	
7. Riverside plantation				
TOTAL COST (Mil TL)		2,068	2,086,232	

Computation Table

I. Project Location	MC ; UC-14	Sub-MC ; Goc stream (Gockoy)
II. Title of Activities	Soil Conservation	

ACTIVITY	UNIT	UNIT COST (Mil TL)	PROPOSED QUANTITY	TOTAL COST (Mil TL)	COMMENTS
1. Soil Conservation					
1.1 Natural regeneration	Ha	64	136	8,704	
1.2 Afforestation (type-1)	Ha	1,685		0	
1.3 Afforestation (type-2)	Ha	1,766	45	79,470	
1.4 Re-greening (type-1)	Ha	2,172	45	97,740	
1.5 Re-greening (type-2)	Ha	1,009		0	
1.6 Gully protection (Gabion type)	10 Units	3,853	*14*	53,942	
1.7 Gully protection (Brush type)	10Units	1,828	*9*	16,452	
Sub-Total			226	256,308	
2. Afforestation	Ha	1,685			
3. Rehabilitation of Degraded High Forest					
3.1 Natural regeneration	Ha	64			
3.2 High forest rehabilitation	Ha	1,082			
Sub-total					
4. Rehabilitation of Degraded Coppice Forest					
4.1 Natural regeneration	Ha	64			
4.2 Coppice forest rehabilitation	Ha	924			
Sub-total					
5. Energy Forest plantation	Ha	3,130			
6. Rangeland Rehabilitation					
6.1 Natural regeneration	Ha	64			
6.2 Rangeland Improvement	Ha	244			
6.3 Gully protection (Gabion type)	10 Units	3,853			
6.4 Gully protection (Brush type)	10Units	1,828			
Sub-total					
7. Riverside plantation	Ha	6,748			
TOTAL COST (Mil TL)			226	256,308	

Computation Table

I. Project Location		MC ; UC-14		Sub-MC ; Deglirmexili stream (Durkoy)		
II. Title of Activities		Afforestation (Pinus sylvestris plantation)				
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64			
	1.2 Afforestation (type-1)	Ha	1,685			
	1.3 Afforestation (type-2)	Ha	1,766			
	1.4 Re-greening (type-1)	Ha	2,172			
	1.5 Re-greening (type-2)	Ha	1,009			
	1.6 Gully protection (Gabion type)	10 Units	3,853			
	1.7 Gully protection (Brush type)	10Units	1,828			
	Sub-Total					
2. Afforestation		Ha	1,685	93	156,705	
3. Rehabilitation of Degraded High Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
4. Rehabilitation of Degraded Coppice Forest						
	4.1 Natural regeneration	Ha	64			
	4.2 Coppice forest rehabilitation	Ha	924			
	Sub-total					
5. Energy Forest plantation		Ha	3,130	75	234,750	
6. Rangeland Rehabilitation						
	6.1 Natural regeneration	Ha	64			
	6.2 Rangeland Improvement	Ha	244			
	6.3 Gully protection (Gabion type)	10 Units	3,853			
	6.4 Gully protection (Brush type)	10Units	1,828			
Sub-total						
7. Riverside plantation		Ha	6,748			
TOTAL COST (Mil TL)				168	391,455	

Computation Table

I. Project Location		MC ; UC-14		Sub-MC ; Kopruk stream (Koprukoy)		
II. Title of Activities		Soil Conservation, Rehabilitation of Degraded High and Coppice forest, Rangeland Rehabilitation, Riverbank Enforcement & Working road Improvement				
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64	301	19,264	
	1.2 Afforestation (type-1)	Ha	1,685	101	170,185	
	1.3 Afforestation (type-2)	Ha	1,766	100	176,600	
	1.4 Re-greening (type-1)	Ha	2,172		0	
	1.5 Re-greening (type-2)	Ha	1,009		0	
	1.6 Gully protection (Gabion type)	10 Units	3,853	*30*	115,590	
	1.7 Gully protection (Brush type)	10Units	1,828	*20*	36,560	
	Sub-Total			502	518,199	
2. Afforestation		Ha	1,685			
3. Rehabilitation of Degraded High Forest						
	3.1 Natural regeneration	Ha	64	94	6,016	
	3.2 High forest rehabilitation	Ha	1,082	63	68,166	
	Sub-total			157	74,182	
4. Rehabilitation of Degraded Coppice Forest						

Computation Table

I. Project Location		MC ; UC-14		Sub-MC ; Bulanik stream (Numanpasa)		
II. Title of Activities						
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64			
	1.2 Afforestation (type-1)	Ha	1,685			
	1.3 Afforestation (type-2)	Ha	1,766			
	1.4 Re-greening (type-1)	Ha	2,172			
	1.5 Re-greening (type-2)	Ha	1,009			
	1.6 Gully protection (Gabion type)	10 Units	3,853			
	1.7 Gully protection (Brush type)	10Units	1,828			
	Sub-Total					
2. Afforestation		Ha	1,685			
3. Rehabilitation of Degraded High Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
4. Rehabilitation of Degraded Coppice Forest						
	4.1 Natural regeneration	Ha	64			
	4.2 Coppice forest rehabilitation	Ha	924			
	Sub-total					
5. Energy Forest plantation		Ha	3,130	100	313,000	
6. Rangeland Rehabilitation						
	6.1 Natural regeneration	Ha	64	60	3,840	
	6.2 Rangeland Improvement	Ha	244	40	9,760	
	6.3 Gully protection (Gabion type)	10 Units	3,853	6	23,118	
	6.4 Gully protection (Brush type)	10Units	1,828	4	7,312	
Sub-total				100	44,030	
7. Riverside plantation		Ha	6,748			
TOTAL COST (Mil TL)				200	357,030	

Computation Table

I. Project Location		MC ; UC-14		Sub-MC ; Yayla stream (Kockoy)		
II. Title of Activities						
ACTIVITY		**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation						
	1.1 Natural regeneration	Ha	64			
	1.2 Afforestation (type-1)	Ha	1,685			
	1.3 Afforestation (type-2)	Ha	1,766			
	1.4 Re-greening (type-1)	Ha	2,172			
	1.5 Re-greening (type-2)	Ha	1,009			
	1.6 Gully protection (Gabion type)	10 Units	3,853			
	1.7 Gully protection (Brush type)	10Units	1,828			
	Sub-Total					
2. Afforestation		Ha	1,685			
3. Rehabilitation of Degraded High Forest						
	3.1 Natural regeneration	Ha	64			
	3.2 High forest rehabilitation	Ha	1,082			
	Sub-total					
4. Rehabilitation of Degraded Coppice Forest						
	4.1 Natural regeneration	Ha	64			

UC-03

Sub-MC (Forest Village)		Acreage (Ha)	Total Cost (Mil TL)	Remarks
Kuru, Latrans stream (Yaylapinar)		193	204,817	
Ahsunicler stream (Heybetepe)		150	172,387	
Gez stream (Gezkoy)		100	115,060	
Mitibey stream (Maden)		350	402,507	
Buyuk stream (Masat)		200	239,567	
MC TOTAL		993	1,134,338	

Activity		Acreage (Ha)	Total Cost (Mil TL)	Remarks
1. Soil Conservation		993	1,124,891	
2. Rehabilitation of Degraded High Forest				
3. Rehabilitation of Degraded Coppice Forest				
4. Energy forest plantation				
5. Rangeland Rehabilitation				
6. Riverside plantation		1.4	9,447	
TOTAL COST (Mil TL)		993	1,134,338	

Computation Table

I. Project Location	MC ; UC-03		Sub-MC ; Kuru, Latrans stream (Yaylapinar)		
II. Title of Activities	Soil Conservation				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64	116	7,424	
1.2 Afforestation (type-1)	Ha	1,685		0	
1.3 Afforestation (type-2)	Ha	1,766	29	51,214	
1.4 Re-greening (type-1)	Ha	2,172	48	104,256	
1.5 Re-greening (type-2)	Ha	1,009	*11*	11,099	
1.6 Gully protection (Gabion type)	10 Units	3,853	*8*	30,824	
1.7 Gully protection (Brush type)	10Units	1,828		0	
Sub-Total			193	204,817	
2. Rehabilitation of Degraded High Forest					
2.1 Natural regeneration	Ha	64			
2.2 High forest rehabilitation	Ha	1,082			
Sub-total					
3. Rehabilitation of Degraded Coppice Forest					
3.1 Natural regeneration	Ha	64			
3.2 Coppice forest rehabilitation	Ha	924			
Sub-total					
4. Energy forest plantation		3,130			
5. Rangeland Rehabilitation					
5.1 Natural regeneration	Ha	64			
5.2 Rangeland Improvement	Ha	244			
5.3 Gully protection (Gabion type)	10 Units	3,863			
5.4 Gully protection (Brush type)	10Units	1,828			
Sub-total					
6. Riverside plantation	Ha	6,748			
TOTAL COST (Mil TL)			193	204,817	

Computation Table

I. Project Location	MC ; UC-03		Sub-MC ; Ahsunicler stream (Heybetepe)		
II. Title of Activities	Soil Conservation				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64	90	5,760	
1.2 Afforestation (type-1)	Ha	1,685		0	
1.3 Afforestation (type-2)	Ha	1,766	23	40,618	
1.4 Re-greening (type-1)	Ha	2,172	37	80,364	
1.5 Re-greening (type-2)	Ha	1,009		0	
1.6 Gully protection (Gabion type)	10 Units	3,853	9	34,677	
1.7 Gully protection (Brush type)	10Units	1,828	6	10,968	
Sub-Total			150	172,387	
2. Rehabilitation of Degraded High Forest					
2.1 Natural regeneration	Ha	64			
2.2 High forest rehabilitation	Ha	1,082			
Sub-total					
3. Rehabilitation of Degraded Coppice Forest					
3.1 Natural regeneration	Ha	64			
3.2 Coppice forest rehabilitation	Ha	924			
Sub-total					
4. Energy forest plantation		3,130			
5. Rangeland Rehabilitation					
5.1 Natural regeneration	Ha	64			
5.2 Rangeland Improvement	Ha	244			
5.3 Gully protection (Gabion type)	10 Units	3,863			
5.4 Gully protection (Brush type)	10Units	1,828			
Sub-total					
6. Riverside plantation	Ha	6,748			
TOTAL COST (Mil TL)			150	172,387	

Computation Table

I. Project Location	MC ; UC-03		Sub-MC ; Cez stream (Gezkoy)		
II. Title of Activities	Soil Conservation				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64	60	3,840	
1.2 Afforestation (type-1)	Ha	1,685		0	
1.3 Afforestation (type-2)	Ha	1,766	15	26,490	
1.4 Re-greening (type-1)	Ha	2,172	25	54,300	
1.5 Re-greening (type-2)	Ha	1,009		0	
1.6 Gully protection (Gabion type)	10 Units	3,853	6	23,118	
1.7 Gully protection (Brush type)	10Units	1,828	4	7,312	
Sub-Total			100	115,060	
2. Rehabilitation of Degraded High Forest					
2.1 Natural regeneration	Ha	64			
2.2 High forest rehabilitation	Ha	1,082			
Sub-total					
3. Rehabilitation of Degraded Coppice Forest					
3.1 Natural regeneration	Ha	64			
3.2 Coppice forest rehabilitation	Ha	924			
Sub-total					

Computation Table

I. Project Location	MC ; UC-03		Sub-MC ; Mitibey stream (Maden)		
II. Title of Activities	Soil Conservation				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64	210	13,440	
1.2 Afforestation (type-1)	Ha	1,685		0	
1.3 Afforestation (type-2)	Ha	1,766	53	93,598	
1.4 Re-greening (type-1)	Ha	2,172	87	188,964	
1.5 Re-greening (type-2)	Ha	1,009		0	
1.6 Gully protection (Gabion type)	10 Units	3,853	*21*	80,913	
1.7 Gully protection (Brush type)	10Units	1,828	*14*	25,592	
Sub-Total			350	402,507	
2. Rehabilitation of Degraded High Forest					
2.1 Natural regeneration	Ha	64			
2.2 High forest rehabilitation	Ha	1,082			
Sub-total					
3. Rehabilitation of Degraded Coppice Forest					
3.1 Natural regeneration	Ha	64			
3.2 Coppice forest rehabilitation	Ha	924			
Sub-total					
4. Energy forest plantation		3,130			
5. Rangeland Rehabilitation					
5.1 Natural regeneration	Ha	64			
5.2 Rangeland Improvement	Ha	244			
5.3 Gully protection (Gabion type)	10 Units	3,863			
5.4 Gully protection (Brush type)	10Units	1,828			
Sub-total					
6. Riverside plantation	Ha	6,748			
TOTAL COST (Mil TL)			350	402,507	

Computation Table

I. Project Location	MC ; UC-03		Sub-MC ; Buyuk stream (Masat)		
II. Title of Activities	Soil Conservation				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64	120	7,680	
1.2 Afforestation (type-1)	Ha	1,685		0	
1.3 Afforestation (type-2)	Ha	1,766	30	52,980	
1.4 Re-greening (type-1)	Ha	2,172	50	108,600	
1.5 Re-greening (type-2)	Ha	1,009		0	
1.6 Gully protection (Gabion type)	10 Units	3,853	*12*	46,236	
1.7 Gully protection (Brush type)	10Units	1,828	*8*	14,624	
Sub-Total			200	230,120	
2. Rehabilitation of Degraded High Forest					
2.1 Natural regeneration	Ha	64			
2.2 High forest rehabilitation	Ha	1,082			
Sub-total					
3. Rehabilitation of Degraded Coppice Forest					
3.1 Natural regeneration	Ha	64			
3.2 Coppice forest rehabilitation	Ha	924			
Sub-total					

OL-14

Sub-MC (Forest Village)		Acreage (Ha)	Total Cost (Mil TL)	Remarks
Dagin, Igdelinin stream (Orcuk, Igdeli)		955	743,970	
Kadaagach stream (Ballica)				
Sivri stream (Tutmac)		867	915,695	
Sivri stream (Ozdere)		1648	1,263,092	
Sekincukm stream (Basakli)		687	726,787	
MC TOTAL		4,157	3,649,544	

Activity		Acreage (Ha)	Total Cost (Mil TL)	Remarks
1. Soil Conservation		1,090	1,334,924	
2. Afforestation		126	212,310	
3. Rehabilitation of Degraded High Forest				
4. Rehabilitation of Degraded Coppice Forest				
5. Energy forest plantation		300	939,000	
6. Rangeland Rehabilitation		2,641	1,159,261	
7. Riverside plantation			4,049	
TOTAL COST (Mil TL)		4,157	3,649,544	

Computation Table

I. Project Location	MC ; OL-14		Sub-MC ; Dagin, Igdelinin Stream (Orcuk, Igdeli)		
II. Title of Activities	Soil conservation, Rangeland Rehabilitation & Riverbank Enforcement				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64	224	14,336	
1.2 Afforestation (type-1)	Ha	1,685		0	
1.3 Afforestation (type-2)	Ha	1,766	81	143,046	
1.4 Re-greening (type-1)	Ha	2,172	102	221,544	
1.5 Re-greening (type-2)	Ha	1,009		0	
1.6 Gully protection (Gabion type)	10 Units	3,853	*23*	88,619	
1.7 Gully protection (Brush type)	10Units	1,828	*18*	32,904	
Sub-Total			407	500,449	
2. Afforestation	Ha	1,685		0	
3. Rehabilitation of Degraded High Forest				0	
3.1 Natural regeneration	Ha	64		0	
3.2 High forest rehabilitation	Ha	1,082		0	
Sub-total				0	
4. Rehabilitation of Degraded Coppice Forest				0	
4.1 Natural regeneration	Ha	64		0	
4.2 Coppice forest rehabilitation	Ha	924		0	
Sub-total				0	
5. Energy forest plantation	Ha	3,130		0	
6. Rangeland Rehabilitation				0	
6.1 Natural regeneration	Ha	64	301	19,264	
6.2 Rangeland Improvement	Ha	244	247	60,268	
6.3 Gully protection (Gabion type)	10 Units	3,853	*30*	115,590	
6.4 Gully protection (Brush type)	10Units	1,828	*25*	45,700	
Sub-total			548	240,822	
7. Riverside plantation	Ha	6,748	0.4	2,699	
TOTAL COST (Mil TL)			955	743,970	

Computation Table

I. Project Location	MC ; OL-14		Sub-MC ; Kadaagach Stream (Balilica)		
II. Title of Activities	Riverbank Enforcement				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64			
1.2 Afforestation (type-1)	Ha	1,685			
1.3 Afforestation (type-2)	Ha	1,766			
1.4 Re-greening (type-1)	Ha	2,172			
1.5 Re-greening (type-2)	Ha	1,009			
1.6 Gully protection (Gabion type)	10 Units	3,853			
1.7 Gully protection (Brush type)	10Units	1,828			
Sub-Total					
2. Afforestation	Ha	1,685			
3. Rehabilitation of Degraded High Forest					
3.1 Natural regeneration	Ha	64			
3.2 High forest rehabilitation	Ha	1,082			
Sub-total					
4. Rehabilitation of Degraded Coppice Forest					
4.1 Natural regeneration	Ha	64			
4.2 Coppice forest rehabilitation	Ha	924			
Sub-total					
5. Energy forest plantation	Ha	3,130			
6. Rangeland Rehabilitation					
6.1 Natural regeneration	Ha	64			
6.2 Rangeland Improvement	Ha	244			
6.3 Gully protection (Gabion type)	10 Units	3,853			
6.4 Gully protection (Brush type)	10Units	1,828			
Sub-total					
7. Riverside plantation	Ha	6,748			
TOTAL COST (Mil TL)					

Computation Table

I. Project Location	MC ; Ol-04		Sub-MC ; Sivri stream (Tutmac)		
II. Title of Activities	Soil Conservation, Rangeland Rehabilitation, Riverside Plantation & Riverbank Enforcement				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64	376	24,064	
1.2 Afforestation (type-1)	Ha	1,685		0	
1.3 Afforestation (type-2)	Ha	1,766	137	241,942	
1.4 Re-greening (type-1)	Ha	2,172	170	369,240	
1.5 Re-greening (type-2)	Ha	1,009		0	
1.6 Gully protection (Gabion type)	10 Units	3,853	*37*	142,561	
1.7 Gully protection (Brush type)	10Units	1,828	*31*	56,668	
Sub-Total			683	834,475	
2. Afforestation	Ha	1,685			
3. Rehabilitation of Degraded High Forest					
3.1 Natural regeneration	Ha	64			
3.2 High forest rehabilitation	Ha	1,082			
Sub-total					

Computation Table

I. Project Location	MC ; OL-04		Sub-MC ; Sivri stream (Ozdere)		
II. Title of Activities	Rangeland Rehabilitation & Energy Forest Plantation				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64			
1.2 Afforestation (type-1)	Ha	1,685			
1.3 Afforestation (type-2)	Ha	1,766			
1.4 Re-greening (type-1)	Ha	2,172			
1.5 Re-greening (type-2)	Ha	1,009			
1.6 Gully protection (Gabion type)	10 Units	3,853			
1.7 Gully protection (Brush type)	10Units	1,828			
Sub-Total					
2. Afforestation	Ha	1,685			
3. Rehabilitation of Degraded High Forest					
3.1 Natural regeneration	Ha	64			
3.2 High forest rehabilitation	Ha	1,082			
Sub-total					
4. Rehabilitation of Degraded Coppice Forest					
4.1 Natural regeneration	Ha	64			
4.2 Coppice forest rehabilitation	Ha	924			
Sub-total					
5. Energy forest plantation	Ha	3,130	200	626,000	
6. Rangeland Rehabilitation					
6.1 Natural regeneration	Ha	64	796	50,944	
6.2 Rangeland Improvement	Ha	244	652	159,088	
6.3 Gully protection (Gabion type)	10 Units	3,853	*80*	308,240	
6.4 Gully protection (Brush type)	10Units	1,828	*65*	118,820	
Sub-total			1,448	637,092	
7. Riverside plantation	Ha	6,748			
TOTAL COST (Mil TL)			1,648	1,263,092	

Computation Table

I. Project Location	MC ; OL-04		Sub-MC ; Sekincukm river (Basakli)		
II. Title of Activities	Afforestation, Energy Forest Planting & Riverbank Enforcement				
ACTIVITY	**UNIT**	**UNIT COST (Mil TL)**	**PROPOSED QUANTITY**	**TOTAL COST (Mil TL)**	**COMMENTS**
1. Soil Conservation					
1.1 Natural regeneration	Ha	64			
1.2 Afforestation (type-1)	Ha	1,685			
1.3 Afforestation (type-2)	Ha	1,766			
1.4 Re-greening (type-1)	Ha	2,172			
1.5 Re-greening (type-2)	Ha	1,009			
1.6 Gully protection (Gabion type)	10 Units	3,853			
1.7 Gully protection (Brush type)	10Units	1,828			
Sub-Total					
2. Afforestation	Ha	1,685	126	212,310	
3. Rehabilitation of Degraded High Forest					
3.1 Natural regeneration	Ha	64			
3.2 High forest rehabilitation	Ha	1,082			
Sub-total					
4. Rehabilitation of Degraded Coppice Forest					
4.1 Natural regeneration	Ha	64			

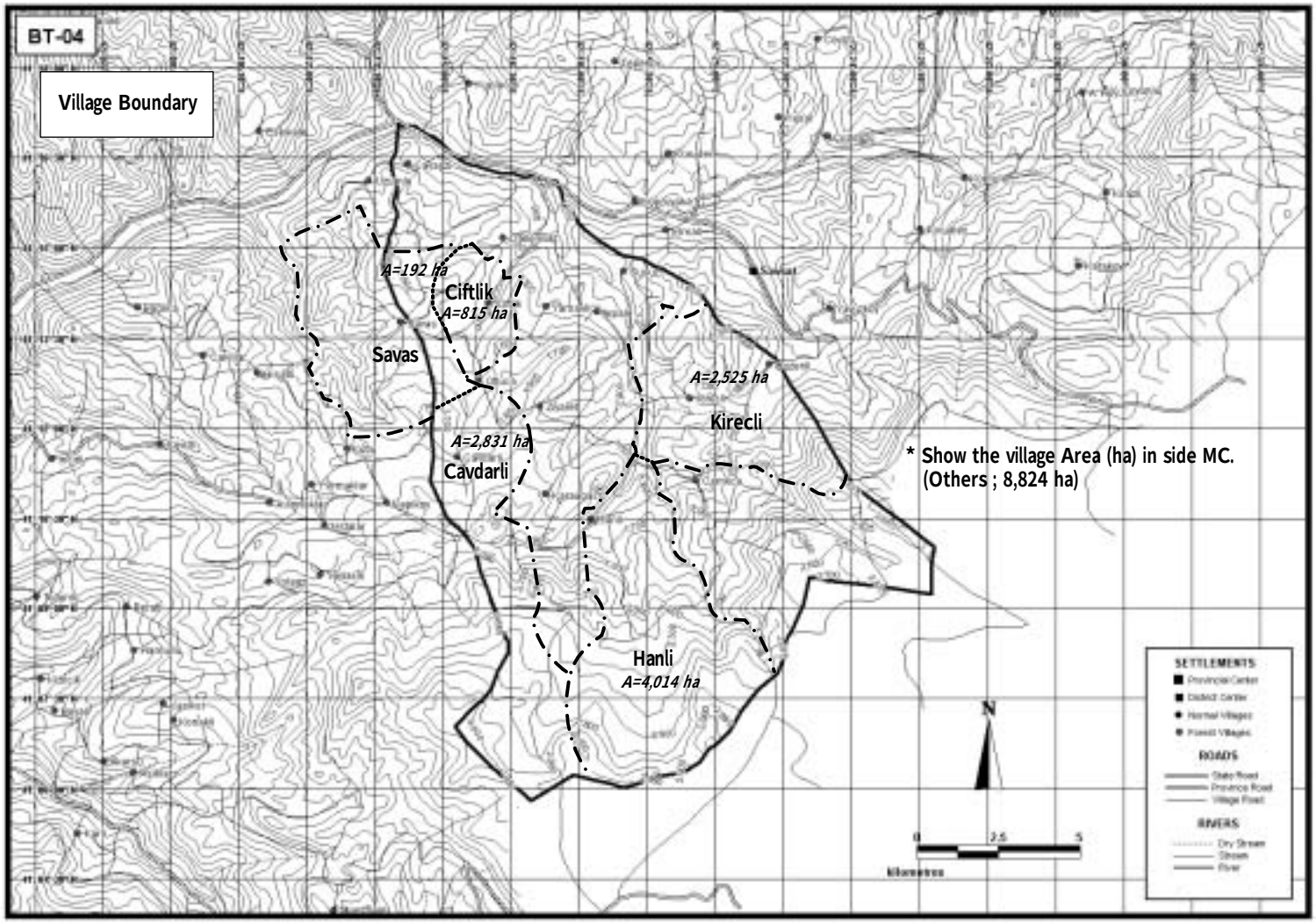
APPENDIX-B.3 ROUGH COPY OF SELECTED FOREST VILLAGES AND APPROXIMATE AREA OF SELECTED VILLAGES

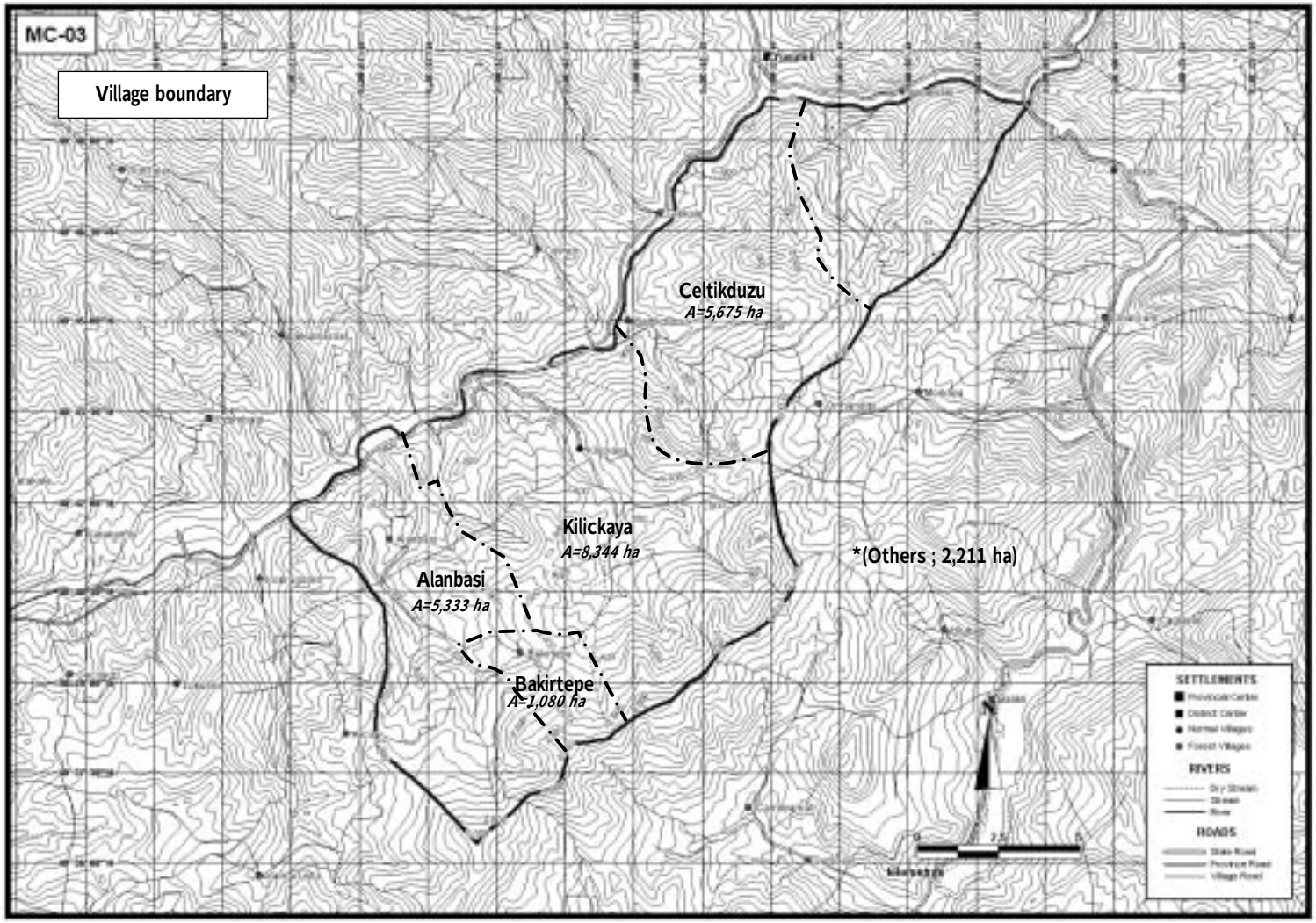
Illustrated the boundary of selected villages according to information which is provided in the workshop in each village. However, there are some places that are not established boundary.

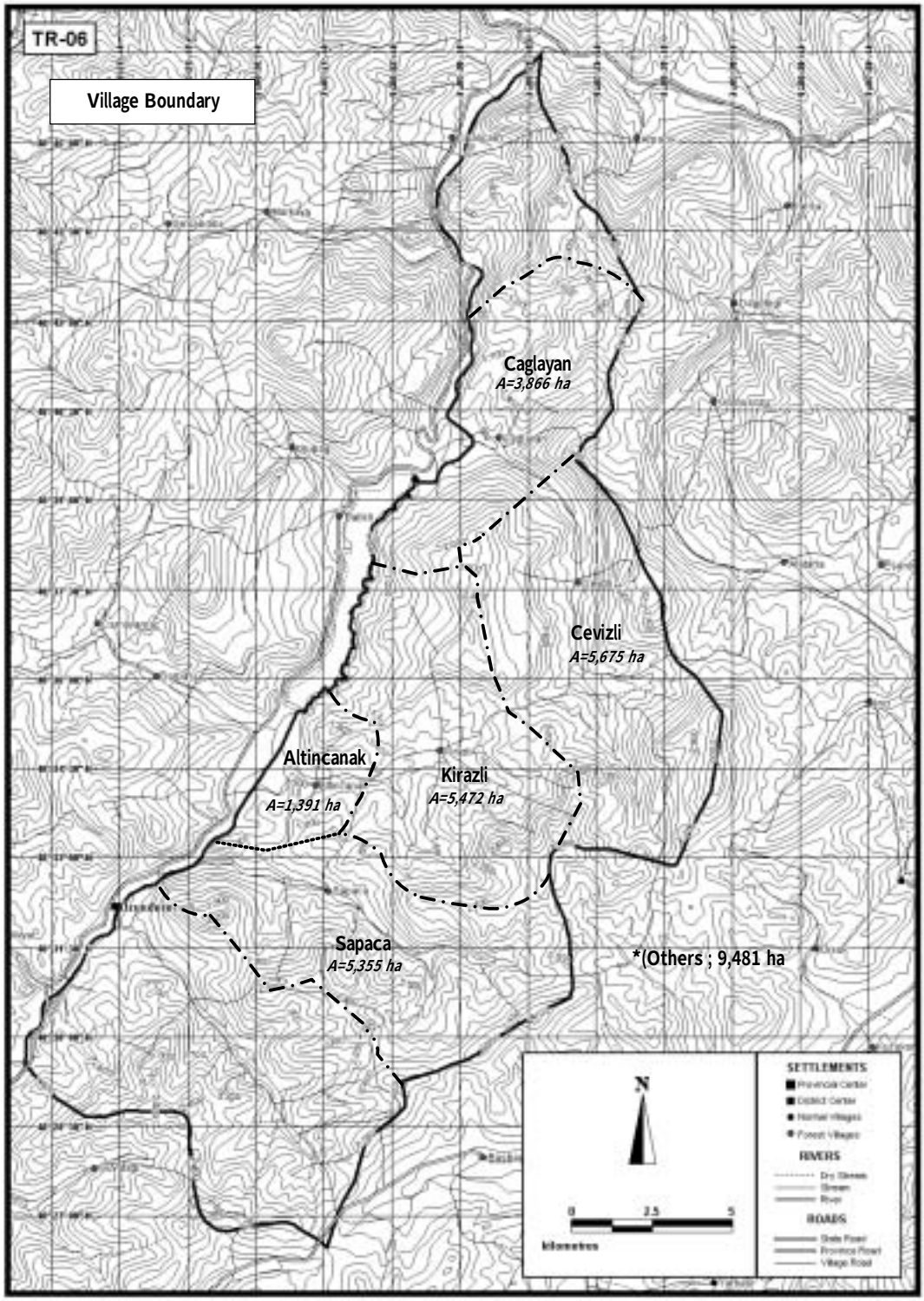
APPROXIMATE AREA OF SELECTED VILLAGES

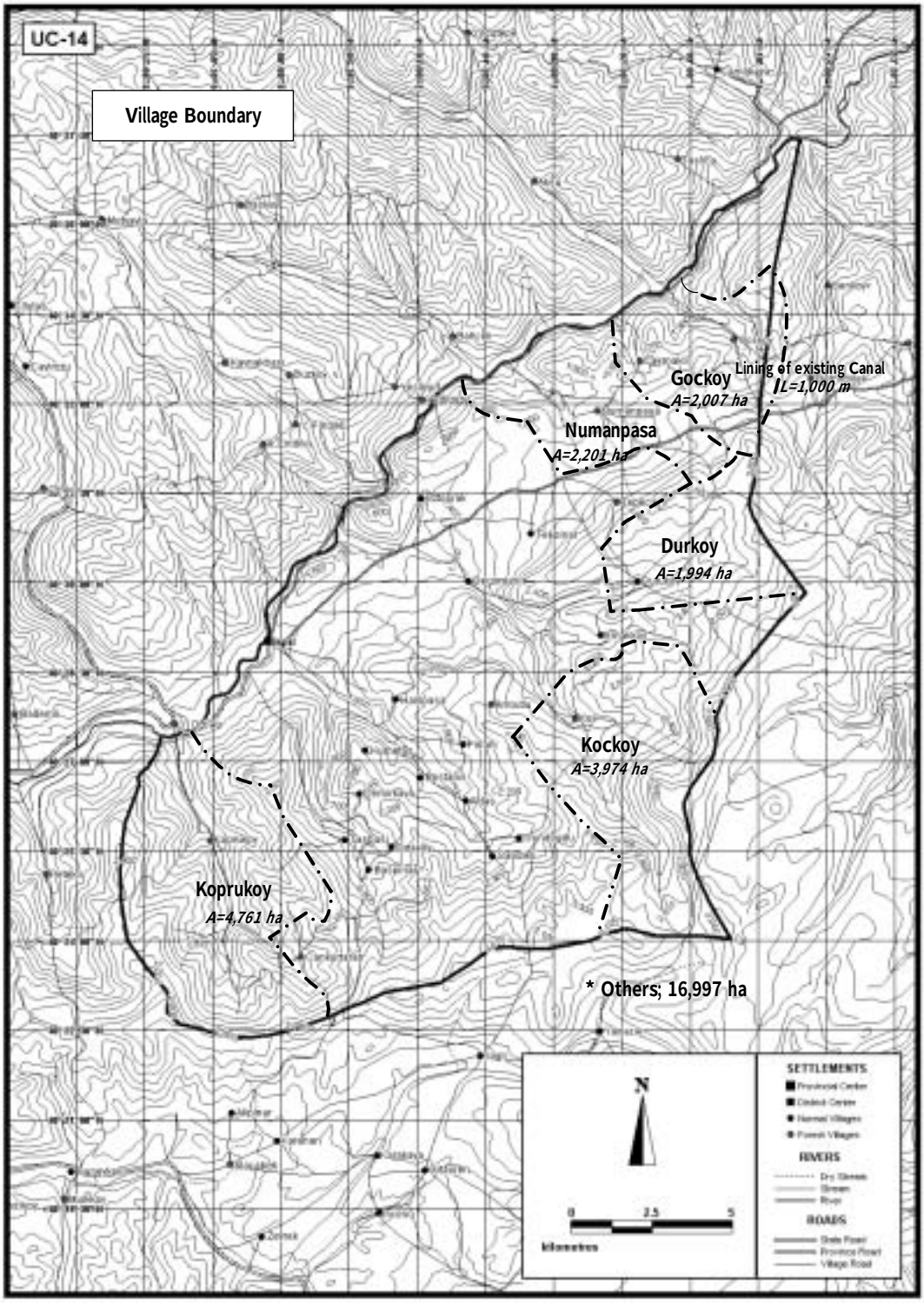
MC No.	Total Area (ha) (based on 1/25,000 scale Topographical Map)	Forest Village Name	Rough Village Area (ha) (based on 1/150,000 scale Map)	(%)
BT-04 (Savsat)	19,203	Savas	190	1.0%
		Ciftlik	815	4.2%
		Kirecli	2,525	13.1%
		Cavdarli	2,831	14.7%
		Hanli	4,014	20.9%
		Others	8,828	46.0%
MC-03 (Yusufeli)	22,643	Celtikduzu	5,675	25.1%
		Kilickaya	8,344	36.9%
		Bakirtepe	1,080	4.8%
		Aranbasi	5,333	23.6%
		Others	2,211	9.8%
TR-06 (Uzundere)	31,240	Caglayan	3,866	12.4%
		Cevizli	5,675	18.2%
		Kirazli	5,472	17.5%
		Altincanak	1,391	4.5%
		Sapaca	5,355	17.1%
		Others	9,481	30.3%
UC-14 (Ispir)	31,934	Gockoy	2,007	6.3%
		Numanpasa	2,201	6.9%
		Durkoy	1,994	6.2%
		Kockoy	3,974	12.4%
		Koprukoy	4,761	14.9%
		Others	16,997	53.2%
UC-03 (Bayburt)	21,758	Masat	5,094	23.4%
		Yaylapinar	8,582	39.4%
		Maden	2,165	10.0%
		Hybetepe	1,841	8.5%
		Gezkoy	1,553	7.1%
		Others	2,523	11.6%
OL-04 (Oltu)	38,603	Ballica	2,254	5.8%
		Orcuk	4,388	11.4%
		Basakli	5,207	13.5%
		Tutmac	3,425	8.9%
		Ozdere	4,752	12.3%
		Others	18,577	48.1%

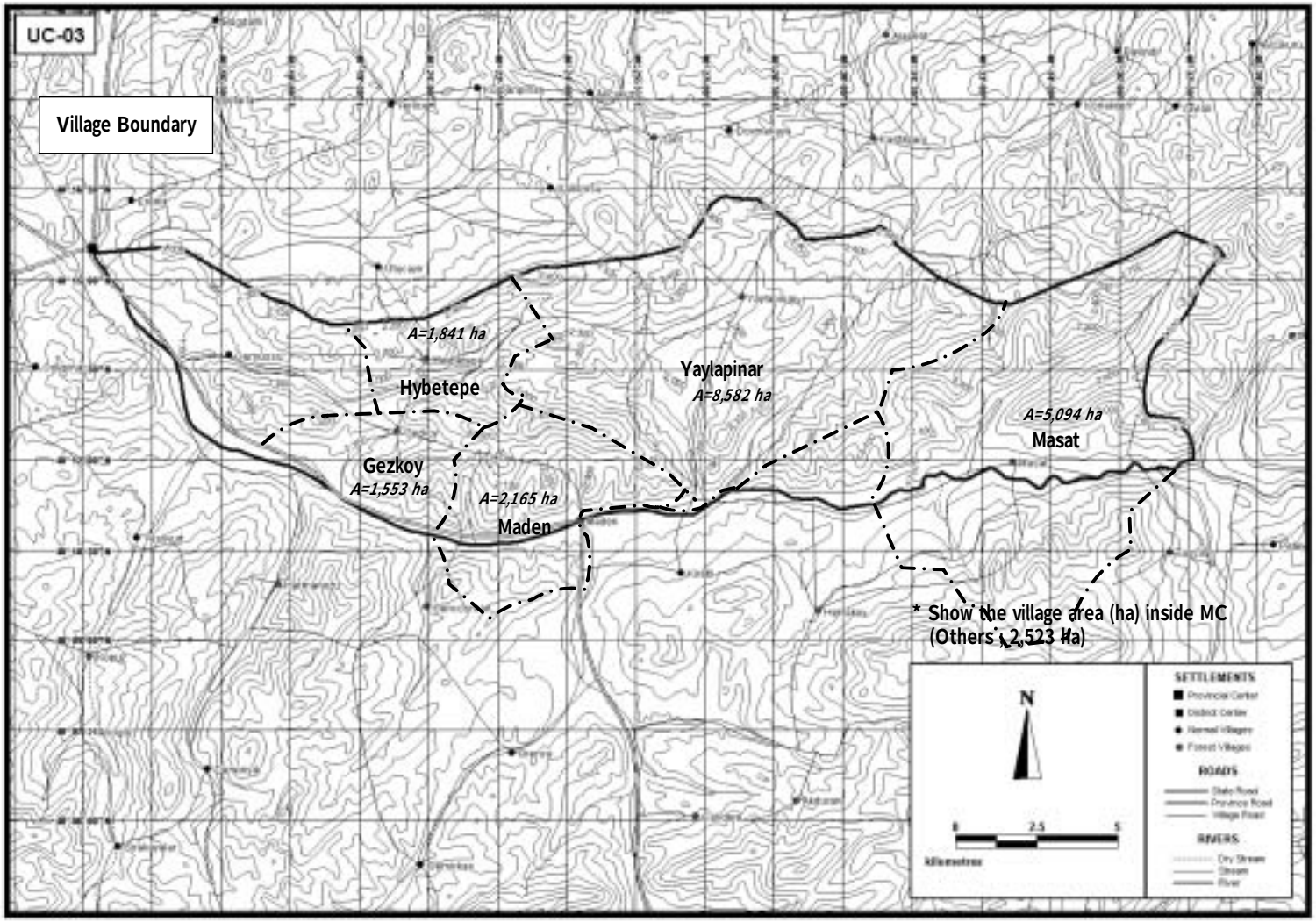
Annnotation; Show the village area (ha) inside MC only.

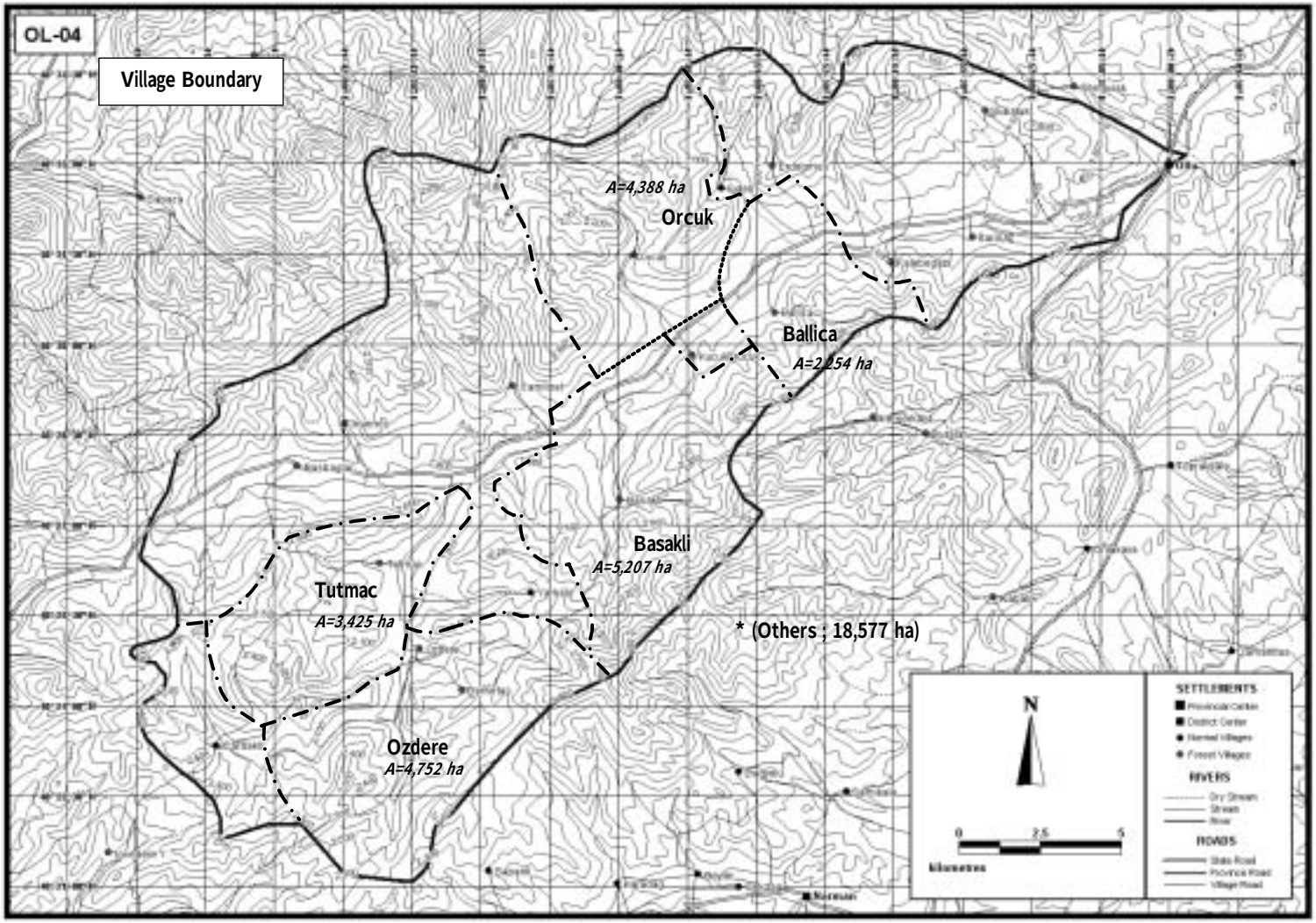

BT-04
Village Boundary
A=192 ha
Ciftlik
A=815 ha
Savas
A=2,525 ha
Kirecli
A=2,831 ha
Cavdarli
Hanli
A=4,014 ha
* Show the village Area (ha) in side MC.
(Others ; 8,824 ha)
N
SETTLEMENTS
ROADS
RIVERS


MC-03
Village boundary
Celtikduzu
A=5,675 ha
Kilickaya
A=8,344 ha
Alanbasi
A=5,333 ha
Bakirtepe
A=1,080 ha
*(Others ; 2,211 ha)
SETTLEMENTS
RIVERS
ROADS

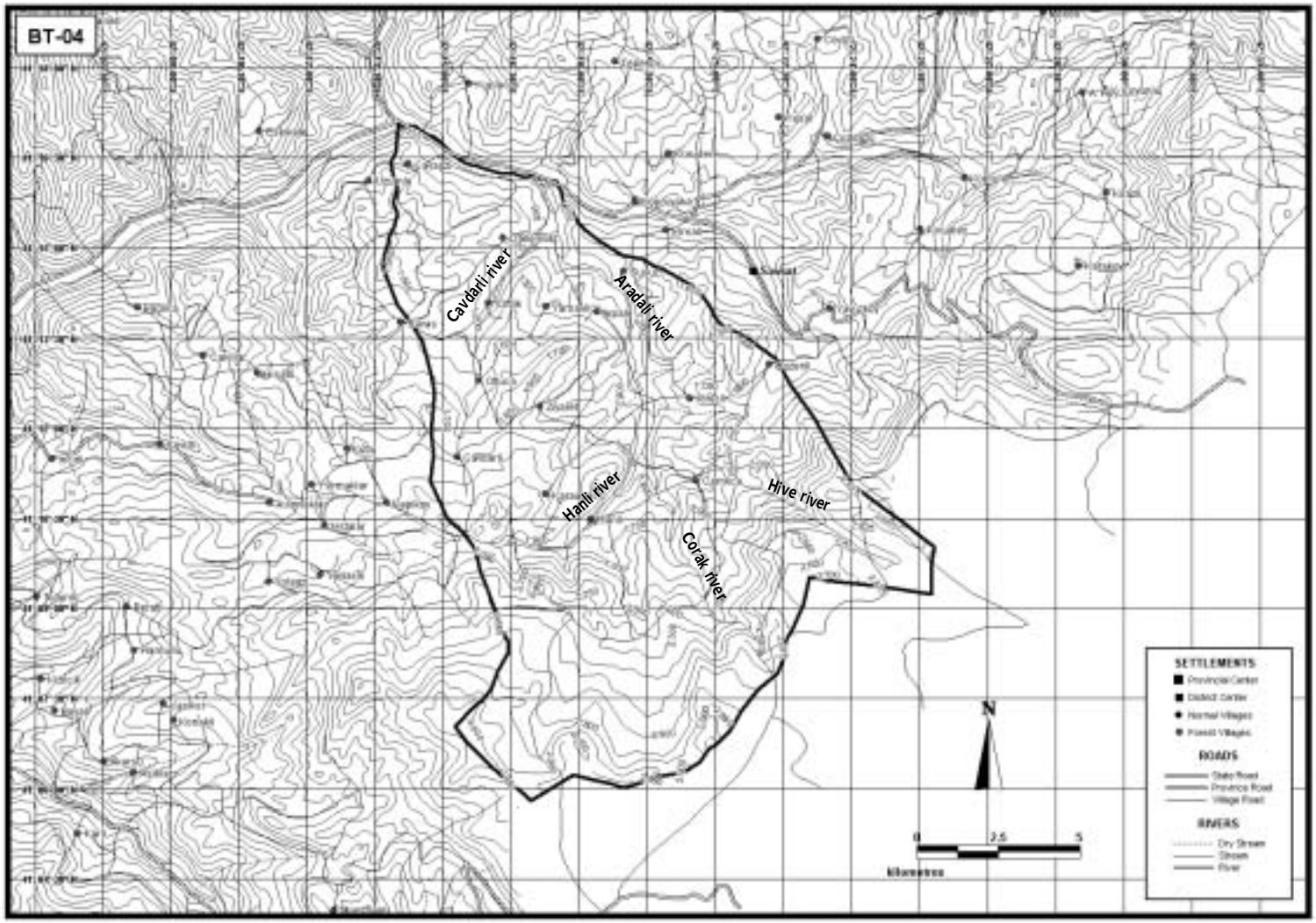

TR-06
Village Boundary
Caglayan
A=3,866 ha
Cevizli
A=5,675 ha
Altincanak
A=1,391 ha
Kirazli
A=5,472 ha
Sapaca
A=5,355 ha
*(Others ; 9,481 ha
N
SETTLEMENTS
RIVERS
ROADS

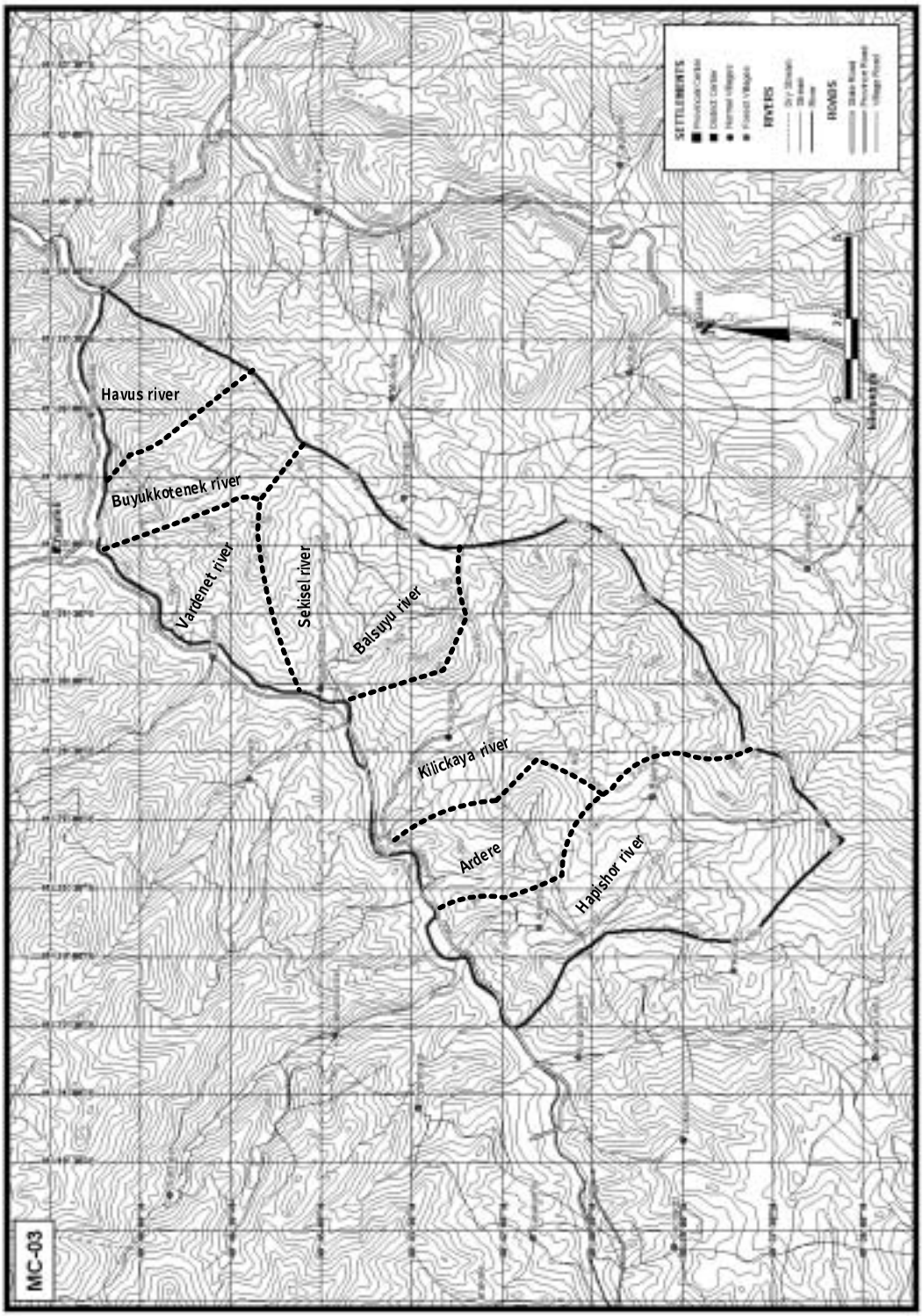

UC-14
Village Boundary
Lining of existing Canal
L=1,000 m
Gockoy
A=2,007 ha
Numanpasa
A=2,201 ha
Durkoy
A=1,994 ha
Kockoy
A=3,974 ha
Koprukoy
A=4,761 ha
* Others; 16,997 ha
N
SETTLEMENTS
RIVERS
ROADS
kilometres

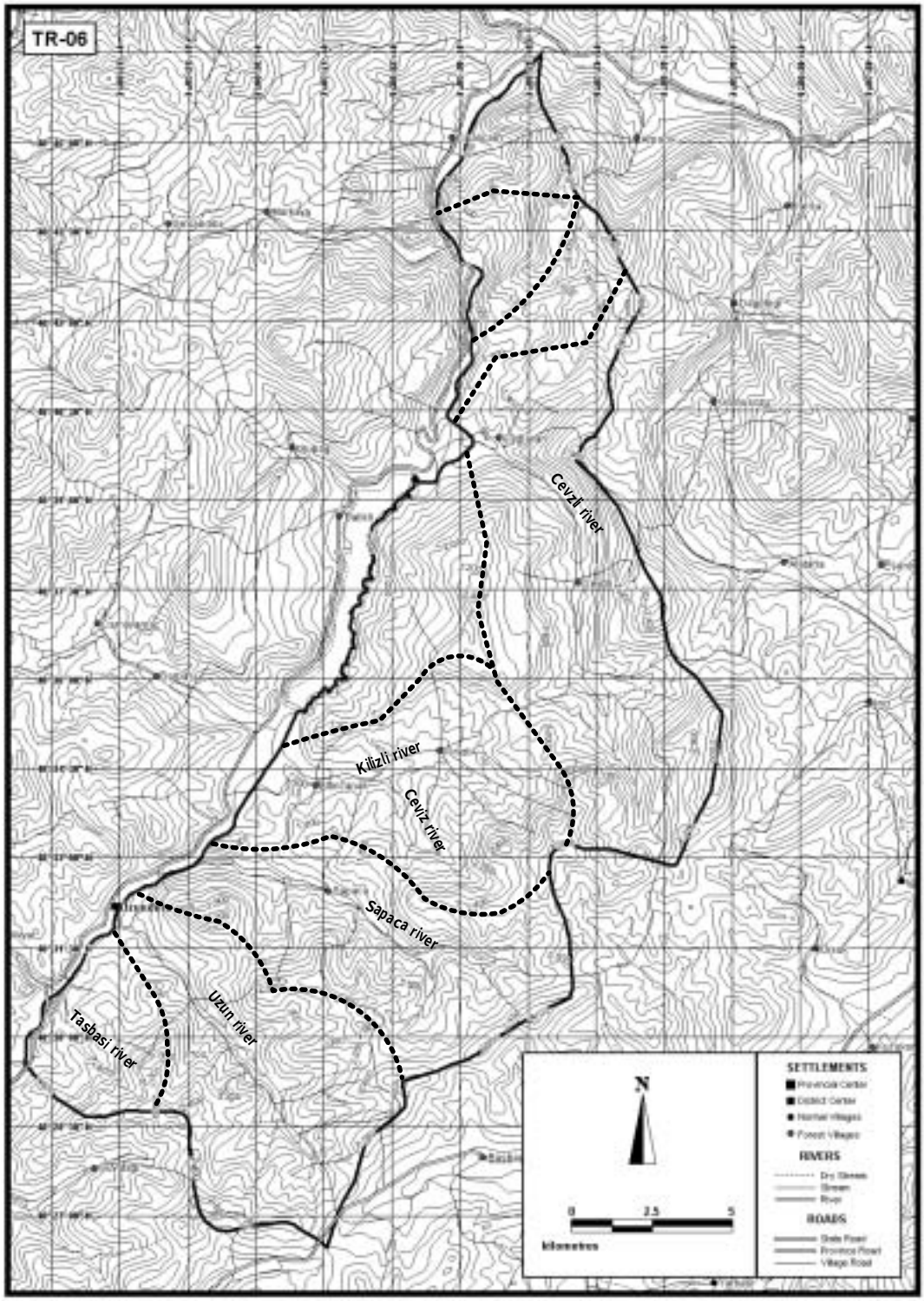

UC-03
Village Boundary
A=1,841 ha
Hybetepe
Yaylapinar
A=8,582 ha
A=5,094 ha
Masat
Gezkoy
A=1,553 ha
A=2,165 ha
Maden
* Show the village area (ha) inside MC
(Others : 2,523 Ha)
N
SETTLEMENTS
ROADS
RIVERS

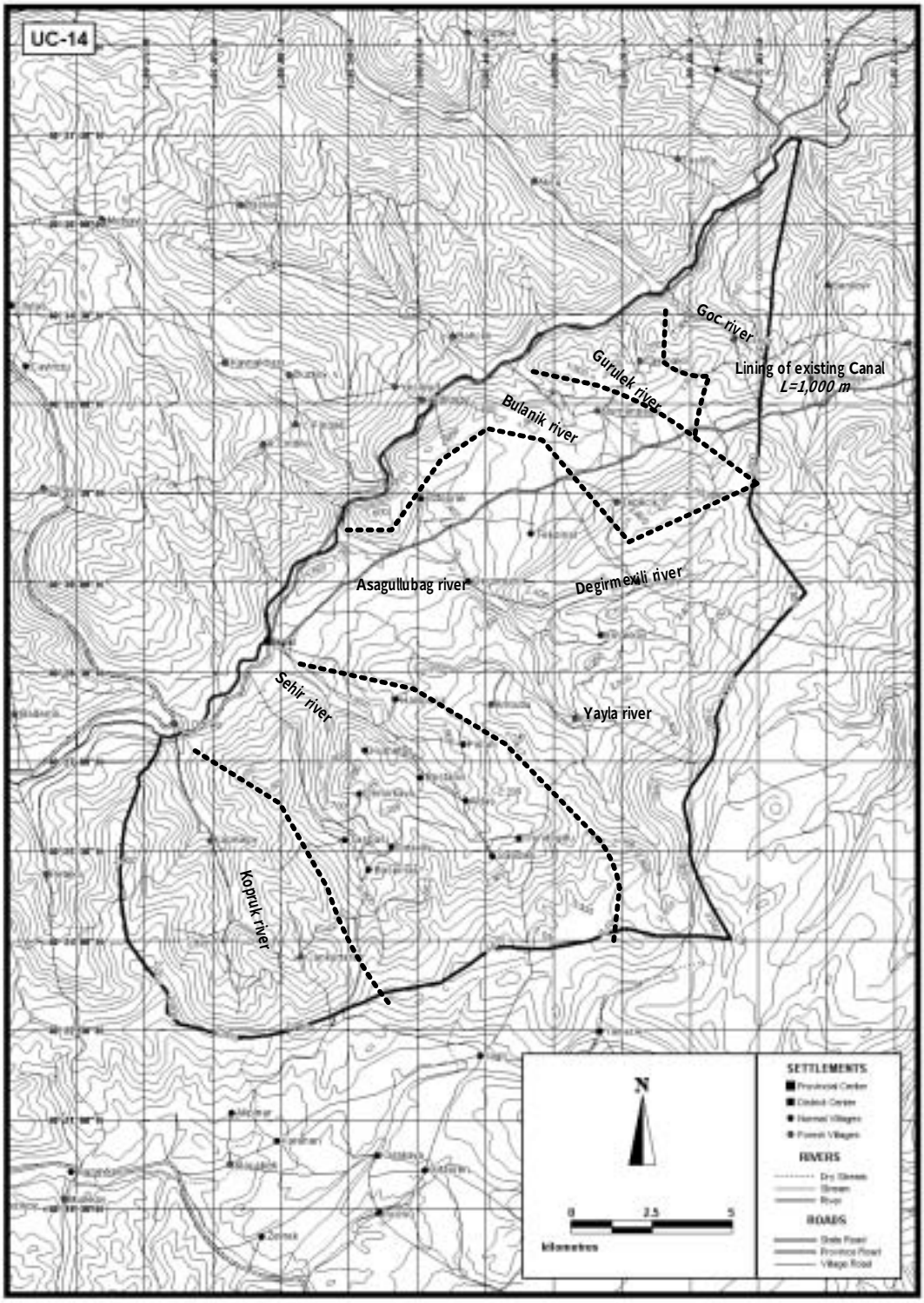

OL-04
Village Boundary
A=4,388 ha
Orcuk
Ballica
A=2,254 ha
Basakli
A=5,207 ha
Tutmac
A=3,425 ha
* (Others ; 18,577 ha)
Ozdere
A=4,752 ha
N
SETTLEMENTS
RIVERS
ROADS

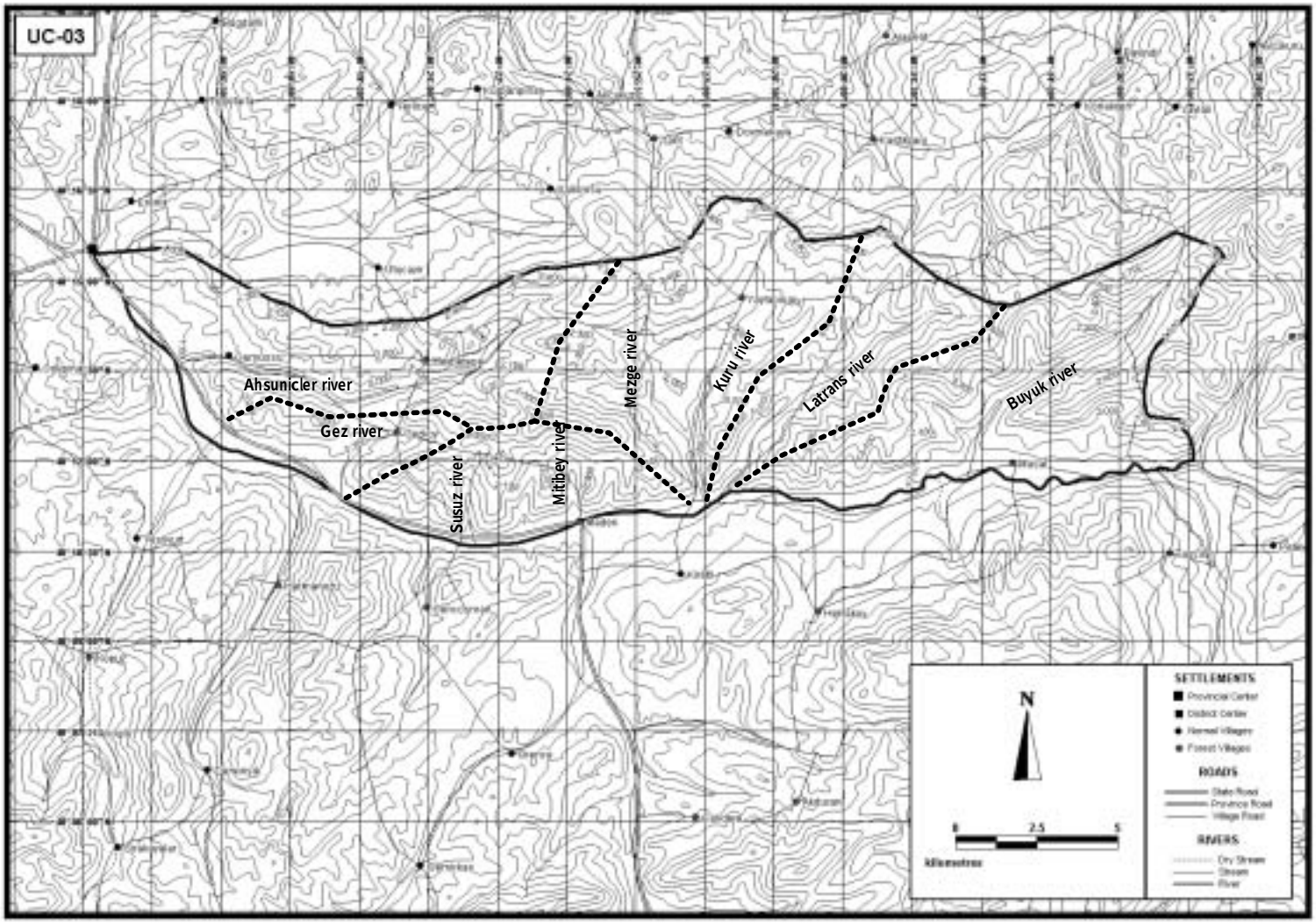
APPENDIX-B.4 CLASSIFICATION OF SUB-MICRO CATCEMENT

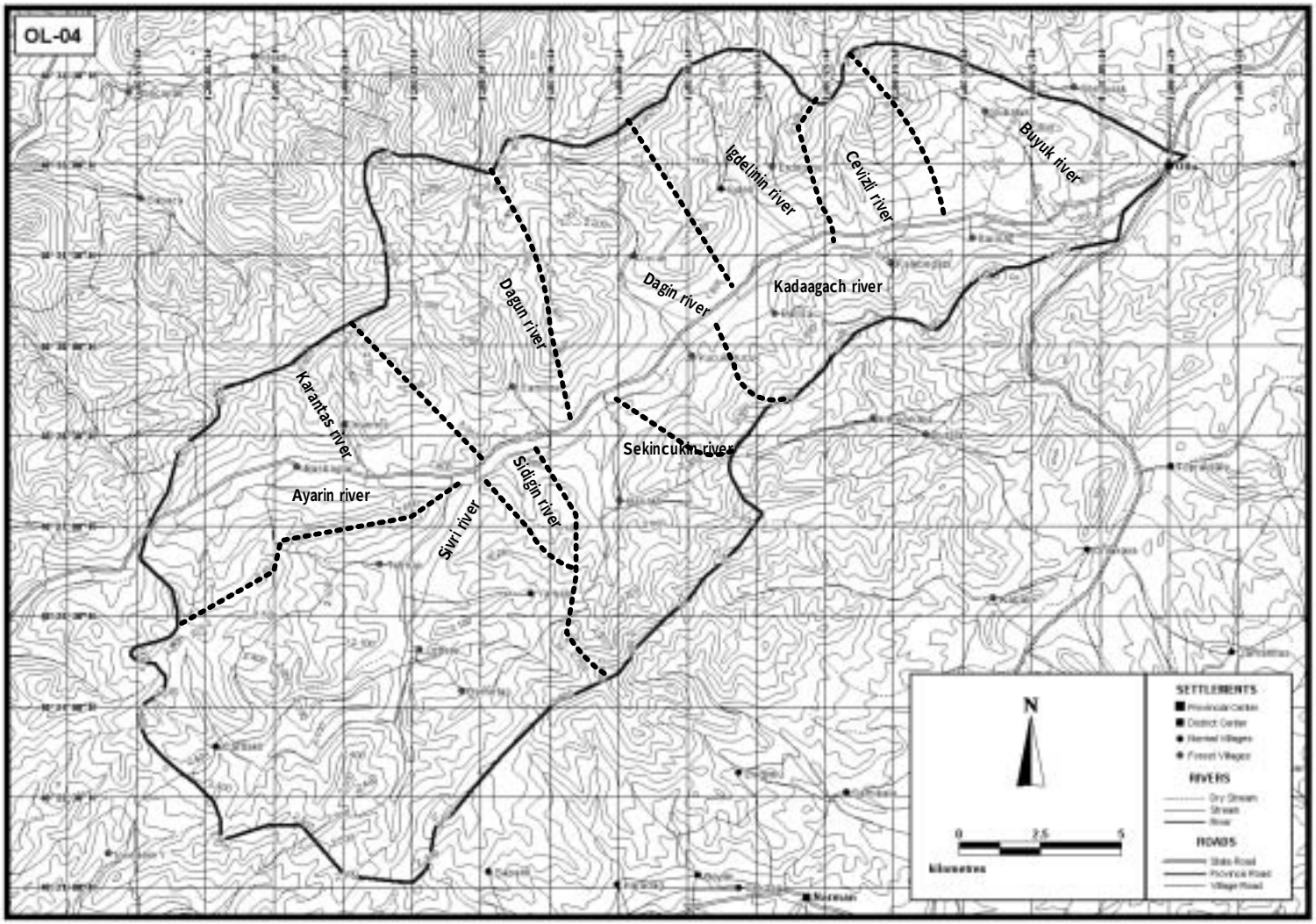

BT-04
Cavdarli river
Aradali river
Hanli river
Hive river
Corak river
N
0
2.5
5
SETTLEMENTS
Provincial Center
District Center
Normal Villages
Forest Villages
ROADS
State Road
Province Road
Village Road
RIVERS
Dry Stream
Stream
River


Havus river
Buyukkotenek river
Vardenet river
Sekisel river
Balsuyu river
Kilickaya river
Ardere
Hapishor river
MC-03

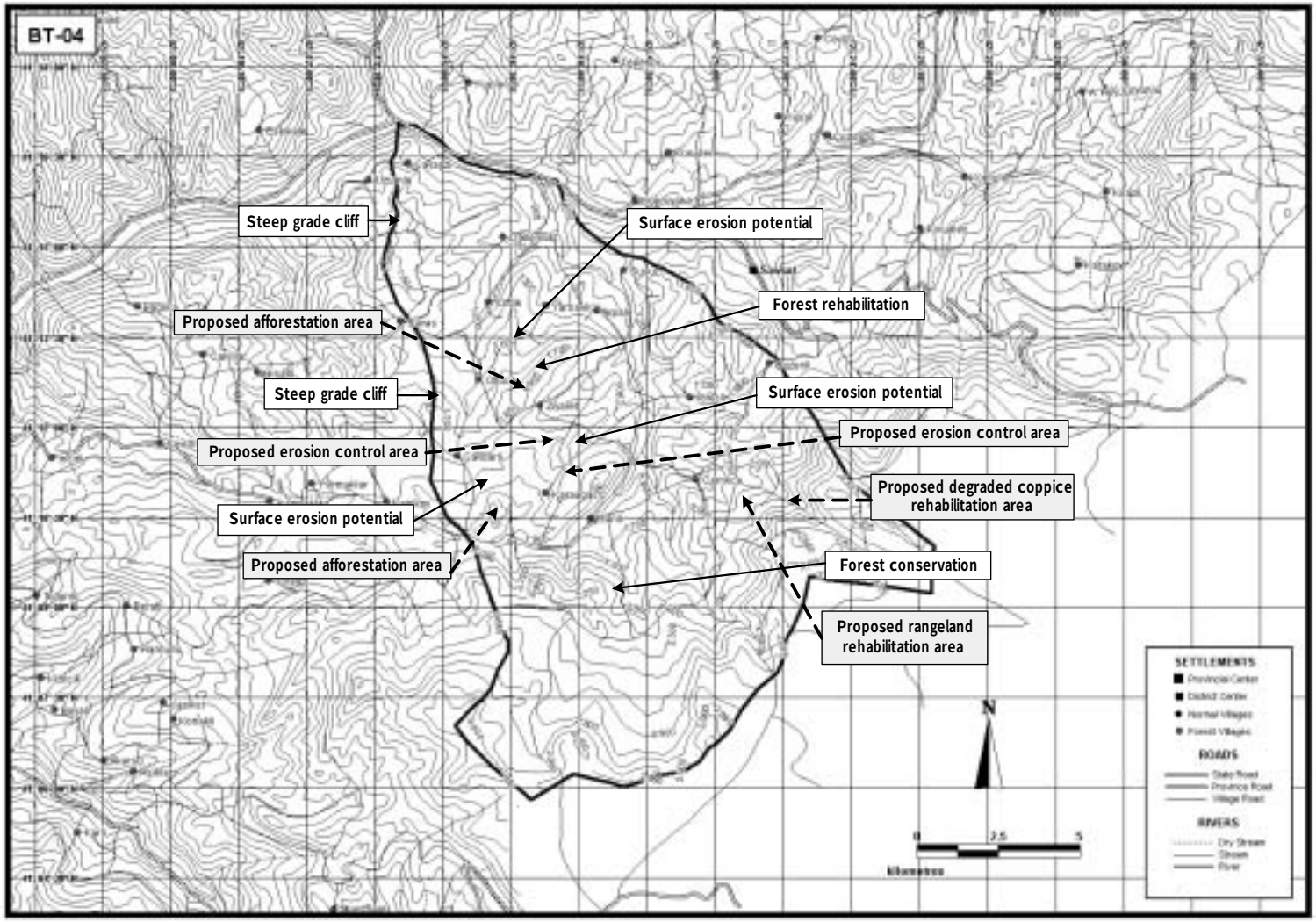

TR-06
Cevzl river
Kilizli river
Cevizr river
Sapaca river
Uzun river
Tasbasi river
N
0
2.5
5
kilometres
SETTLEMENTS
RIVERS
ROADS

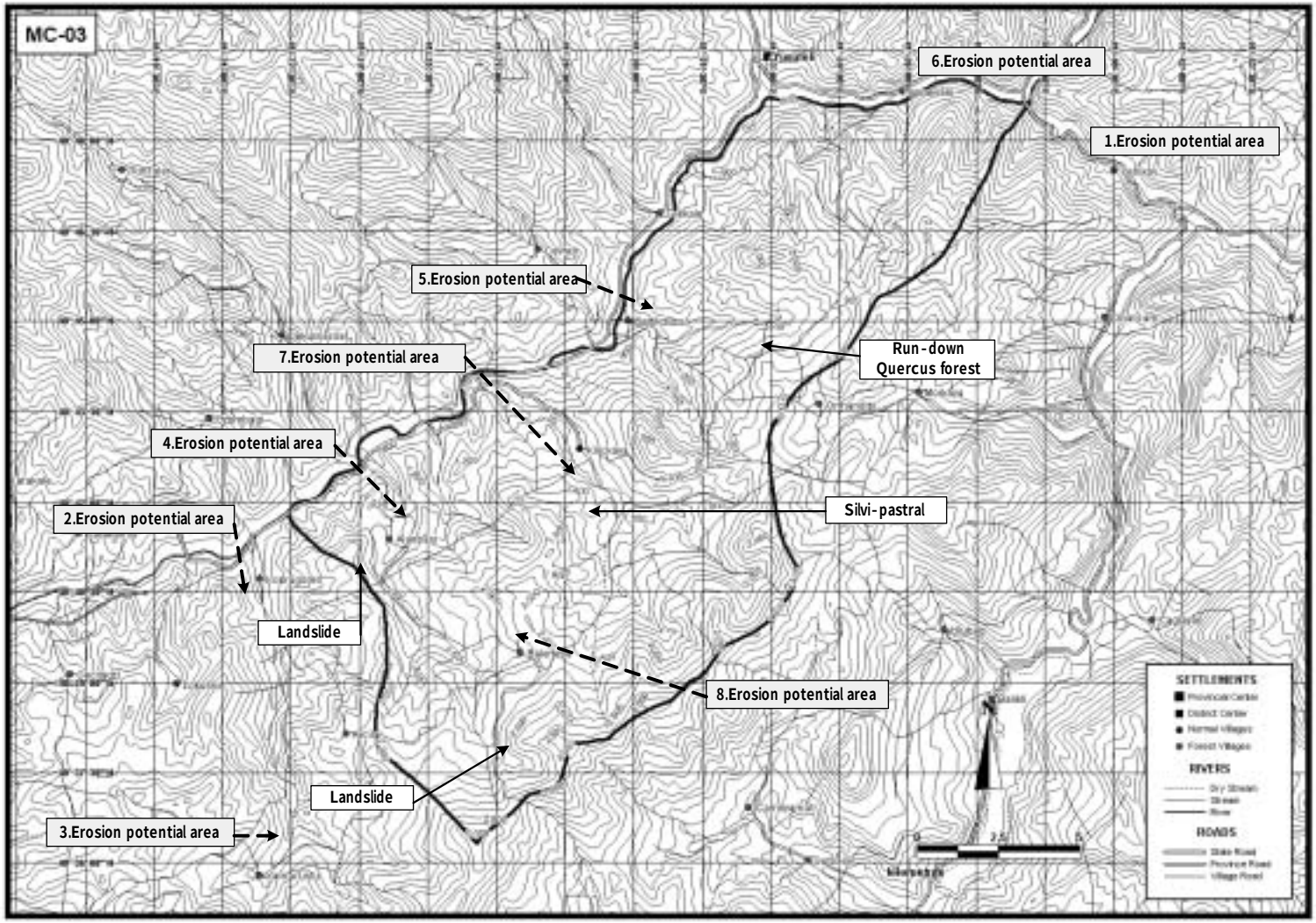

UC-14
Goc river
Gurulek river
Bulanik river
Lining of existing Canal
L=1,000 m
Asagullubag river
Degirmexili river
Sehir river
Yayla river
Kopruk river
N
SETTLEMENTS
RIVERS
ROADS
kilometres

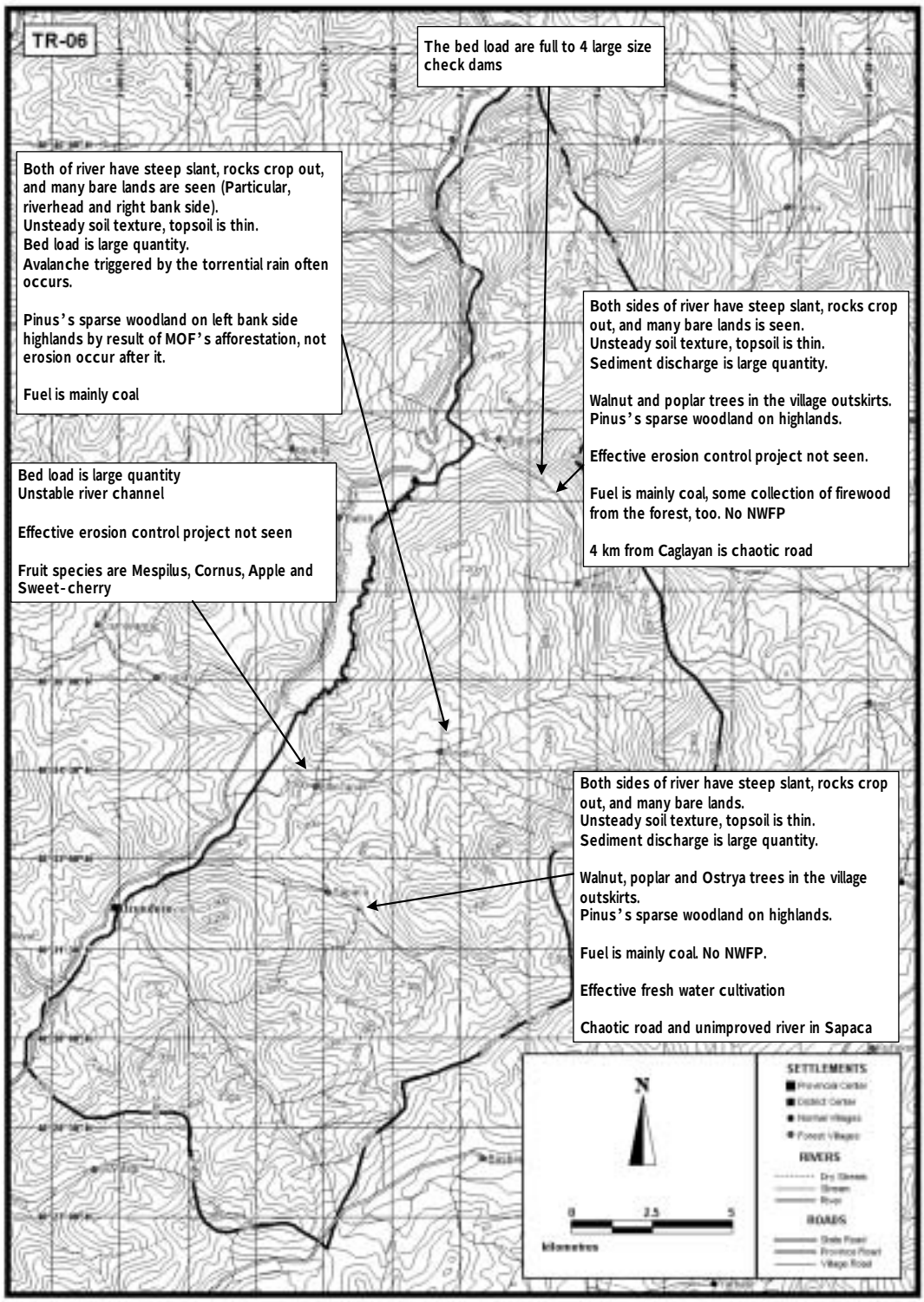

UC-03
Ahsunicler river
Gez river
Susuz river
Mitibey river
Mezge river
Kuru river
Latrans river
Buyuk river
N
0
2.5
5
Kilometres
SETTLEMENTS
Provincial Center
District Center
Kernel Villages
Forest Villages
ROADS
State Road
Province Road
Village Road
RIVERS
Dry Stream
Stream
River

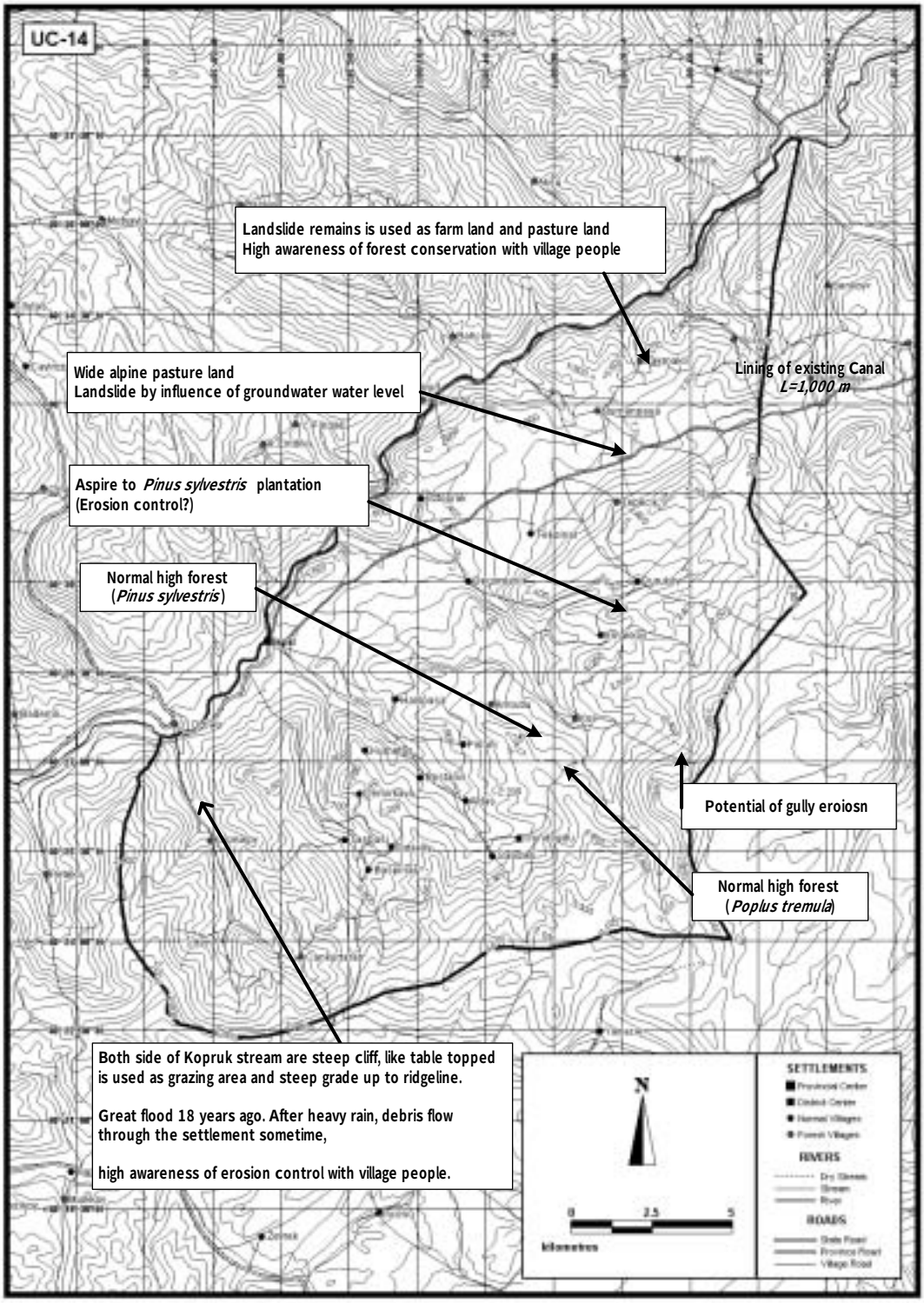

OL-04
Buyuk river
Cevizli river
Igdelinin river
Kadaagach river
Dagin river
Dagun river
Karantas river
Sekincukin river
Siligin river
Ayarin river
Sivri river
N
0
2.5
5
kilometres
SETTLEMENTS
RIVERS
ROADS

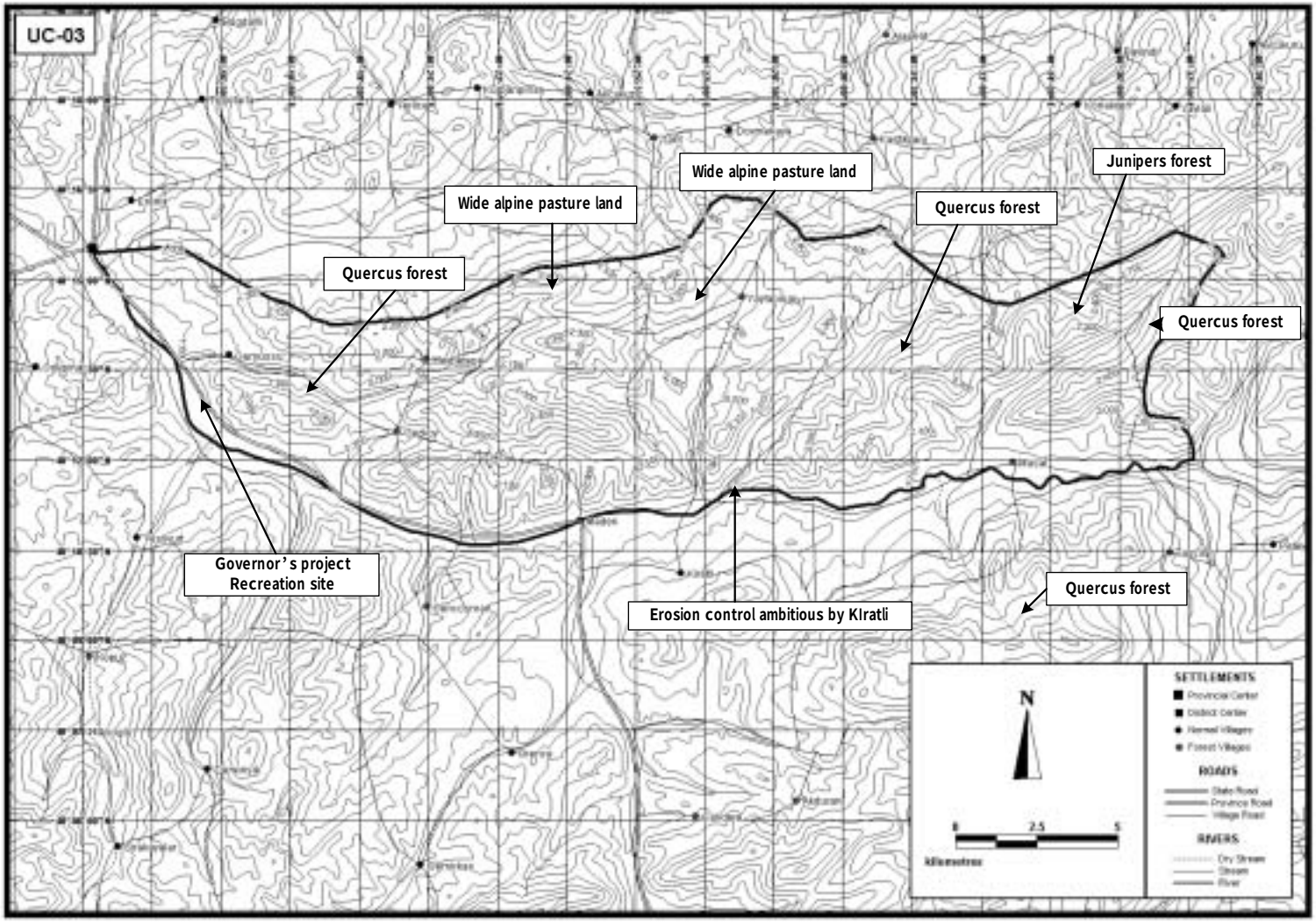
APPENDIX-B.5 IMPRESSION OF ON-SITE STUDY

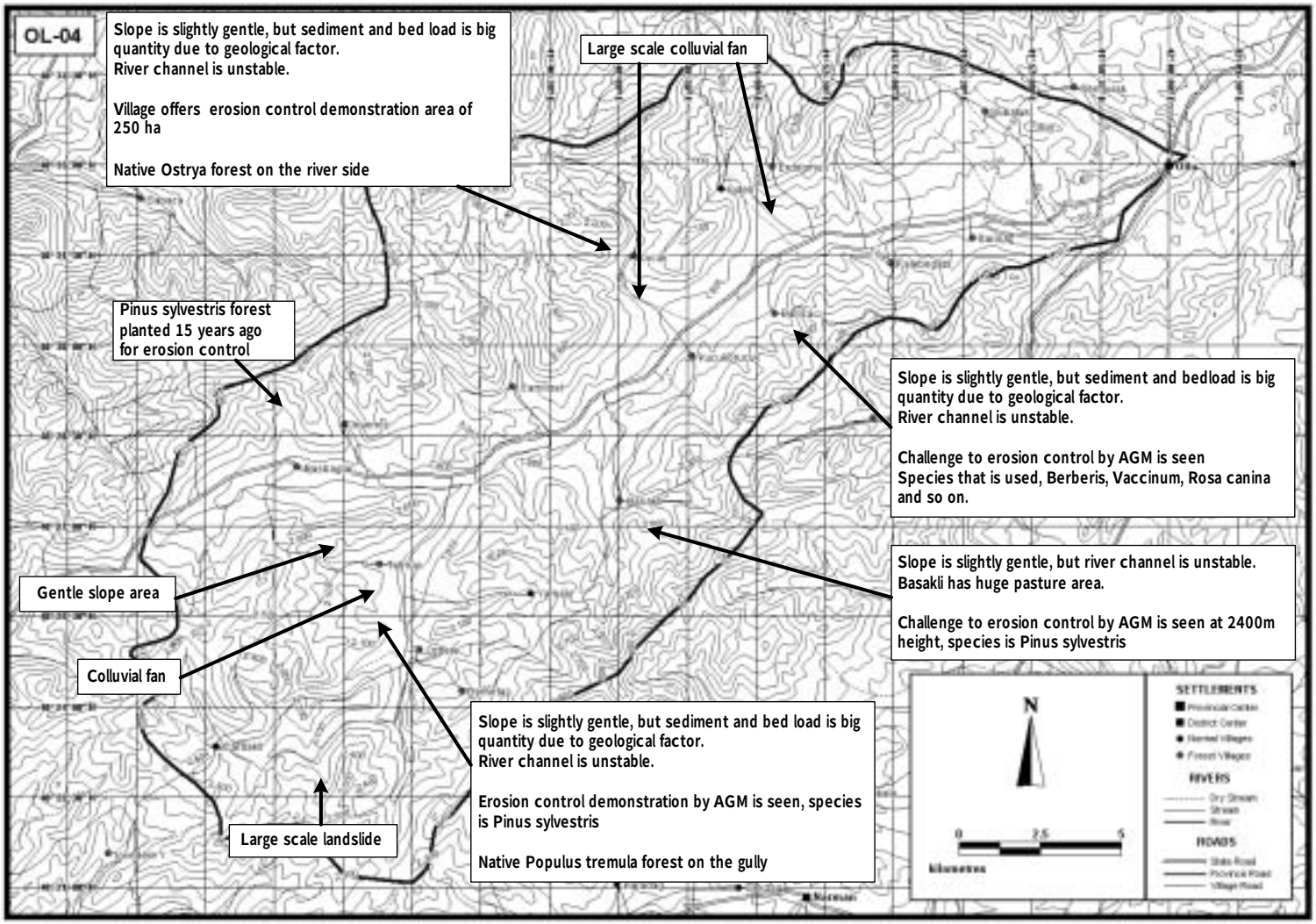

BT-04
Steep grade cliff
Surface erosion potential
Forest rehabilitation
Proposed afforestation area
Steep grade cliff
Surface erosion potential
Proposed erosion control area
Proposed erosion control area
Proposed degraded coppice rehabilitation area
Surface erosion potential
Proposed afforestation area
Forest conservation
Proposed rangeland rehabilitation area
N
SETTLEMENTS
ROADS
RIVERS


MC-03
6.Erosion potential area
1.Erosion potential area
5.Erosion potential area
7.Erosion potential area
Run-down
Quercus forest
4.Erosion potential area
Silvi-pastral
2.Erosion potential area
Landslide
8.Erosion potential area
Landslide
3.Erosion potential area
SETTLEMENTS
RIVERS
ROADS


TR-06
The bed load are full to 4 large size check dams
Both of river have steep slant, rocks crop out, and many bare lands are seen (Particular, riverhead and right bank side).
Unsteady soil texture, topsoil is thin.
Bed load is large quantity.
Avalanche triggered by the torrential rain often occurs.
Pinus's sparse woodland on left bank side highlands by result of MOF's afforestation, not erosion occur after it.
Fuel is mainly coal
Both sides of river have steep slant, rocks crop out, and many bare lands is seen.
Unsteady soil texture, topsoil is thin.
Sediment discharge is large quantity.
Walnut and poplar trees in the village outskirts.
Pinus's sparse woodland on highlands.
Effective erosion control project not seen.
Fuel is mainly coal, some collection of firewood from the forest, too. No NWFP
4 km from Caglayan is chaotic road
Bed load is large quantity
Unstable river channel
Effective erosion control project not seen
Fruit species are Mespilus, Cornus, Apple and Sweet-cherry
Both sides of river have steep slant, rocks crop out, and many bare lands.
Unsteady soil texture, topsoil is thin.
Sediment discharge is large quantity.
Walnut, poplar and Ostrya trees in the village outskirts.
Pinus's sparse woodland on highlands.
Fuel is mainly coal. No NWFP.
Effective fresh water cultivation
Chaotic road and unimproved river in Sapaca
N
SETTLEMENTS
RIVERS
ROADS


UC-14
Landslide remains is used as farm land and pasture land
High awareness of forest conservation with village people
Lining of existing Canal
L=1,000 m
Wide alpine pasture land
Landslide by influence of groundwater water level
Aspire to Pinus sylvestris plantation
(Erosion control?)
Normal high forest
(Pinus sylvestris)
Potential of gully eroiosn
Normal high forest
(Poplus tremula)
Both side of Kopruk stream are steep cliff, like table topped is used as grazing area and steep grade up to ridgeline.
Great flood 18 years ago. After heavy rain, debris flow through the settlement sometime,
high awareness of erosion control with village people.
N
SETTLEMENTS
RIVERS
ROADS


UC-03
Wide alpine pasture land
Wide alpine pasture land
Junipers forest
Quercus forest
Quercus forest
Quercus forest
Governor's project
Recreation site
Erosion control ambitious by KIratli
Quercus forest
N
SETTLEMENTS
ROADS
RIVERS


OL-04
Slope is slightly gentle, but sediment and bed load is big quantity due to geological factor.
River channel is unstable.
Village offers erosion control demonstration area of 250 ha
Native Ostrya forest on the river side
Large scale colluvial fan
Pinus sylvestris forest planted 15 years ago for erosion control
Slope is slightly gentle, but sediment and bedload is big quantity due to geological factor.
River channel is unstable.
Challenge to erosion control by AGM is seen
Species that is used, Berberis, Vaccinum, Rosa canina and so on.
Slope is slightly gentle, but river channel is unstable.
Basakli has huge pasture area.
Challenge to erosion control by AGM is seen at 2400m height, species is Pinus sylvestris
Gentle slope area
Colluvial fan
Slope is slightly gentle, but sediment and bed load is big quantity due to geological factor.
River channel is unstable.
Erosion control demonstration by AGM is seen, species is Pinus sylvestris
Native Populus tremula forest on the gully
Large scale landslide
N
SETTLEMENTS
RIVERS
ROADS

APPENDIX-B.6 CALCULATION OF WATER BALANCE BY THORNWAITE'S CILMATIC CLASSIFICATION MATHOD

Examined relation of the precipitation and evapotranspiration potential. For purpose of a judgment of adequate planting period and plating method.

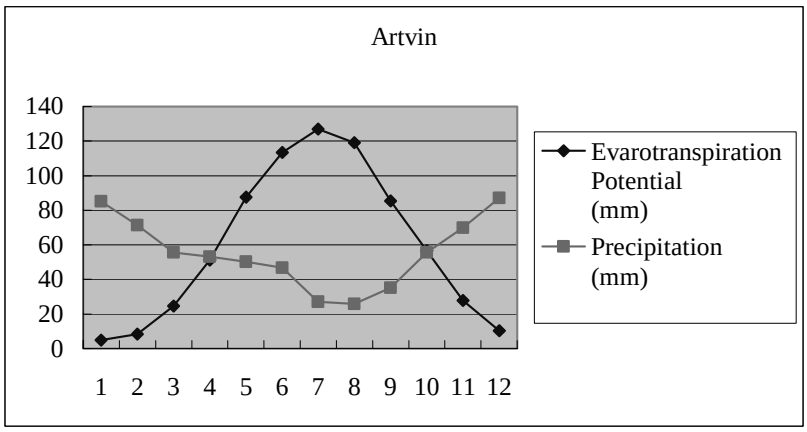
Classified climatic types based on Thornwaite method, according to result of analysis, all MCs belong Subarid climate type. It was estimated that significantly water shortage in summer in all MCs but surplus of water did not have in Yusufeli and Oltu in the summer.

Compared the monthly evapotranspiration potential that demanded by calculation with precipitation, and calculated surplus quantity and shortage quantity of water of every month. According to this analysis, water is short in Artvin between April to October、May to September in Bayburt, March to November in Yusufeli, May to October in Tortum and April to November in Oltu.

By the analysis could understand adequate planting period that is limited in early autumn or late fall. In addition, some measures will be needed after planting for keep moisture surrounding plant root.

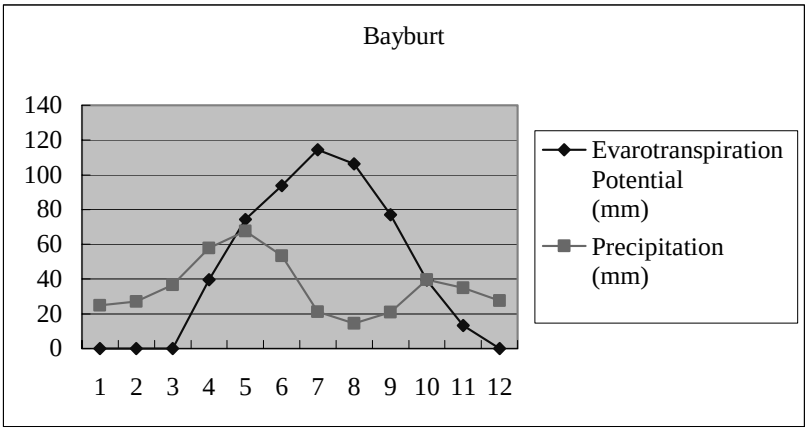
Artvin

Month	Evarotranspiration Potential (mm)	Precipitation (mm)	**Thornwaite's Climatic Index**		**Climate type**	**Aspect**
1	4.98	85.1	Moisture Index	27.2	W2	Significant water surplus in summer
2	8.3	71.4	Indices of Humidity	34.6	S1	Significant water shortage in summer
3	24.72	55.6	Indices of Aridity	6.5	C2 Type	Subhumid
4	51.06	53.1				
5	87.5	50.3				
6	113.4	46.8				
7	127	27				
8	119	25.8				
9	85.28	35.1				
10	56.64	55.6				
11	27.88	70				
12	10.4	87.1				
Total	716.16	662.9				



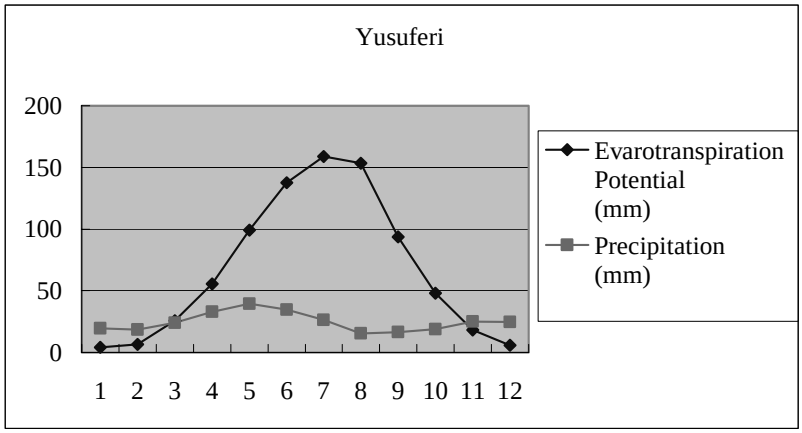
Bayburt

Month	Evarotranspiration Potential (mm)	Precipitation (mm)	**Thornwaite's Climatic Index**		**Climate type**	**Aspect**
1	0	24.8	Moisture Index	10.2	W	Moderate water surplus in winter
2	0	27.1	Indices of Humidity	33.7	S1	Significant water shortage in summer
3	0	36.6	Indices of Aridity	-10.0	C1Type	Subarid
4	39.6	57.8				
5	74.4	67.6				
6	93.75	53.4				
7	114.3	21.2				
8	106.2	14.6				
9	76.96	20.9				
10	39.36	39.7				
11	13.28	35				
12	0	27.5				
Total	557.85	426.2				



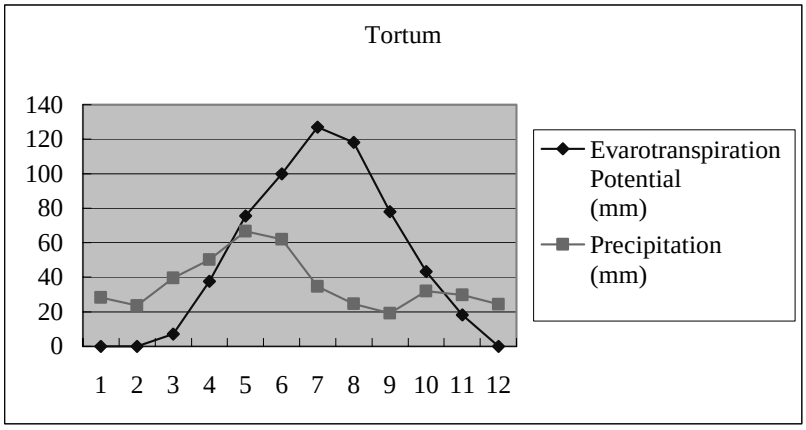
Yusuferi

Month	Evarotranspiration Potential (mm)	Precipitation (mm)	**Thornwaite's Climatic Index**		**Climate type**	**Aspect**
1	4.2	19.4	Moisture Index	0.0	d	Is not a surplus of water
2	6.64	18.5	Indices of Humidity	63.4	S1	Significant water shortage in summer
3	25.75	24.1	Indices of Aridity	-38.0	C1Type	Subarid
4	55.5	33				
5	99.2	39.3				
6	137.5	34.7				
7	158.75	26.3				
8	153.4	15.6				
9	93.6	16.4				
10	48	19				
11	18.26	25				
12	5.67	24.6				
Total	806.47	295.9				



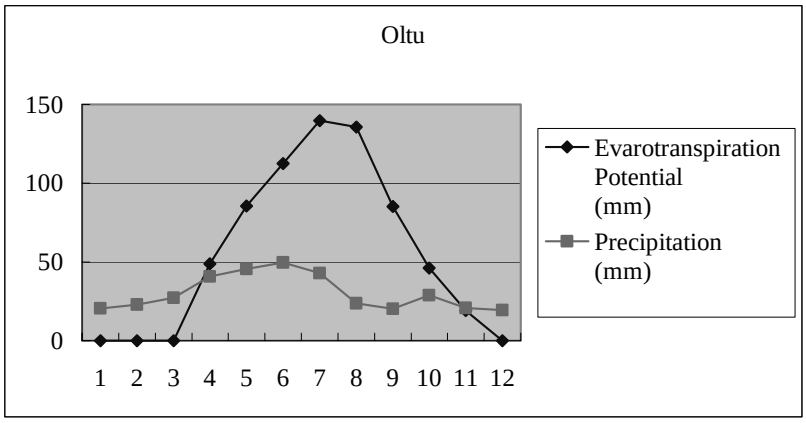
Tortum

Month	Evarotranspiration Potential (mm)	Precipitation (mm)	**Thornwaite's Climatic Index**		**Climate type**	**Aspect**
1	0	28.4	Moisture Index	5.3	d	Few surpluses of water
2	0	23.6	Indices of Humidity	33.5	S1	Significant water shortage in summer
3	7.21	39.5	Indices of Aridity	-14.8	C1Type	Subarid
4	37.74	50.1				
5	75.64	66.6				
6	100	62.1				
7	127	34.6				
8	118	24.5				
9	78	19.2				
10	43.2	32				
11	18.26	29.8				
12	0	24.4				
Total	605.05	434.8				



Oltu

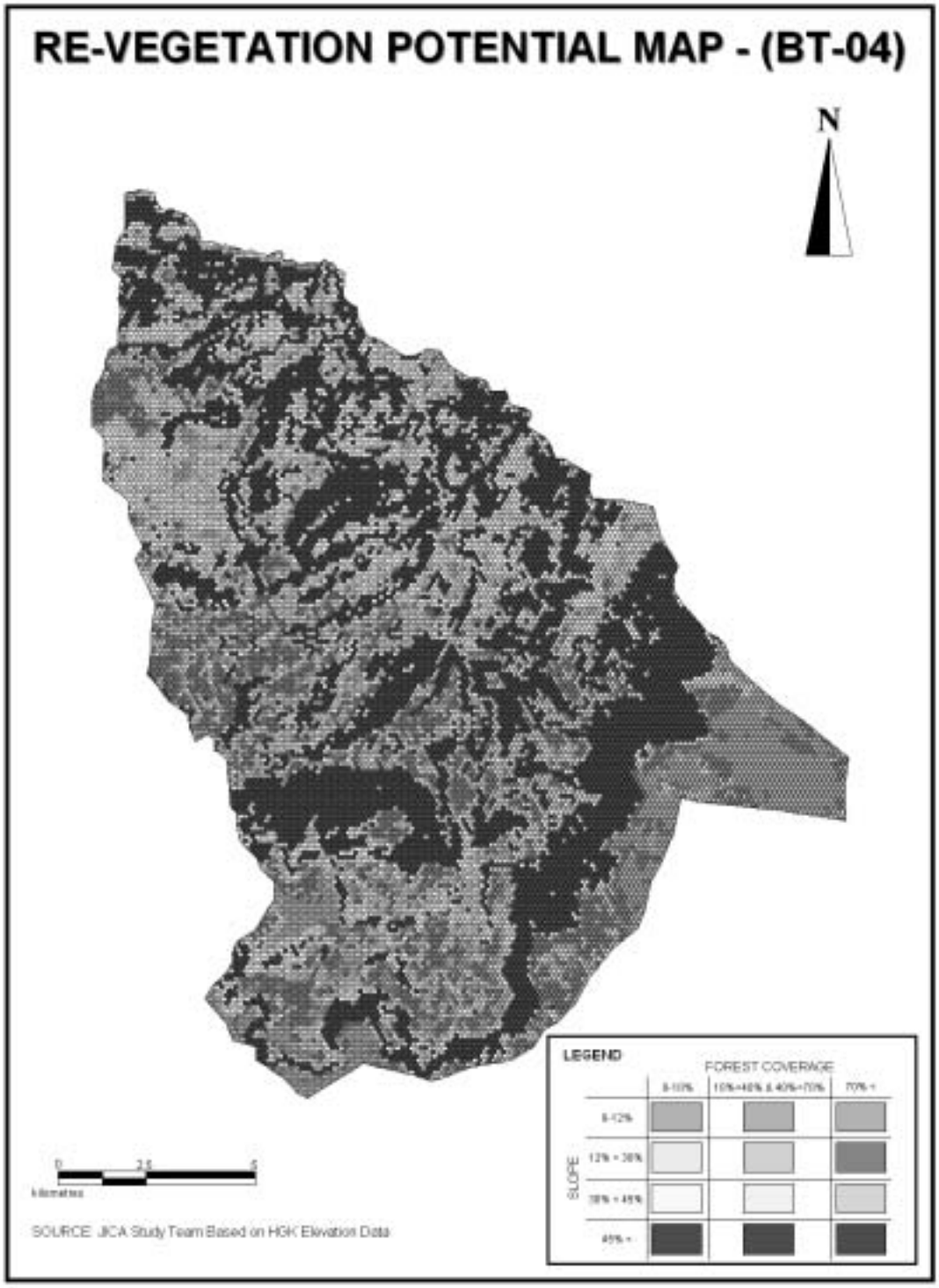
Month	Evarotranspiration Potential (mm)	Precipitation (mm)	**Thornwaite's Climatic Index**		**Climate type**	**Aspect**
5	0	20.4	Moisture Index	0.0	d	Is not a surplus of water
2	0	23	Indices of Humidity	46.1	S1	Significant water shortage in summer
3	0	27.2	Indices of Aridity	-27.6	C1Type	Subarid
4	48.84	40.7				
5	85.56	45.6				
6	112.5	49.6				
7	139.7	42.8				
8	135.7	23.7				
9	85.28	20.2				
10	46.08	28.8				
11	19.09	20.8				
12	0	19.5				
Total	672.75	362.3				



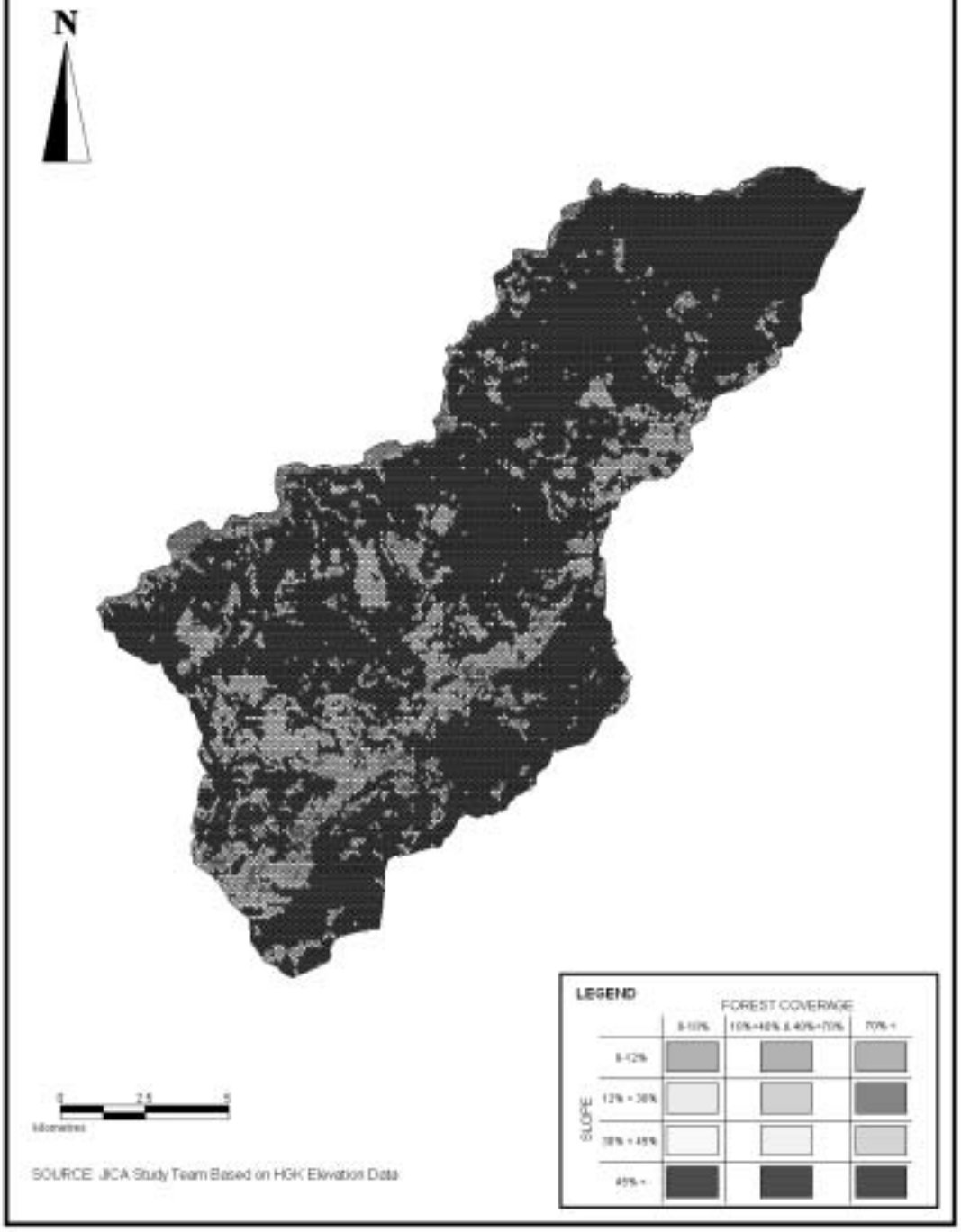
APPENDIX-B.7 THE RE-VEGETATION POTENTIAL MAP, SLOPE MAP AND LANDUSE AND VEGETATION MAP

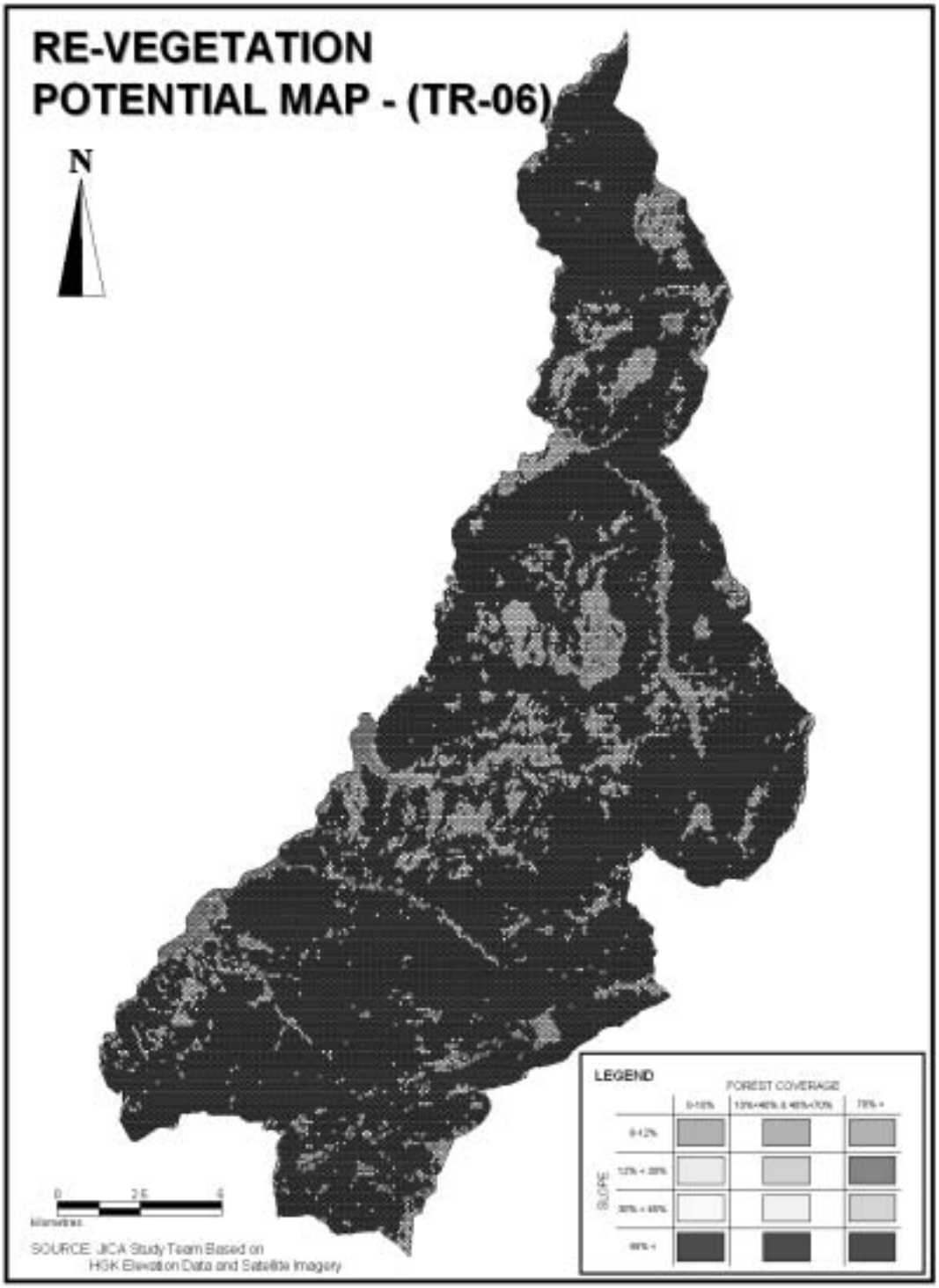
The vegetative activities in the proposed activities for rehabilitation and management of the natural resurgences have selected to kind of measures which refer to the Re-vegetation Potential Map in the following.

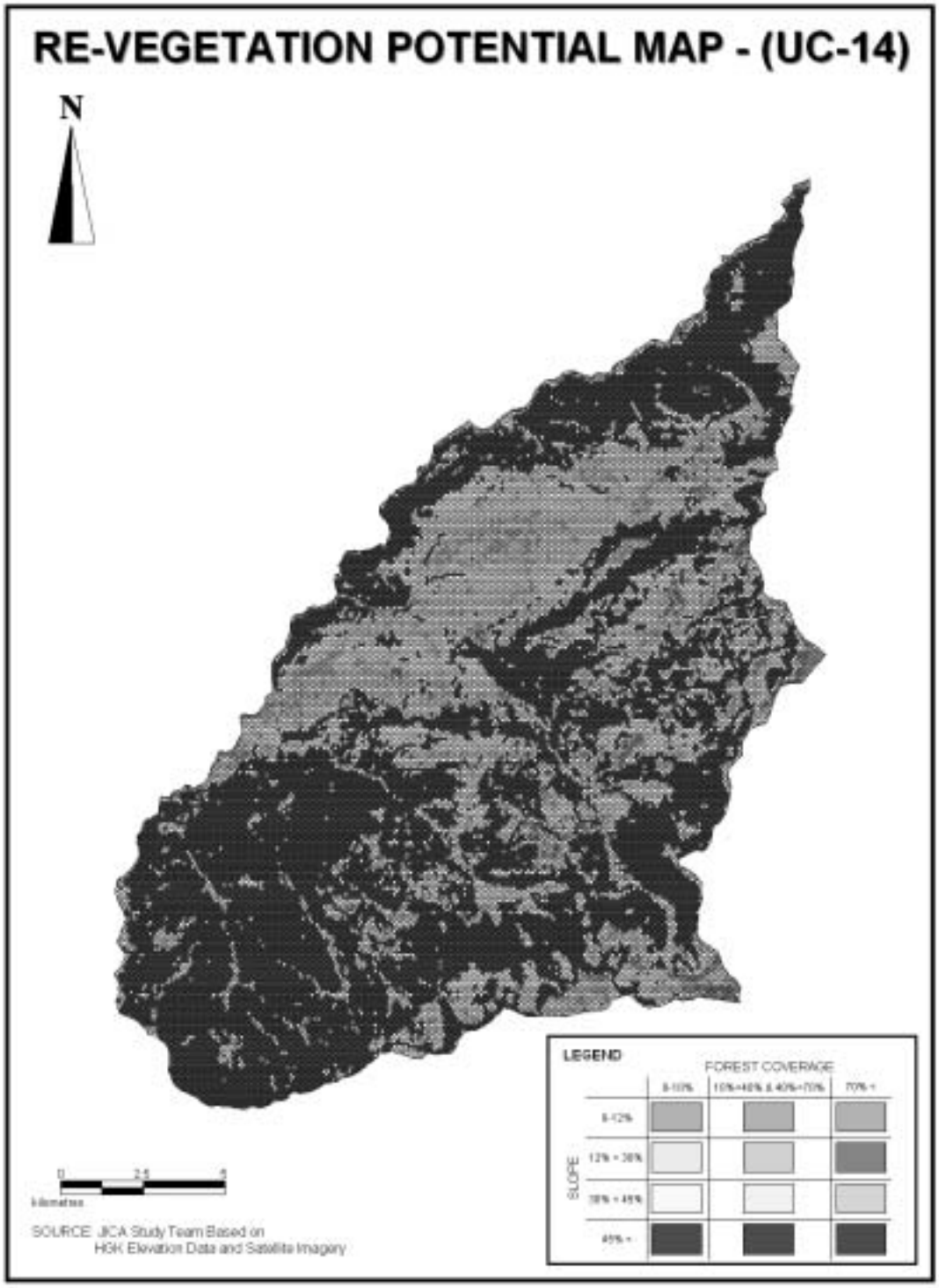
This Re-vegetation Potential Map have prepared on the basis of the Slope Map and the Landuse and Vegetation Map.

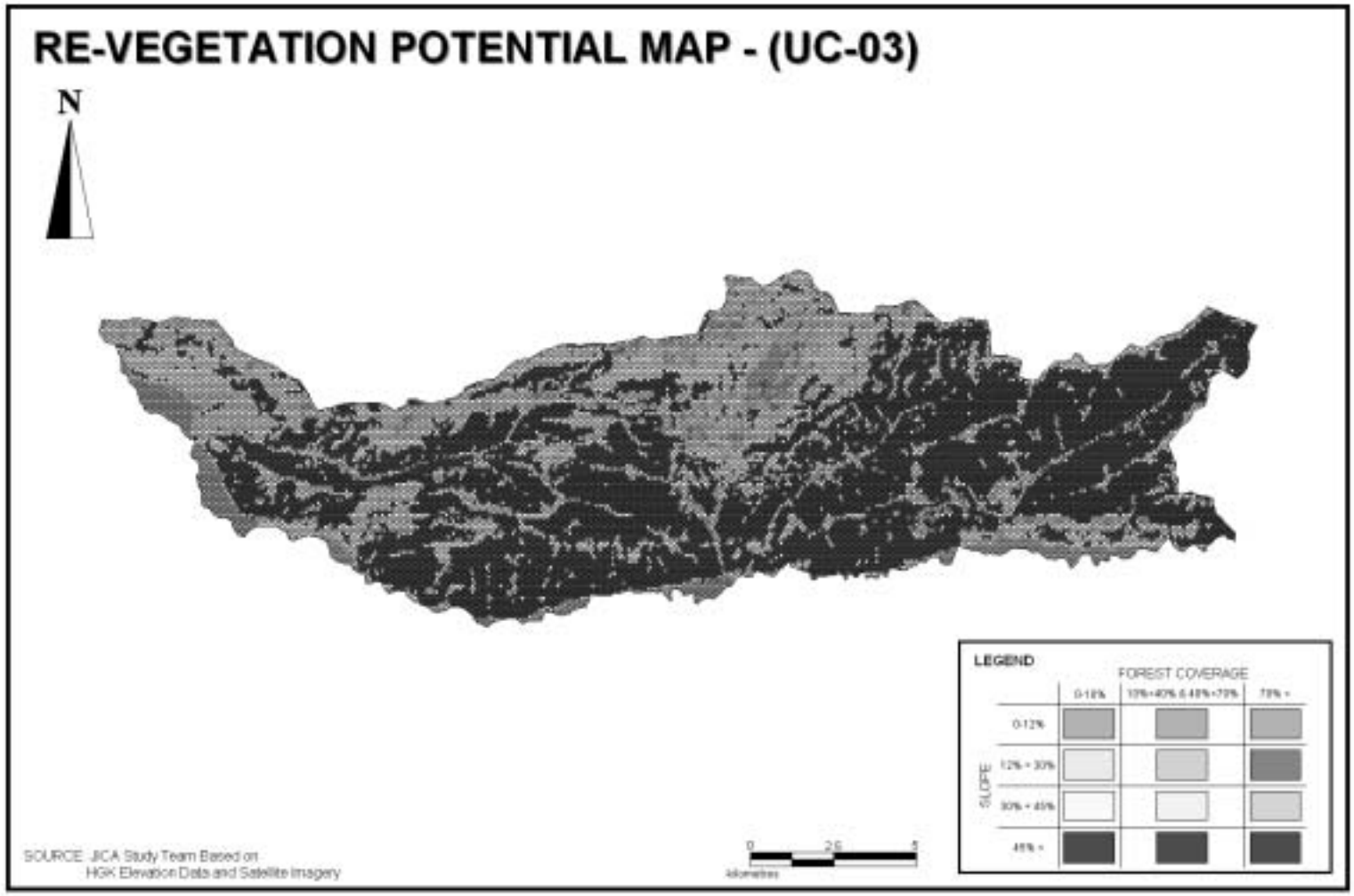

RE-VEGETATION POTENTIAL MAP - (BT-04)
N
LEGEND
FOREST COVERAGE
SLOPE
SOURCE: JICA Study Team Based on HGK Elevation Data

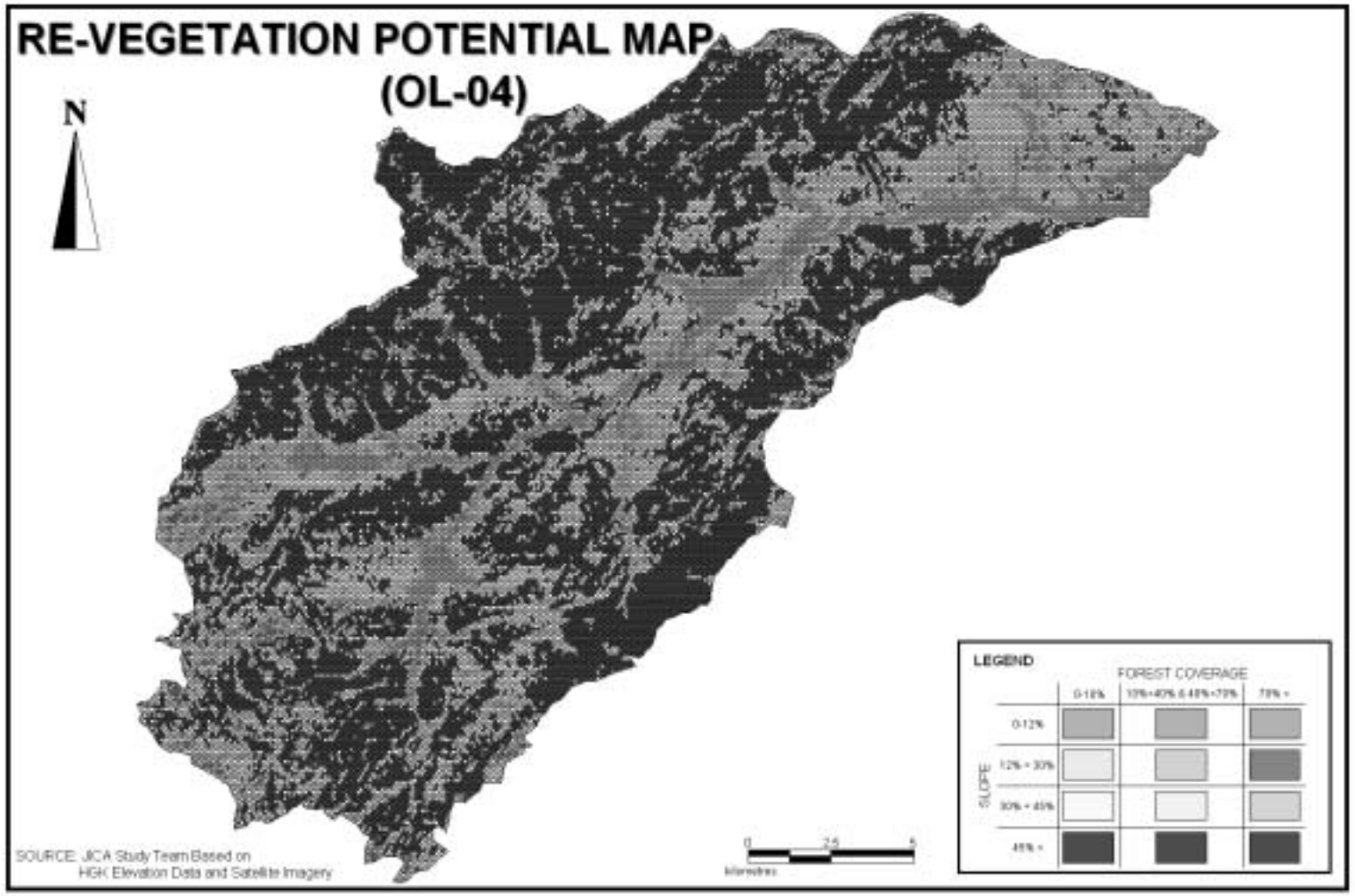
RE-VEGETATION POTENTIAL MAP - (MC-03)

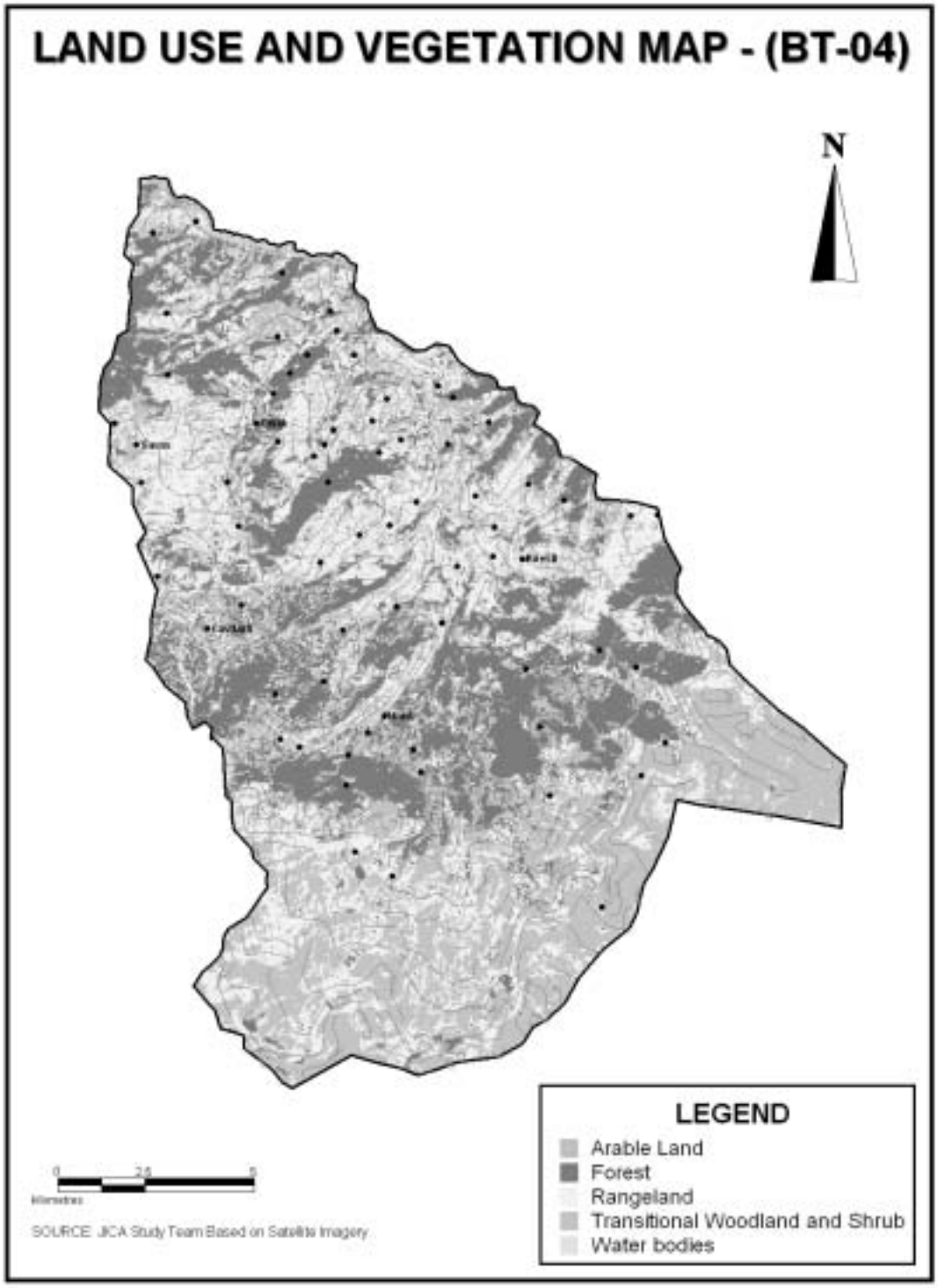


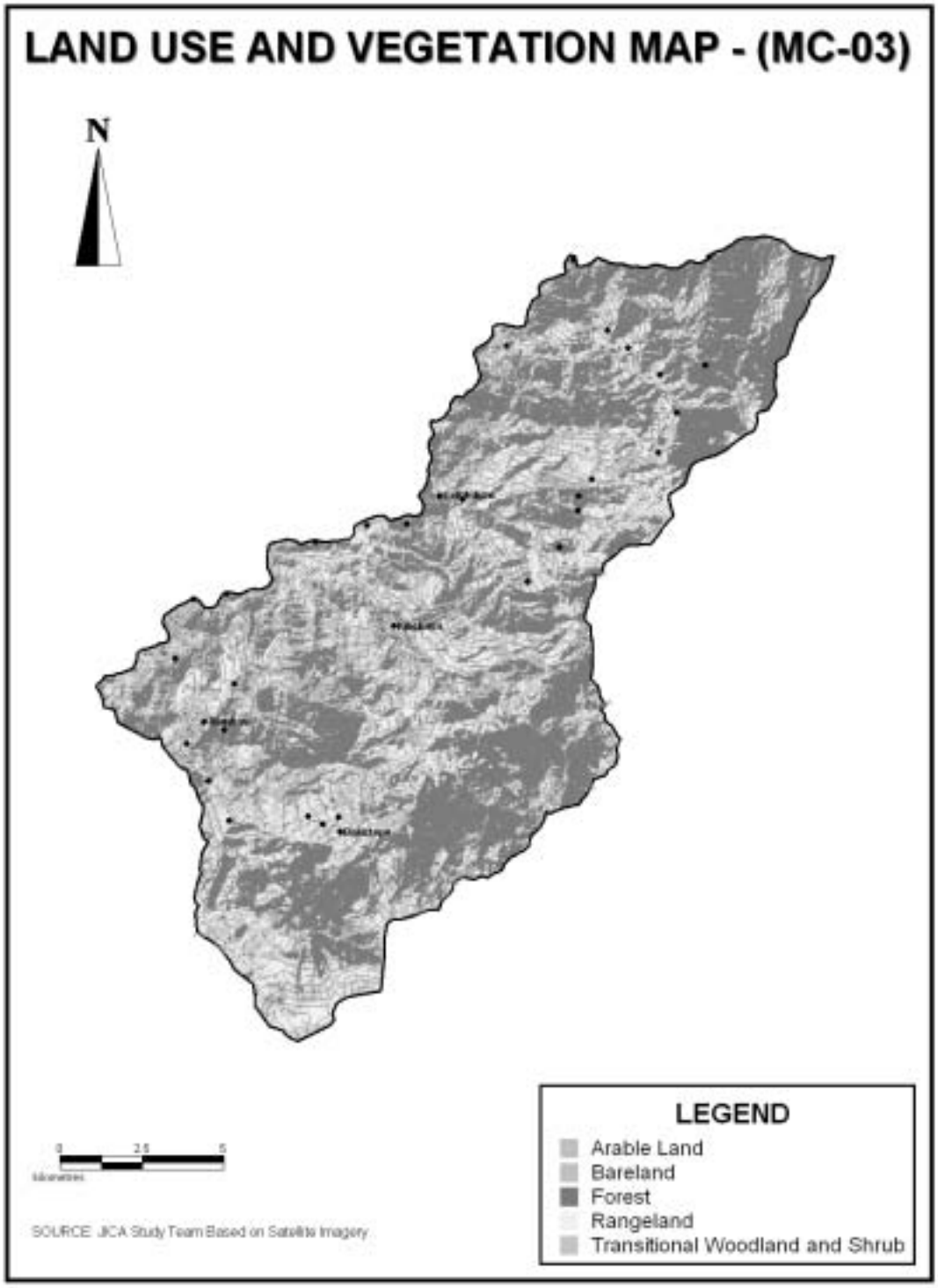

RE-VEGETATION
POTENTIAL MAP - (TR-06)
N
LEGEND
FOREST COVERAGE
SLOPE
SOURCE: JICA Study Team Based on
HSK Elevation Data and Satellite Imagery

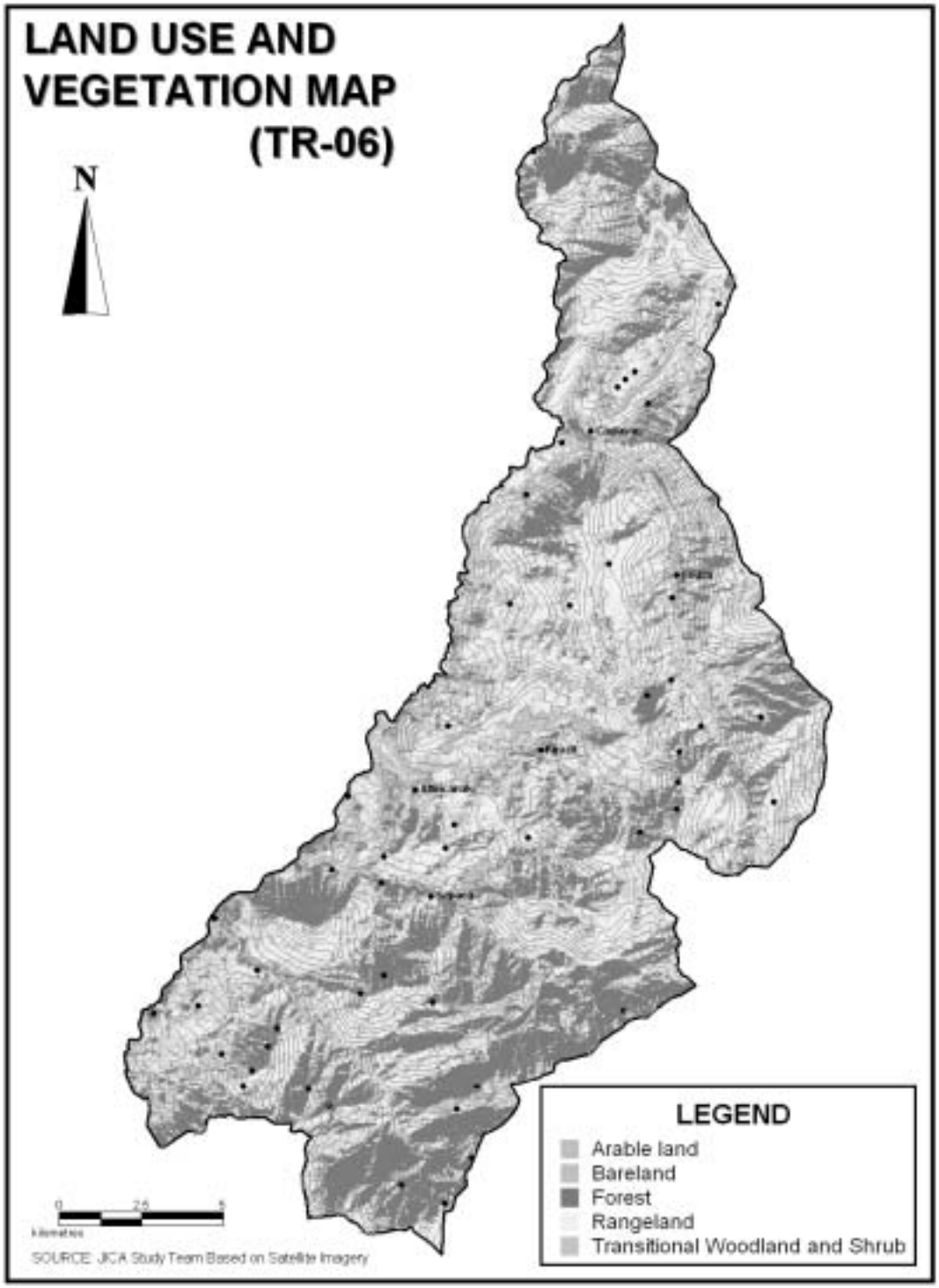

RE-VEGETATION POTENTIAL MAP - (UC-14)
N
LEGEND
FOREST COVERAGE
SLOPE
SOURCE: JICA Study Team Based on
HGK Elevation Data and Satellite Imagery

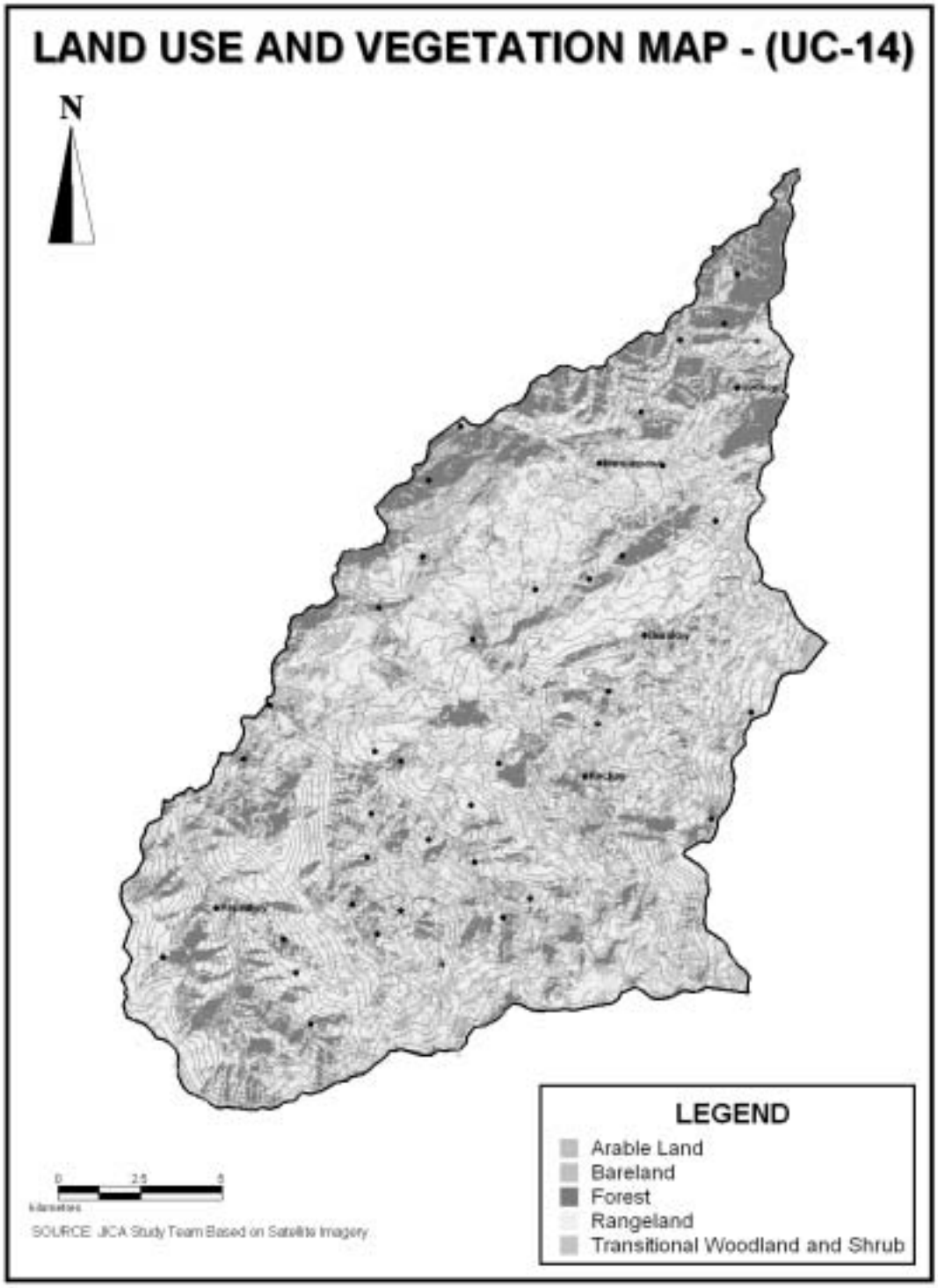

RE-VEGETATION POTENTIAL MAP - (UC-03)
N
LEGEND
FOREST COVERAGE
0-10%
10%-40% & 40%-70%
70% -
SLOPE
0-12%
12% - 30%
30% - 45%
45% -
SOURCE: JICA Study Team Based on
HGK Elevation Data and Satellite Imagery
0
2.5
5
kilometres

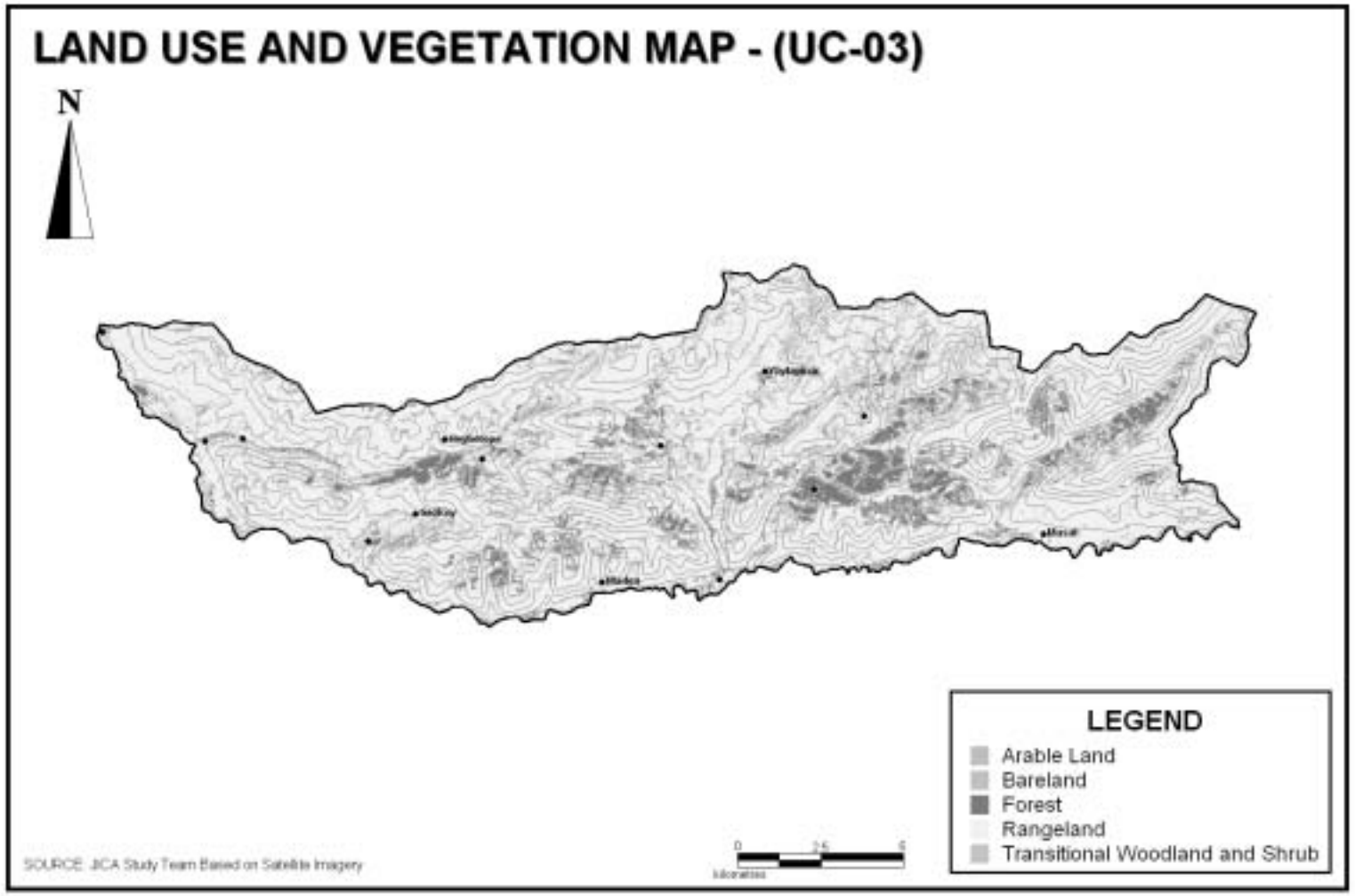

RE-VEGETATION POTENTIAL MAP
(OL-04)
N
LEGEND
FOREST COVERAGE
0-10%
10%+40% & 40%+70%
70% +
SLOPE
0-12%
12% + 30%
30% + 45%
45% +
SOURCE: JICA Study Team Based on
HGK Elevation Data and Satellite Imagery
0
24
kilometres

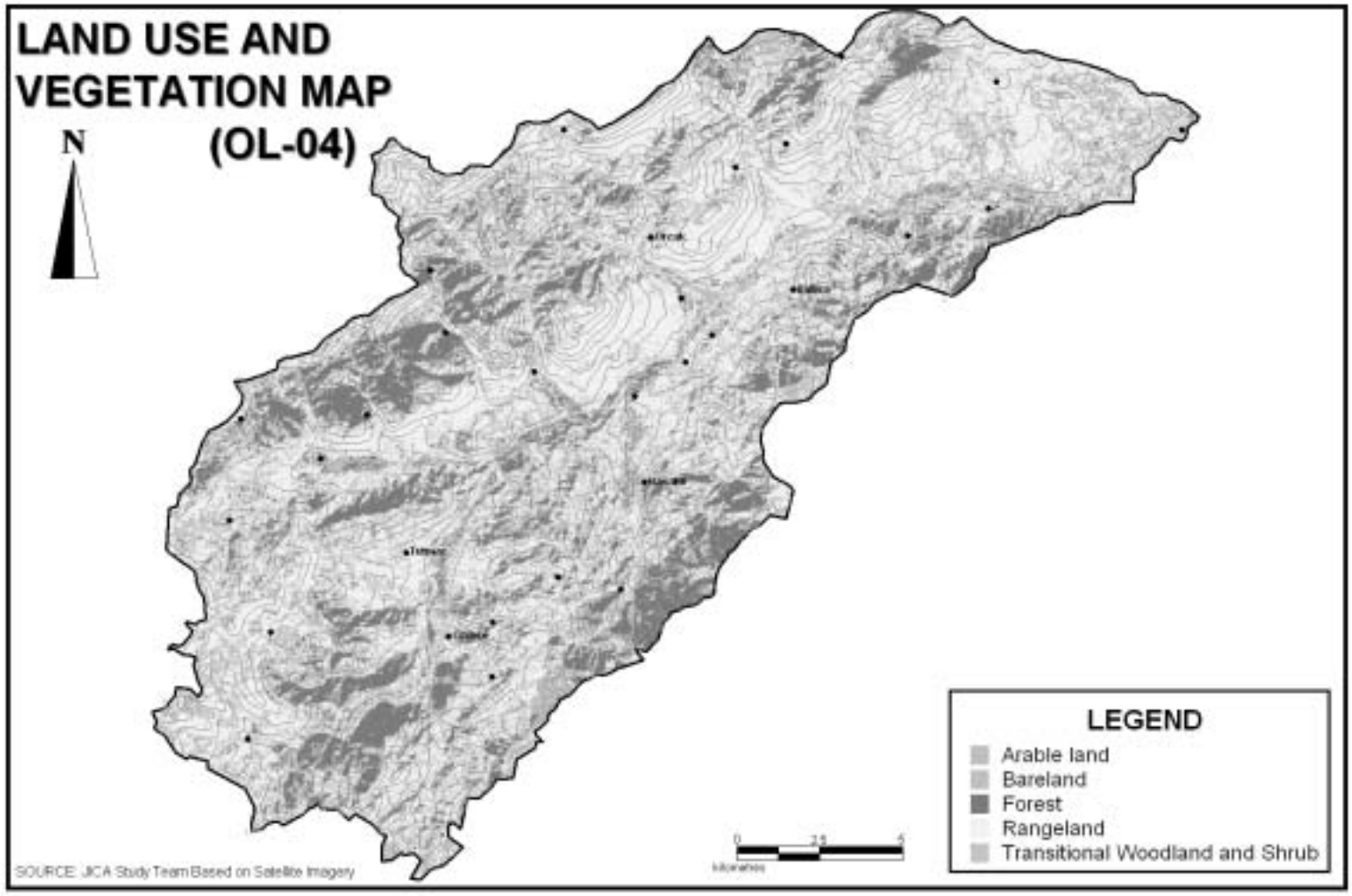

LAND USE AND VEGETATION MAP - (BT-04)
N
LEGEND
Arable Land
Forest
Rangeland
Transitional Woodland and Shrub
Water bodies
SOURCE: JICA Study Team Based on Satellite Imagery

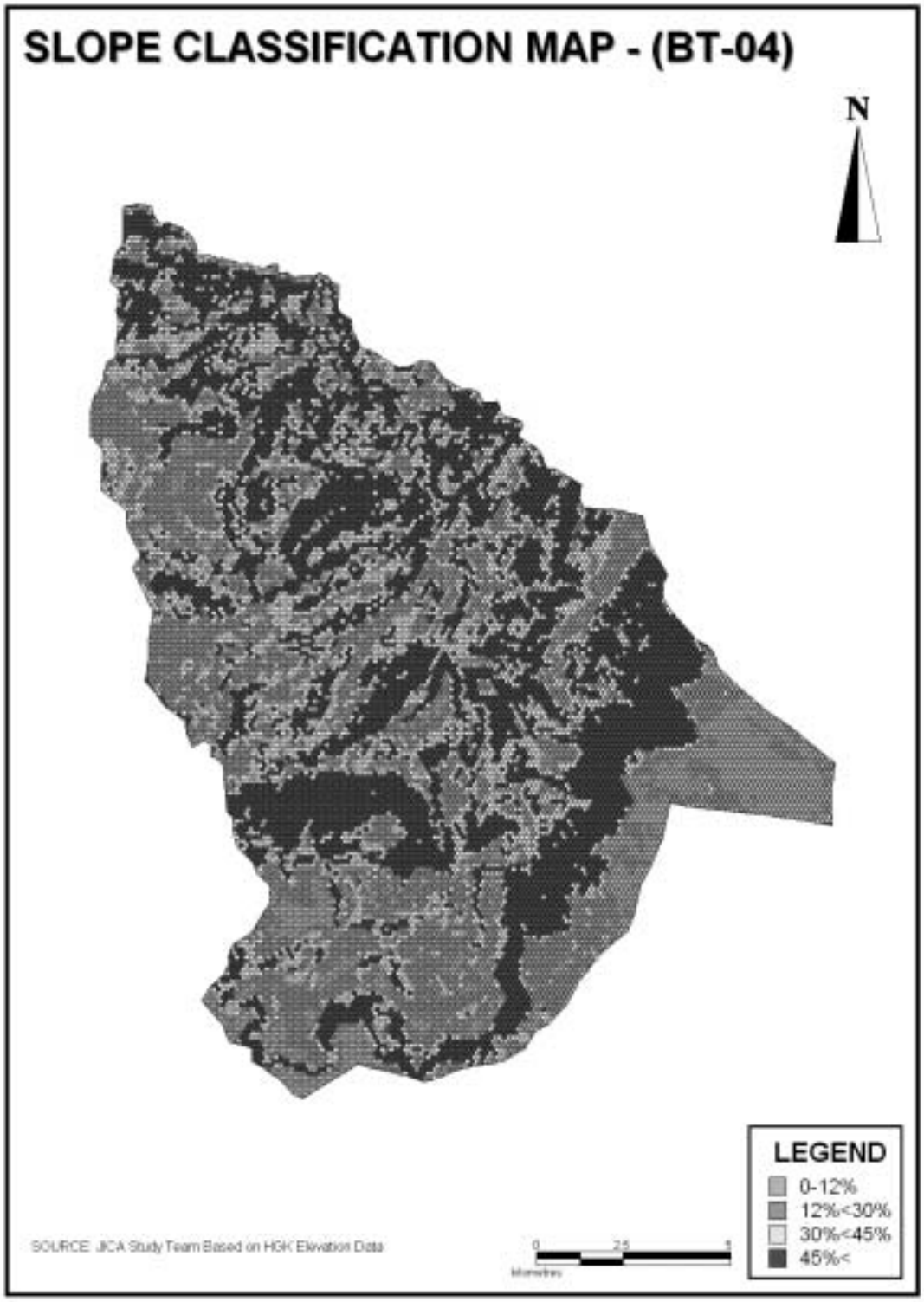

LAND USE AND VEGETATION MAP - (MC-03)
N
0
2.5
5
SOURCE: JICA Study Team Based on Satellite Imagery
LEGEND
Arable Land
Bareland
Forest
Rangeland
Transitional Woodland and Shrub

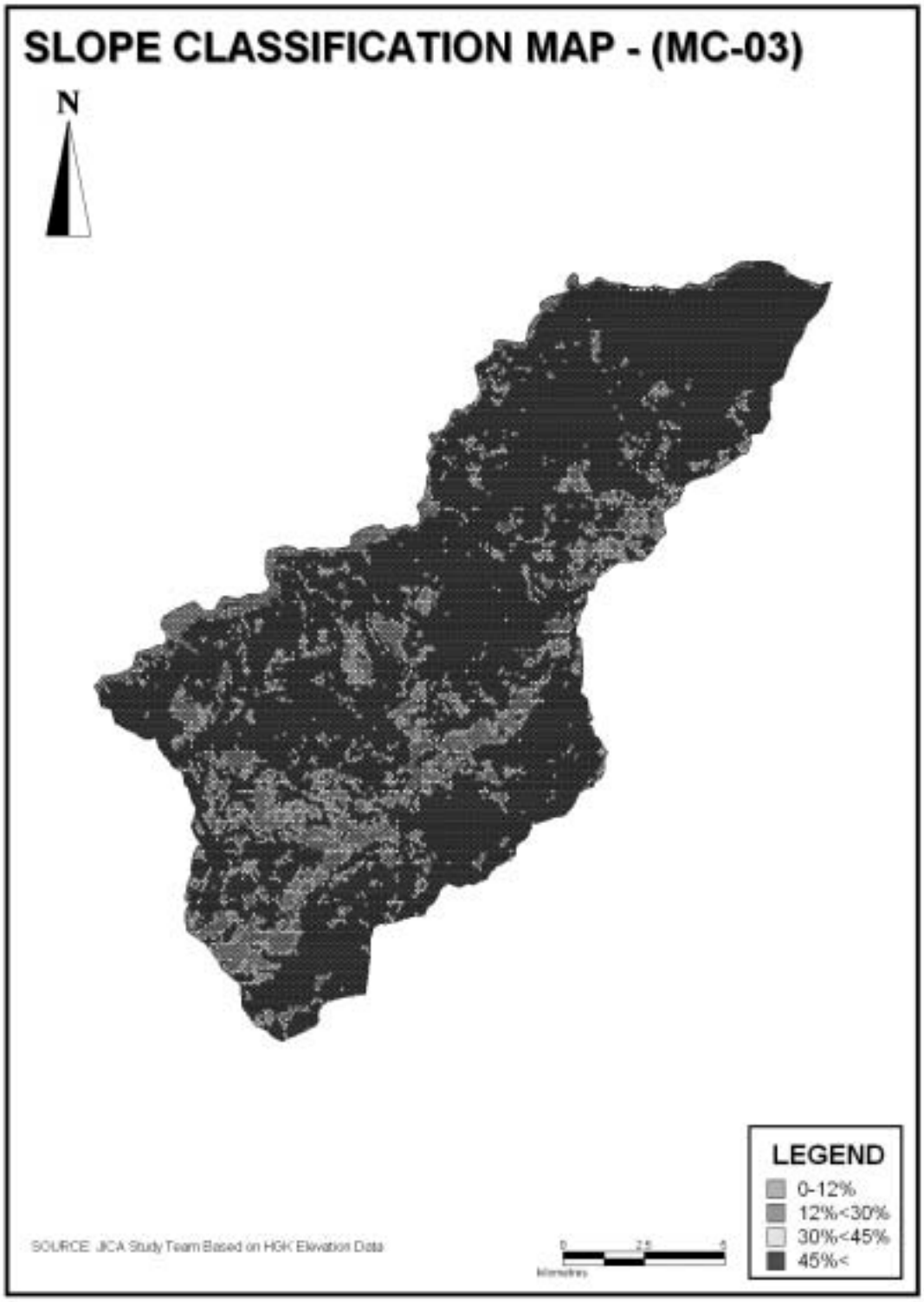

LAND USE AND
VEGETATION MAP
(TR-06)
N
LEGEND
Arable land
Bareland
Forest
Rangeland
Transitional Woodland and Shrub
SOURCE: JICA Study Team Based on Satellite Imagery

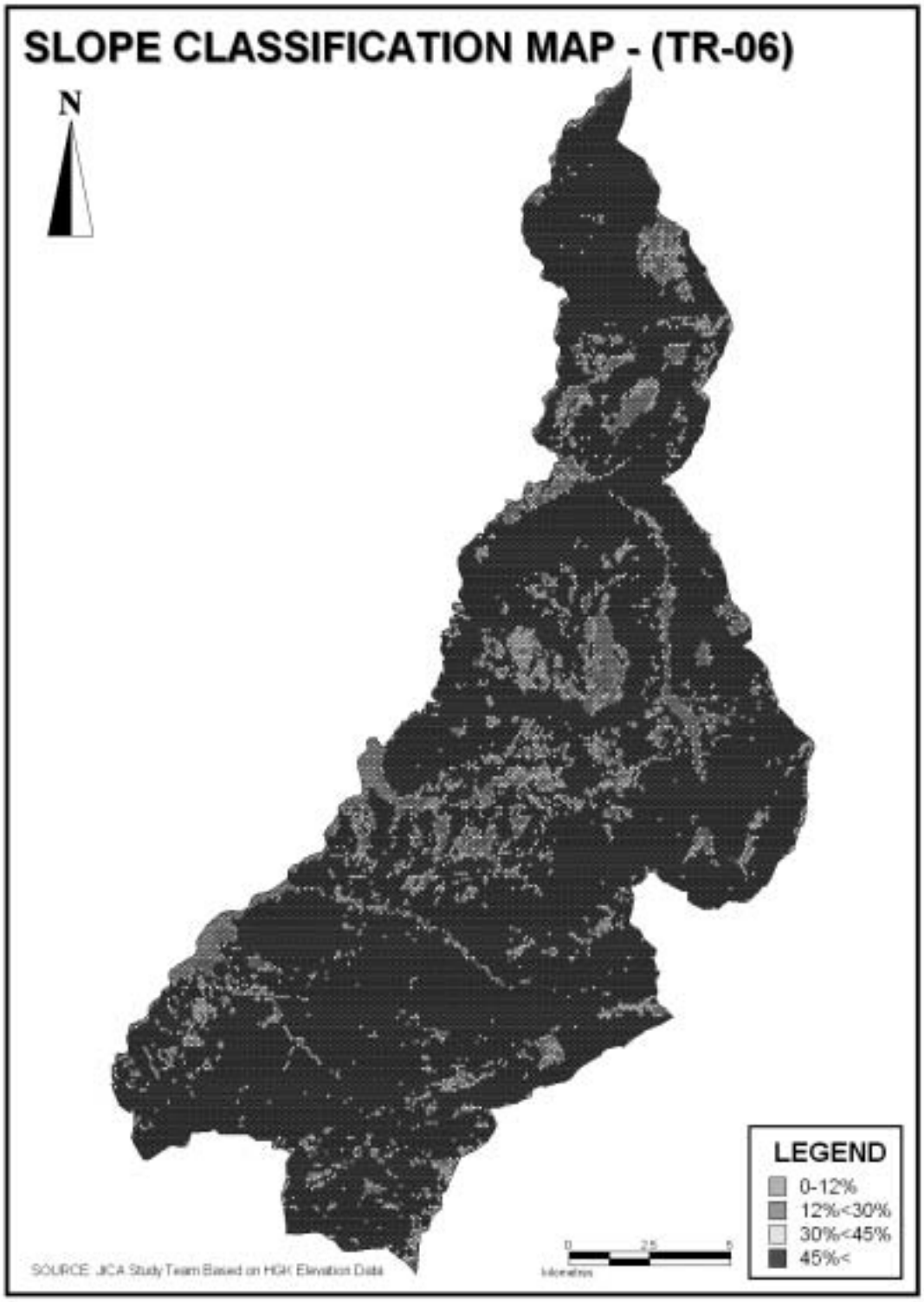

LAND USE AND VEGETATION MAP - (UC-14)
N
LEGEND
Arable Land
Bareland
Forest
Rangeland
Transitional Woodland and Shrub
SOURCE: JICA Study Team Based on Satellite Imagery

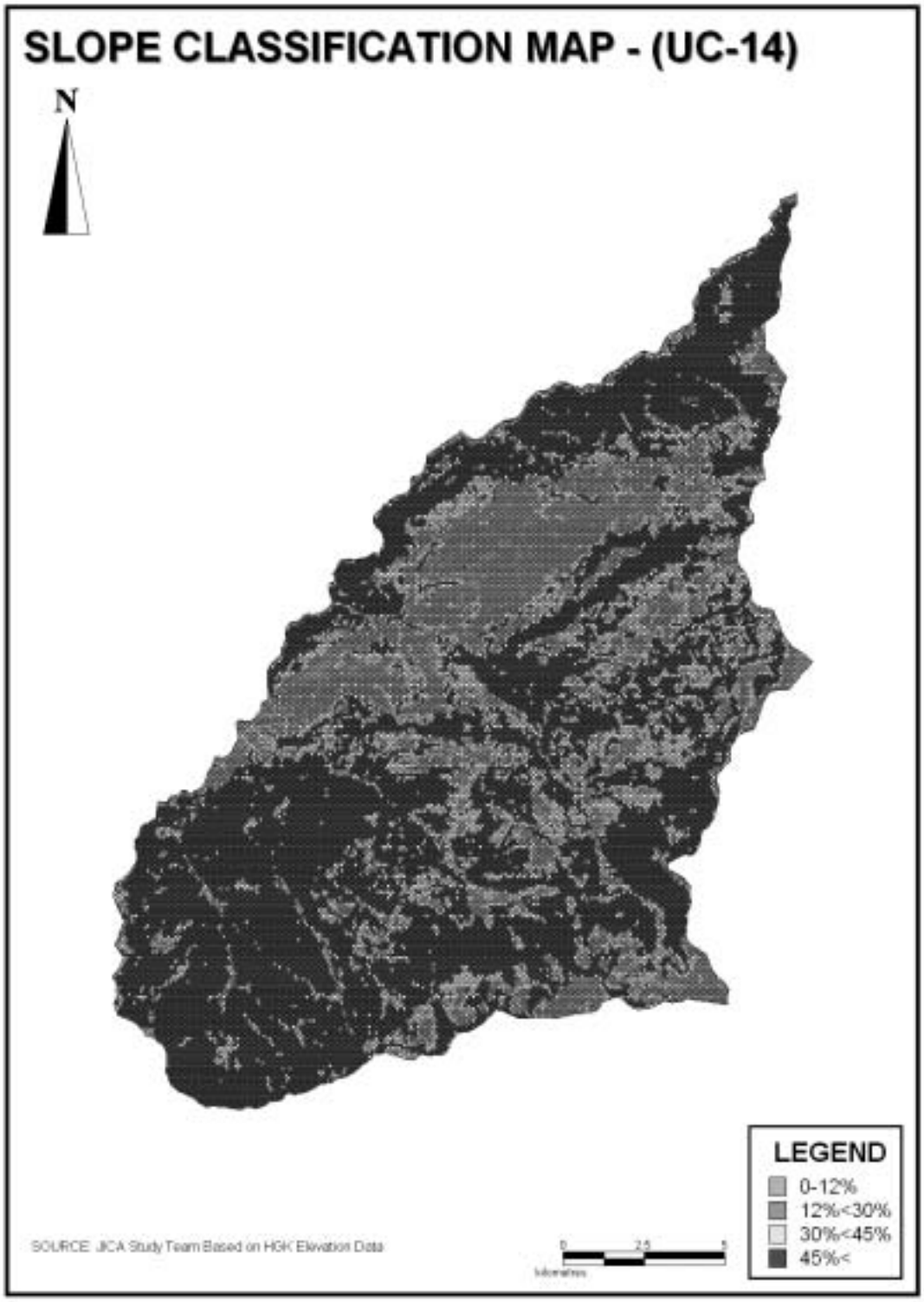

LAND USE AND VEGETATION MAP - (UC-03)
N
LEGEND
Arable Land
Bareland
Forest
Rangeland
Transitional Woodland and Shrub
SOURCE: JICA Study Team Based on Satellite Imagery

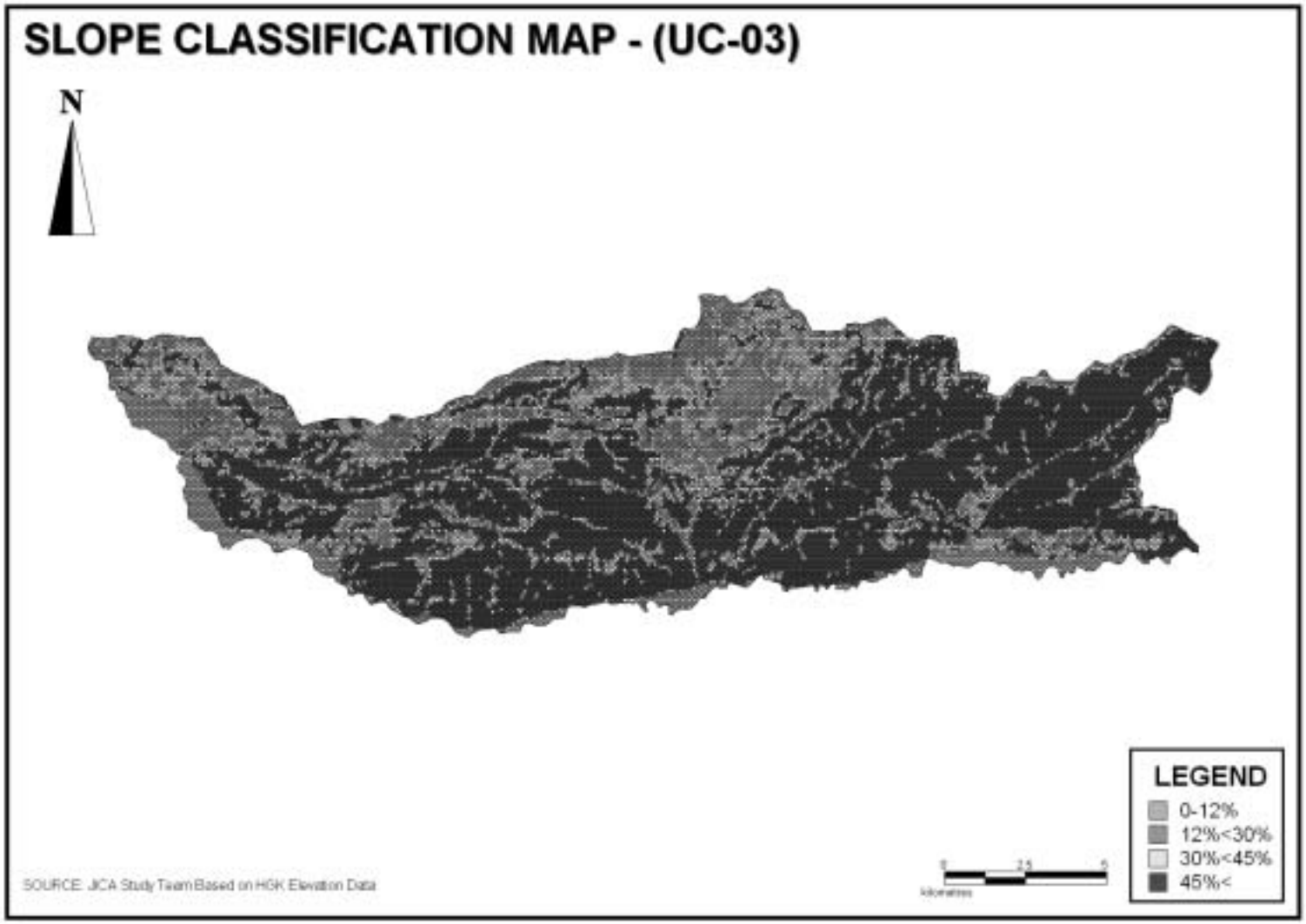

LAND USE AND
VEGETATION MAP
(OL-04)
N
LEGEND
Arable land
Bareland
Forest
Rangeland
Transitional Woodland and Shrub
SOURCE: JICA Study Team Based on Satellite Imagery

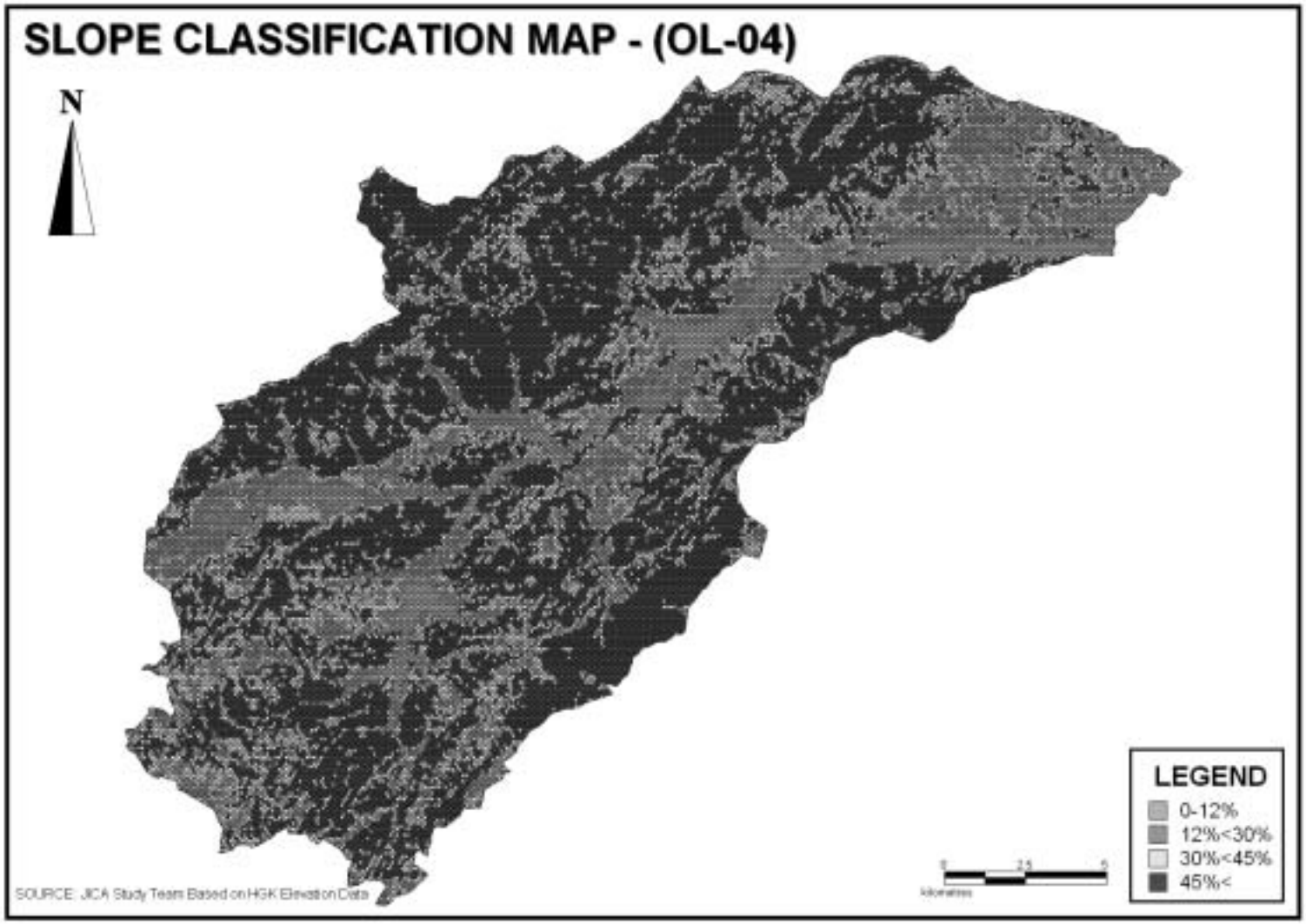

SLOPE CLASSIFICATION MAP - (BT-04)
N
LEGEND
0-12%
12%<30%
30%<45%
45%<
SOURCE: JICA Study Team Based on HGK Elevation Data
0
25


SLOPE CLASSIFICATION MAP - (MC-03)
N
LEGEND
0-12%
12%<30%
30%<45%
45%<
SOURCE: JICA Study Team Based on HGK Elevation Data


SLOPE CLASSIFICATION MAP - (TR-06)
N
LEGEND
0-12%
12%<30%
30%<45%
45%<
SOURCE: JICA Study Team Based on HGIS Elevation Data


SLOPE CLASSIFICATION MAP - (UC-14)
N
LEGEND
0-12%
12%<30%
30%<45%
45%<
SOURCE: JICA Study Team Based on HGK Elevation Data


SLOPE CLASSIFICATION MAP - (UC-03)
N
LEGEND
0-12%
12%<30%
30%<45%
45%<
SOURCE: JICA Study Team Based on HGK Elevation Data


SLOPE CLASSIFICATION MAP - (OL-04)
N
LEGEND
0-12%
12%<30%
30%<45%
45%<
SOURCE: JICA Study Team Based on HGK Elevation Data

APPENDIX-B.8 FOREST CLASSIFICATION BASED ON THE FOREST MANAGEMENT PLAN

The Forest Management Plan is created as basics document of forest management in Turkey. The main tree species, crown closeness, forest society (diameter of 1.5m height) and existing condition of forest in each forests are indicated in this Forest Management plan. We gleaned this document for this study and inflected in on-site studies. However, this plan had the following failings for using basics document of this study. Therefore we summarize here it as reference materials.

1. The prepared year is greatly different according to the MC, so we may not have uniformity of information.

BT-04 (Savsat) ; 1984-85 (Scale 1/25,000)
MC-03 (Yusufeli) : 1980? (Scale 1/25,000)
TR-06 (Uzundere) : 2001 (Scale 1/25,000)
UC-14 (Ispir) : 2001, 1990?(some part) (Scale 1/25,000)
UC-03 (bayburt) : 1986-87 (Scale 1/100,000)
OL-04 (Oltu) : 2001, 1990?(some part) (Scale 1/25,000)

2. Even in the same MC, a different part has the Forest Management Plan which prepared different year.

3. The Forest Management Plan is not prepared for the whole selected MCs.

Accordingly it is unfit information to use for the whole plan.

Unit:Ha

		BT-04 Savsat	MC-03 Yusufeli	TR-06 Oltu	UC-14 Ispir	UC-03 Bayburt	OL-04 Uzundere
Normal High Forest	**NK**	0.0	2,785.9	2,423.9	1,535.3	46.8	2,704.0
Normal Coppice Forest	**Bt**	0.0	0.0	0.0	90.7	447.2	8.2
Degraded High Forest	**BK**	3,896.3	5,060.0	3,649.8	3,666.9	2,730.9	5,946.1
Degraded Coppice Forest	**BBt**	1,314.9	180.3	0.0	44.3	504.2	0.0
Non Forest Land without Tree	**OT**	221.7	6,892.2	7,515.3	8,822.9	17,965.5	7,951.2
Agricultutral Land	**Z**	5,304.7	4,031.8	5,442.7	7,177.5	0.0	2,218.0
Pastureland/Rangeland	**Me**	3,496.3	1,501.9	1,388.1	0.0	0.0	0.0
Settlement Area	**Settlement Area**	331.5	183.7	39.0	132.5	0.0	0.0
Total Area		14,565.5	20,635.9	20,458.7	21,470.1	21,694.6	18,827.5

Normal High Forest	**NK(%)**	0.0	13.5	11.8	7.2	0.2	14.4
Normal Coppice Forest	**Bt (%)**	0.0	0.0	0.0	0.4	2.1	0.0
Degraded High Forest	**BK (%)**	26.8	24.5	17.8	17.1	12.6	31.6
Degraded Coppice Forest	**BBt (%)**	9.0	0.9	0.0	0.2	2.3	0.0
Non Forest Land without Tree	**OT (%)**	1.5	33.4	36.7	41.1	82.8	42.2
Agricultutral Land	**Z (%)**	36.4	19.5	26.6	33.4	0.0	11.8
Pastureland/Rangeland	**Me (%)**	24.0	7.3	6.8	0.0	0.0	0.0
Settlement Area	**Settlement Area (%)**	2.3	0.9	0.2	0.6	0.0	0.0

Normal High Forest	**NK**	0.0	2,785.9	2,423.9	1,535.3	46.8	2,704.0
Degraded High Forest	**BK**	3,896.3	5,060.0	3,649.8	3,666.9	2,730.9	5,946.1
Sub-Total		3,896.3	7,845.9	6,073.6	5,202.2	2,777.7	8,650.2
Normal Coppice Forest	**Bt**	0.0	0.0	0.0	90.7	447.2	8.2
Degraded Coppice Forest	**BBt**	1,314.9	180.3	0.0	44.3	504.2	0.0
Sub-Total		1,314.9	180.3	0.0	135.0	951.4	8.2
Total Forests		5,211.2	8,026.2	6,073.6	5,337.2	3,729.1	8,658.4

Normal High Forest	**NK (%)**	0.0	34.7	39.9	28.8	1.3	31.2
Degraded High Forest	**BK (%)**	74.8	63.0	60.1	68.7	73.2	68.7
Sub-Total(%)		74.8	97.8	100.0	97.5	74.5	99.9
Normal Coppice Forest	**Bt (%)**	0.0	0.0	0.0	1.7	12.0	0.1
Degraded Coppice Forest	**BBt (%)**	25.2	2.2	0.0	0.8	13.5	0.0
Sub-Total(%)		25.2	2.2	0.0	2.5	25.5	0.1
Total Forests(%)		100.0	100.0	100.0	100.0	100.0	100.0

APPENDIX-B.9 REVICED FOREST SECTOR REPORT FOR THE MASTER PLAN BY MR. MUZAFFER DOGRU

Forest Resources and Forest Management

1 Area and Conditions of the Forests

According to Landsat image analysis carried out by the Study Team, the area of Forest in the Coruh river catchment is estimated at some 440,000 ha or 22% of the total catchment area. If the area of Transitional Woodland and Shrub (e.g. degraded forest lands) is included, it exceeds 677,000 ha, which corresponds 33% of the total catchment area. On the other hand, according to OGM forest management plans the total forest area within three Provinces is about 786,000 ha. According to these figures, while the forests and woodlands (degraded forests) together make about 40% of the watershed area, normal forests alone cover only 16% of the total watershed area. Normal forests cover 28%, 13.6% and 1% of the watershed areas of Artvin, Erzurum and Bayburt provinces respectively. These figures show that the forest areas in Erzurum and particularly in Bayburt provinces are far from adequate and there is an urgent need for rehabilitation of degraded forests and expansion of forest areas by afforestation on suitable non-forest lands.

Table 1-1 Forest Conditions in the Study Area **unit: ha**

	Artvin			Erzurum			Bayburt			Total		
	Normal	Degraded	Total	Normal	Degraded	Total	Normal	Degraded	Total	Normal	Degraded	Total
High Forest	**184,929**	**92,721**	**277,650**	**120,360**	**85,323**	**205,683**	**570**	**4,635**	**5,205**	**305,859**	**182,679**	**488,538**
Coniferous	106,507	59,861	166,368	120,134	53,671	173,805	570	4,238	4,808	227,211	117,770	344,981
Broad-leaved	38,566	14,150	52,716	115	16	131	0	97	97	38,681	14,263	52,944
Mixed	39,856	18,710	58,566	111	31,636	31,747	0	300	300	39,967	50,646	90,613
Coppice	**6,995**	**105,804**	**112,799**	**5,869**	**170,340**	**176,209**	**3,286**	**5,672**	**8,958**	**16,150**	**281,816**	**297,966**
Total	**191,924**	**198,525**	**390,449**	**126,229**	**255,663**	**381,892**	**3,856**	**10,307**	**14,163**	**322,009**	**464,495**	**786,504**

Source: JICA study team based on data of MOF, 1997 and OGM regional offices of Artvin and Trabzon, 2002

High forest accounts for 62% of the forests in the watershed area. Coniferous trees are dominant in the high forests with the share of 71 %, followed by mixed tree species with 19% and broad-leaved with 10%. The major species in the high forests are Scotch pine (*Pinus sylvestris*), spruce (*Picea orientalis*), fir (*Abies nordmandiana*), juniper (Juniperus orientalis) for coniferous and beech (*Fagus orientalis*), oak (Quercus sp.), alder (*Alnus sp.*), aspen (Populus tremula) for broad-leaved, respectively. Coppice forests are dominated by oak species. Shrub and plant species on the forest lands also show a rich diversity throughout the Çoruh Watershed (Capparis species, Rose hip, wild sainfoin sp., etc.).

The high forests and coppice are further classified into “normal (productive)” and “degraded (unproductive)” forest respectively by crown density (canopy closure). The forests with 0-10% of crown density are regarded “degraded” and that of 11-100% is defined as “normal”. Based on this definition, some 51% of the forest areas are classified as degraded and unproductive. The share of degraded forest area in the total forest by Province is: 51% for Artvin, 67% for Erzurum and 73% for Bayburt, respectively. About 37% of high forests are degraded while 95% of the coppice forests are degraded, which is normally utilized for firewood production basically for meeting local demand. The total standing volume of the productive high forest is estimated at 41 million m^3 in Artvin and 20 million m^3 in Erzurum. The average standing volumes per hectare are 149 m^3 for Artvin and 100 m^3 for Erzurum, respectively.

The site classes[1] of the normal forests in the Study area are generally over class III, and indicate the low potentials for wood production. Due to difficult site conditions on most areas, afforestation activities should be carried out under the basis of "selecting appropriate areas".

Most of the trees in the forests of Artvin are from 31 to 50 years old, while the forests in Erzurum are even younger, and consist of trees aged from 31 to 40 years. Regarding that the standard cutting ages of major wood species for the Study area generally indicates 100 to 120 years, it is shown that the majority of the forests in the study area is too young for harvesting, and needs long years to mature.

All the forests in the Çoruh Watershed region are owned by the state. However, cadastral surveys and delineation works have been completed only for a very small portion of the forests (e.g. 11.6% of the forests in Artvin and for less than 10% in Erzurum and Bayburt).

2 Forest Resources Management Activities and Achievements

2.1 Management Planning

Forest management activities are carried out according to the forest resource inventories and management plans prepared/renewed every 10 year by the OGM's central forest management planning teams or private firms on contract. These activities are planned and coordinated by the Management Planning Department of OGM in Ankara. According to the current management plans the breakdown of the forests by management objectives is given in Table 3.5.2.1.1 below. Examination of this table shows that, in spite of very special importance of the biological diversity of the region forests and very harsh and difficult site conditions prevailing in the region, the ratios of the protected forest areas (2%) and of the forest areas assigned for protective functions (15%) are extremely low, and majority of the forests are still managed for forests products' (mainly wood) utilization purposes.

Table 2.1.1 : Breakdown of the forests by the major management objective in the Çoruh Watershed Region

Management Objective	Artvin		Erzurum		Bayburt		Total	
	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%
Conservation forest[1]	-	-	21,813	5.7	-	-	21,813	2.8
Forests managed to produce forest products	295,069	75.5	343,583	90.0	14,163	100.0	652,815	83.0
Forests managed for[2] protective functions	79,912	20.5	16,496	4.3	-	-	96,408	12.2
Protected areas	15,469	4.0	-	-	-	-		2.0
- National parks	13,910	3.6	-	-				1.8
- Nature parks	368	0.1	-	-				-
- Nature reserves	1,191	0.3	-	-				0.2
TOTAL	390,449	100	381,892	100	14,163	100	786,504	100

[1] Declared by the government on the areas with serious environmental problems and risks.
[2] Assigned by forest management plan for protective purposes.

[1] Classifications indicating potential wood productivity. The criteria for classification regard the natural conditions of the site, such as climate, soil and topology. Site classes are described in numbers, where the larger number indicates lower productivity.

The areas of the forests assigned for protective functions (mainly for soil and water conservation) has significantly increased in the forest management plans prepared during recent years and this positive trend is expected to continue during coming periods.

2.2 Forest rehabilitation and management activities undertaken by AGM and OGM

Degraded forest areas are shown as the potential reforestation and rehabilitation sites in the management plans. AGM carries out site surveys and assessments on such areas, prepares and implements reforestation, erosion control and range improvement implementation projects for their appropriate rehabilitation and sustainable utilization. AGM undertakes the erosion control and other rehabilitation activities besides on forestlands also on non-forest lands (especially on OT areas[3]) where such measures are urgently needed. Forest management and rehabilitation activities undertaken in the Çoruh Watershed provinces by AGM and OGM during last four years are shown in Table 3.5.2.2.1 - 3.5.2.2.4 below.

Major problems and constraints in relation to the conservation and management of the forests in the watershed regions include the following:

- incomplete cadastral surveys and delineation of the forest areas;
- lack of adequate number of staff in the forestry units (OGM, AGM, ORKÖY, DMPG) in the watershed provinces;
- inadequacies of the current centralized forest management planning system in relation multipurpose (functional) management of forest resources, inadequate attention on local needs during planning, inadequate participation of local villagers and other stakeholders during planning;
- inadequate coordination and integration during planning of different forestry activities by OGM, AGM, ORKÖY and DMPG units. inadequate dialogue and collaboration between MEF and other related government agencies.;
- illicit wood cutting by local communities for meeting their energy (fuel wood) needs, which cause deterioration of the forest resources and failures natural regeneration;
- inadequate silvicultural implementations due to low piece rates paid for forestry implementations, lack of adequate labor force in local villages due to high migration rates;
- increased insect damages in the forests, particularly in Artvin province;
- inadequate attention on natural resources degradation and erosion problems and risks during undertaking of range cadastral and delineation works by MARA;
- inadequate alternative income opportunities, support programs/projects and awareness in the low-income village communities;
- inadequate attention on rehabilitation potential and cost effectiveness during undertaking of the soil conservation and forest rehabilitation implementations;
- lack of mutual confidence between villagers and government agencies.

[3] OT areas are the non-forest lands identified by the forest management plans as the sites that should be undertaken under forest regime in order to undertake the urgent rehabilitation.

Table 2.2-1 : AGM and OGM Activities Carried Out in Çoruh Watershed Provinces During 1999-2002 Period

	Activity	Unit	ERZURUM				ARTVIN				BAYBURT			
			1999	2000	2001	2002	1999	2000	2001	2002	1999	2000	2001	2002
1.	**EROSION CONTROL**													
1.1.	Soil conservation measures	Ha.	320	650	1,060	800	698	1,075	1,374	1,726	550	560	180	85
1.2.	Tree planting	Ha.	257	355	615	1,007								
1.3.	Tending	Ha.	320	300	400	1,150	3,792	4,245	5,000	3,500	1,905	1,000	1,000	1,300
2.	**AFFORESTATION**													
2.1.	Site preparation	Ha.	560	660	102	100		40		100	18.8	110	150	100
2.2.	Tree planting	Ha.	565	520	61	141								
2.3.	Tending	Ha.	880	587	257	714.2	553	418	225	52	264	22.8	110	100
3.	**RANGE IMPROVEMENT**	Ha.	100	50	-	40					-		150	
4.	**SILVICULTURE**													
4.1.	Natural regeneration	Ha	-	69	69	94	-	-	19	-				
4.2.	Tending and maintenance	Ha	400	486	486	660	1,265	850	348	345				
4.3.	Energy forest establishment	Ha	80	-	-		-	-	-	-	12.0	28.0	33.0	22.5
4.4.	Energy forest rehabilitation	Ha	-	-	-	275	-	-	-	-				
4.5.	Artificial regeneration	Ha	118	158	392	331	129	47	55	59	60.5	78.5	26.0	38.0
4.6.	Maintenance in artificial regeneration sites	Ha	450	550	550	519	1,531	573	1,424	1,617				
4.7.	Maintenance in reforestation sites	Ha	2,185	2,000	2,000	64	886	58	347	402				
5.	**WOOD PRODUCTION (HARVESTING)**													
5.1.	- Round wood	M3	36,974	40,933	57,556	44,758	90,390	122,637	104,329	86,143				
5.2.	- Fuel wood	Stere	18,445	16,767	26,611	36,791	18,181	10,293	15,650	22,993	1,285	1,480	785	1,897
6.	PROTECTION													
6.1.	- By guard	MM	428	298	303	112	235	45	142	113				
6.2.	- By village community	Village	-	1	1	2	-	42	-	-				
6.3.	- Mechanical combating against insects	Ha.	35	80	100	-	1,000	1,300	-	10,650				
6.4.	- Chemical combating against insects	Ha.	-	-	172	-	2,050	5,800	-	-				
6.5	- Biological combating against insects	Ha	-	-	-	-	5,000	4,550	9,100	6,300				
7.	**INFRASTRUCTURE**													
7.1.	- Road maintenance	Km.	611	1,558	1,210	557	2,350	2,452	2,598	2,785				

Table 2.2-2 : AGM and OGM Activities and Expenditures in Erzurum During 1999-2002 Period

Agency	Activity			1999		2000		2001		2002	
			Unit	Quantity	Million TL	Quantity	Million TL	Quantity	MillionTL	Quantity	MillionTL
AGM (Erzurum Chief Engineer Unit)	**1.**	**EROSION CONTROL**									
	1.1.	Soil conservation measures	Ha.	320	44,381	650	161,362	1,060	356,825	800	319,286
	1.2.	Tree planting	Ha.	257	8,428	355	21,647	615	31,674	1,007	107,902
	1.3.	Tending	Ha.	320	51,854	300	18,243	400	54,874	1,150	143,464
	2.	**AFFORESTATION**									
	2.1.	Site preparation	Ha.	560	89,520	660	129,191	102	51,239	100	83,779
	2.2.	Tree planting	Ha.	565	17,768	520	42,649	61	7,474	141	27,838
	2.3.	Tending	Ha.	880	71,018	587	205,782	257	37,203	714.2	84,663
	3.	**RANGE IMPROVEMENT**	Ha.	100	7,859	50	500	-	-	40	7,127
OGM (Erzurum Forest Regional Directorate)	**4.**	**SILVICULTURE**									
	4.1.	Natural regeneration	Ha	-	-	69	2,750	69	2,750	94	12,020
	4.2.	Tending and maintenance	Ha	400	1,900	486	7,912	486	7,912	660	13,582
	4.3.	Energy forest establishment	Ha	80		-	-	-	-		
	4.4.	Energy forest rehabilitation	Ha	-	-	-	-	-	-	275	
	4.5.	Artificial regeneration	Ha	118	18,653	158	31,248	392	62,496	331	98,361
	4.6.	Maintenance in artificial regeneration sites	Ha	450	12,341	550	11,669	550	11,669	519	18,048
	4.7.	Maintenance in reforestation sites	Ha	2,185	49,936	2,000	49,946	2,000	49,946	64	72,024
	5.	**WOOD PRODUCTION (HARVESTING)**									
	5.1.	- Round wood	M3	36,974	423,992	40,933	541,699	57,556		44,758	1,155,733
	5.2.	- Fuel wood	Stere	18,445	87,300	16,767	105,505	26,611	249,043	36,791	225,682
	6.	**PROTECTION**									
	6.1.	- By guard	MM	428	149,424	298	184,717	303	184,717	112	120,822
	6.2.	- By village community	Village	-	-	1	300	1	300	2	1,600
	6.3.	- Mechanical combating against insects	Ha.	35	4,464	80	3,022	100	5.5	-	-
	6.4.	- Chemical combating against insects	Ha.	-	-	-	-	172	170	-	-
	7.	**INFRASTRUCTURE**									
	7.1.	- Road maintenance	Km.	611	10,401	1,558	37,022	1,210	30,334	557	25,344

Table 2.2.3 : AGM and OGM Activities and Expenditures in Artvin During 1999-2002 Period

Agency	Activity			1999		2000		2001		2002	
			Unit	Quantity	Million TL	Quantity	Million TL	Quantity	MillionTL	Quantity	MillionTL
AGM (Artvin Chief Engineer Unit)	**1.**	**EROSION CONTROL**									
	1.1.	Soil conservation measures	Ha.	698	66,049	1,075	144,264	1,374	369,932	1,726	708,653
	1.2.	Tree planting	Ha.								
	1.3.	Tending	Ha.	3,792	123,710	4,245	261,889	5,000	93,940	3,500	160,006
	2.	**AFFORESTATION**									
	2.1.	Site preparation	Ha.			40	4968			100	33,791
	2.2.	Tree planting	Ha.								
	2.3.	Tending	Ha.	553	16,805	418	23,330	225	6726	52	910
	3.	**RANGE IMPROVEMENT**	Ha.								
OGM (Atrtvin Forest Regional Directorate)	**4.**	**SILVICULTURE**									
	4.1.	Natural regeneration	Ha	-	-	-	-	19	5,500	-	-
	4.2.	Tending and maintenance	Ha	1,265	8,500	850	13,000	348	9,500	345	18,000
	4.3.	Energy forest establishment	Ha	-	-	-	-	-	-	-	-
	4.4.	Energy forest rehabilitation	Ha	-	-	-	-	-	-	-	-
	4.5.	Artificial regeneration	Ha	129	24,500	47	60,000	55	27,000	59	41,000
	4.6.	Maintenance in artificial regeneration sites	Ha	1,531	32,700	573	13,000	1,424	49,000	1,617	111,000
	4.7.	Maintenance in reforestation sites	Ha	886	15,800	58	34,000	347	8,200	402	25,000
	5.	**WOOD PRODUCTION (HARVESTING)**									
	5.1.	- Round wood	M3	90,390	950,400	122,637	2,115,000	104,329	1,861,000	86,143	1,522,000
	5.2.	- Fuel wood	Stere	18,181	67,400	10,293	96,000	15,650	68,000	22,993	218,000
	6.	**PROTECTION**									
	6.1.	- By guard	MM	235	89,300	45	30,000	142	120,000	113	130,000
	6.2.	- By village community	Village	-	-	42	25,000	-	-	-	-
	6.3.	- Mechanical combating against insects	Ha.	1,000	7,000	1,300	1,000	-	-	10,650	630,000
	6.4.	- Chemical combating against insects	Ha.	2,050	143,300	5,800	60,000	-	-	-	-
	6.5.	- Biological combating against insects	Ha.	5,000		4,550	73,000	9,100	149,500	6,300	167,000
	7.	**INFRASTRUCTURE**									
	7.1.	- Road maintenance	Km.	2,350	55,900	2,452	91,000	2,598	100,300	2,765	184,000

Table 2.2.4 : AGM and OGM Activities and Expenditures in Bayburt During 1999-2002 Period

Agency	Activity			1999		2000		2001		2002	
			Unit	Quantity	Million TL	Quantity	Million TL	Quantity	MillionTL	Quantity	MillionTL
AGM (Bayburt Chief Engineer Unit)	**1.**	**EROSION CONTROL**									
	1.1.	Soil conservation measures	Ha.	550	62,515	560	123,034	180	48,207	85	43,035
	1.2.	Tree planting	Ha.								
	1.3.	Tending	Ha.	1,905	50,381	1,000	21,590	1,000	6,395	1,300	12,194
	2.	**AFFORESTATION**									
	2.1.	Site preparation	Ha.	18.8		110	20,611	150		100	40,004
	2.2.	Tree planting	Ha.								
	2.3.	Tending	Ha.	264	5,806	22.8	545	110		100	10,473
	3.	**RANGE IMPROVEMENT**	Ha.	-	-			150	219		
OGM (Bayburt Forest Chief Unit)	**4.**	**SILVICULTURE**									
	4.1.	Natural regeneration	Ha								
	4.2.	Tending and maintenance	Ha								
	4.3.	Energy forest establishment	Ha	12.0		28.0		33.0		22.5	
	4.4.	Energy forest rehabilitation	Ha								
	4.5.	Artificial regeneration	Ha	60.5		78.5		26.0		38.0	
	4.6.	Maintenance in artificial regeneration sites	Ha								
	4.7.	Maintenance in reforestation sites	Ha								
	5.	**WOOD PRODUCTION (HARVESTING)**									
	5.1.	- Round wood	M3								
	5.2.	- Fuel wood	Stere	1,285		1,480		785		1,897	
	6.	**PROTECTION**									
	6.1.	- By guard	MM								
	6.2.	- By village community	Village								
	6.3.	- Mechanical combating against insects	Ha.								
	6.4.	- Chemical combating against insects	Ha.								
	7.	**INFRASTRUCTURE**									
	7.1.	- Road maintenance	Km.								

Contracting of erosion control activities and afforestation works increasingly to local village communities in Artvin and Erzurum provinces should be considered as a positive development, that provides significant contributions in improving the relations between the villagers and AGM and in reducing the opposition of villagers to such activities. Achievements of the erosion control and afforestation activities carried out by local village communities on contract basis, given by AGM, in Artvin province during last three years are shown in Table 3.5.2.2.5 below.

Table 2.2.5 : Erosion Control and Afforestation Activities Carried out by the Local Village Communities in Artvin Province During 2000-2002

Year	District	Activity	Area (Ha.)	Payments made to village million TL.
2000	Artvin	Erosion control - establishment	865	83,385
	Yusufeli	" " "	210	60,879
		Sub-total	***1,075***	***144,264***
	Artvin	Erosion control - tending, maintenance	1,050	48,974
	Yusufeli	" " " "	1,955	115,424
	Şavşat	" " " "	700	43,423
	Ardanuç	" " " "	440	45,596
	Murgul	" " " "	100	8,472
		Sub-total	***4,245***	***261,889***
	Ardanuç	Afforestation - establishment	40	4,968
	Artvin	Afforestation - tending, maintenance	80	2,622
	Ardanuç	" " "	158	13,458
	Murgul	" " "	80	2,750
		Sub-total	***318***	***18,830***
	PROVINCE TOTAL			**429,951**
2001	Artvin	Erosion control - establishment	756	178,428
	Yusufeli	" " "	618	245,327
		Sub-total	*1,374*	*423,755*
	Artvin	Erosion control - tending, maintenance	2,600	17,567
	Yusufeli	" " " "	2,300	60,310
	Ardanuç	" " " "	300	7,562
	Şavşat	" " " "	400	8,500
		Sub-total	*5,000*	*93,939*
	Artvin	Afforestation - tending, maintenance	225	6,726
	PROVINCE TOTAL			**524,420**
2002	Artvin	Erosion control - establishment	784	291,468
	Yusufeli	" " "	942	417,185
		Sub-total	*1,726*	*708,653*
	Artvin	Erosion control - tending, maintenance	1,650	29,255
	Yusufeli	" " " "	1,600	128,151
	Ardanuç	" " " "	150	1,200
	Şavşat	" " " "	100	1,500
		Sub-total	*3,500*	*160,006*
	Şavşat	Afforestation - establishment	100	33,791
	Artvin	Afforestation - tending, maintenance	52	910
	PROVINCE TOTAL			**903,360**
2000-2002	- Erosion control - establishment		**3,310**	
	- Erosion control - tending, maintenance		**12,745**	
	- Afforestation - establishment		**140**	

	- Afforestation - tending, maintenance	**595**	

Protection of erosion control and afforestation sites have also been increasingly contracted to village communities during recent years. 13.6 billion TL was paid to 22 village communities for protection of 3,861 ha in Erzurum, during first 6 months of 2003. In Yusufeli district of Arvin, 8.4 billion TL will be paid to 6 villages for protection of 2,301 ha erosion control and afforestation areas during 2003.

Afforestation activities undertaken with fast growing tree species (mainly poplar) by villagers have also been supported by low interest credit by MEF/AGM. 71 persons established such plantations on 180 ha in Erzurum, by receiving 45 billion credit assistance from AGM during last 10 years.

Opportunities and potentials for the development of forest resources rehabilitation and management in the watershed areas include the following.

- increasing awareness among the villagers in relation to importance of the conservation of forests and other natural resources and their linkages for sustainable development of their livelihoods;
- accumulated knowledge and experiences of the forestry organization based on long-term implementations under different conditions;
- increasing interest and initiatives within the forestry organization for the development of functional (multipurpose) forest management planning;
- increasing interest within the forestry organization and among the other stakeholders (including local villagers) for the development of participation in the planning and implementation of forestry programs;
- positive impacts of the pilot implementations undertaken by AGM and OGM during recent years for contracting forest protection and rehabilitation activities (e.g. protection of regeneration sites, soil conservation, afforestation, tending and maintenance activities on such areas) to village communities, which provides significant employment and revenue opportunities as well as increases interest among the villagers;
- increasing interest among AGM staff for using local multipurpose tree, shrub and plant species (e.g. Populus tremula, Capparis sp., rose hip, almond, wild pomegranate, sainfoin, etc.) in soil conservation activities, which are appreciated by local communities;
- decreasing pressures on forest resources due to out-migration from the villages within or adjacent the forest areas;
- development of the capacities and contributions of the NGOs in the watershed regions;
- development potential of eco-tourism as a significant income source in some regions (e.g. Şavşat, Borçka, Ispir, Yusufeli, Tortum) of the Çoruh Watershed.
- existence of universities and research institutions working on forestry, other natural resources and rural development issues in Erzurum and Artvin provinces.
- Low salaries paid to forestry staff.

2.3 ORKÖY Activities Undertaken for Improving Forest Villagers Livelihood and as well as the Relations Between Villagers and Forestry Organization

Out of 832 of the villages 515 (61.9%) are the forest villages in the Çoruh Watershed region. Of the forest villages 200 are within-forest villages and 315 forest-neighbouring villages. According to 2000 census, total population of the forest villages is 156,130 (58.2% of the rural population), of which 62,657 (23.3%) are living within forest villages and 93,473 (34.8%) in forest-neighbouring villages presently. Average population decreases during recent decade are estimated –3.51% in the within-forest villages and –2.88% in the forest-neighbouring villages. Forest villages are mostly located in the hilly and mountainous areas of upper-catchment regions. Due to limited land resources, lack of adequate alternative income resources and inadequate government support programs and projects, poverty is wide spread and income level is extremely low in the forest villages (per capita income is estimated between $200-500 by different studies). Consequently, in many areas forest villagers are dependent on excessive utilizations and pressures on the forests and the pasture lands within or near forests (e.g. illicit wood cuttings, overgrazing), which causes destruction and deterioration of the forests.

Present policies and strategies of MOF for poverty reduction and livelihood improvement in the forest villagers include: (i) provision by OGM of the fuel wood and round wood needs of village households at subsidized prices and allocation of part of the wood production at subsidized prices to village households and cooperatives to earn income from their sales; (ii) collection and utilization of Non-Wood Forest Products (NWFPs) by villagers by paying modest charges to OGM; (iii) allocation of degraded forest lands to village households for reforestation purposes and credit support by AGM for their establishment and maintenance; (iv) transferring small shares of hunting revenues to local village communities; (v) protection of forest regeneration, reforestation and wildlife reserve areas by local villagers with the payments made to village budget by OGM, AGM and MPG; (vi) preferential employment of forest villagers and cooperatives in forest works (e.g., wood harvesting and transportation, reforestation, etc.); and (vii) supporting small scale income-generation activities by providing low-interest ORKÖY credits to forest village households and cooperatives.

ORKÖY contributions in relation to supporting small-scale income generation activities in the forest villages during recent years are given in Table 3.5.2.3.1. below. Examination of this table shows that ORKÖY support for income generation activities have reached only to a limited number of villages and families have been far from adequate in the watershed region during recent years. The forest village cooperatives supported by ORKÖY credit assistance have also been very few. Inadequate budget allocation of the governments for ORKÖY programs has been the main reason for this situation. Other constraints include: (i) inadequate staff capacities of ORKÖY; (ii) inadequate linkages, established during planning and implementation stages, between the ORKÖY activities and the forest rehabilitation and management activities carried out by the other units of MEF (AGM, OGM, DNPG); and (iv) inadequate monitoring and assessment of the results of ORKÖY activities with respect to poverty reduction and livelihood improvement, forest resources conservation and development and improvement of the relations between the villagers and forestry organization.

Table 2.3.1 : ORKÖY contributions in small-scale income generation activities in the Çoruh Watershed region forest villages during recent years.

Province	Year	District	Number of village/ HH/coop.	Sheep for milk		Sheep for MEat		Cattle for milk (pure race)		Cattle for meat		Apiculture		Fish farming		Heating/cooking device, roof cover		Greenhouse		Cooperative credit	
				HH	Mil. TL	HH	Mil. TL	HH	Mil. TL	HH	Mil. TL	HH	Mil. TL	HH	Mil. TL	HH	Mil. TL	HH	Mil. TL	Plant type	Mil. TL
ARTVIN	1998	Ardanuç	1/5	5	6,750																
		Borçka	1/0/1																	Parquet	10,000,000
	1999	Borçka	1/2											2	8,000						
	2000	Artvin	1/3									3	2,700								
		Ardanuç	3/11					4	8,900			7	6,300								
	2001	Artvin	2/10					10	24,000												
		Şavşat	4/12	12	28,800																
		Yusufeli	1/3	3	7,200																
	2002	Artvin	1/3									3	6,900								
		Borçka	1/3					3	12,000												
		Şavşat	1/3	4	16,000																
		Yusufeli	1/4	4	16,000																
	1998 - 2002		18/60/1	28		-		17		-		13		2						1	10,000,000
ERZURUM	1991	Uzundere	3/11	11	88																
		Oltu	2/8	8	64																
	1992	Uzundere	5/108	13	156											95	59				
		Oltu	1/3	3	36																
	1993	Uzundere	2/112			3	150			5	250					104	300				
		Oltu	2/9							9	500										
		Ispir	2/2							2	100										
	1994	Uzundere	1/3									3	94.5								
		Oltu	2/6							3	150	3	94.5								
	1996	Uzundere	4/27	4	1,452									7	4,200			16	6,400		
		Ispir	1/3	3	1,089																
	1998	Şenkaya	1/0/1																	Dairy	37,351
	2002	Oltu	1/0/1																	Dairy	212,165
	1991 - -2002		27/292/2	42		3		-		19		6		7		199		16		2	
BAYBURT	1999	Bayburt	/5			4	8,963							1	4,000						
	2000	"	/31			26	76,180					5	4,500								
	2001	"	/14	14	46,700																
	2002	"	/10			10	49,957														
	1999 - 2002		/60	14		40						5		1							

2.4 The Activities Undertaken by DNPG in Relation to the Development and Management of the National Parks and Other Protected Areas

Awareness and expectations in the region communities for conservation, sustainable management and appropriate utilization of the rich biological diversity, wildlife and landscape resources have shown a significant increase during recent years. Under MEF, field units of the General Directorate of Nature Conservation and National Parks is the main government agency responsible for undertaking of these activities. Existing protected areas established and managed by this agency are shown in Table 3.5.2.4.1 below. Besides these sites there are also a number of candidate areas (e.g. Tortum Lake Area in Erzurum, Karcal Mountain, Murgul Valley Areas in Artvin) for which assessment and establishment works are continuing.

Table 2.4.1. Existing Protected Areas in the Çoruh Watershed Regions.

No	Name of the area	Location	Status	Area (Ha.)
1.	Karagöl-Shara National Park	Artvin-Şavşat	National Park	3,766
2.	Hatilla National PArk	Artvin	National Park	17,104
3.	Camili Efeler Ormanı	Artvin-Borçka	Nature Reserve	1,453
4.	Camili-Görgit	Artvin-Borçka	Nature Reserve	490
5.	Karagöl-Nature Park	Artvin-Borçka	Nature Park	368
6.	Çoruh Valley Wildlife Conservation Area	Artvin-Yusufeli	Wildlife Conservation Area	21,821
7.	Oltu Wildlife Conservation Area	Erzurum-Oltu	Wildlife Conservation Area	5,400
8.	Verçenik Mountain Wildlife Conservation Area	Erzurum-Ispir	Wildlife Conservation Area	50,435
9.	Pazaryolu Wildlife Conservation Area	Erzurum-Pazaryolu	Wildlife Conservation Area	20,326
TOTAL			2 national parks, 2 nature reserves, 1 nature park, 4 wildlife conservation areas	20,870 1,943 368 97,982 **121,163**

DMPG units undertake management (e.g. planning, inventory, protection, awareness creation, public education) activities on these sites. Among DMPG activities, training of hunters and contracting protection of the sites to local villages have gained increased importance during recent years. Establishment and management of the forest recreation sites have also been among the priority activities of DMPG, in order to meet growing demand in the region.

Camili Nature Reserve Area is included among the four sites of the ongoing "Biological Diversity Conservation Project", supported by the GEF program. Few NGOs (including TEMA) have also been implementing small-scale development projects at the same site.

The major constraints in relation to the national parks and protected areas management include; (i) inadequate coverage of the existing protected areas for conservation of the rich biological diversity resources, endemic and threatened species in the region; (ii) lack of management plans for the protected areas in the region; (iii) lack of sufficient staff capacities and budget resources of DMPG field units; (iv) inadequate cooperation and collaboration between DMPG and the other units of MEF; (v) inadequate dialogue and collaboration with the NGOs, research and education institutions; (vi) inadequate efforts and pilot implementations for the development of community-based, environmentally sound eco-tourism activities in the watershed regions; and (vii) insufficient knowledge and experiences of the DMPG units about inventory and management of wildlife resources.

C. Socio-Economic Conditions

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C.1 INTRODUCTION

The socio-economic development in the eastern part of Turkey, where the Coruh river catchment is located, has been lagged behind in general. Rectification of disparity between east and west is one of the most important policy issues of the present administration.

As one of the present Study objectives addresses to the enhancement of the livelihood, the projects to be proposed in the Study will be expected to contribute to the attainment of one of the national goal.

Socio-economic conditions of the people living in the Coruh river catchment are constrained by many factors including harsh climate, steep topography and fragile geology, poor vegetation, hard access to the major urban centers, etc. Natural resources have been deteriorated as a result of over-exploitation such as over grazing and over logging in the past decades. As local people have depended most of their livelihood on natural resources, their degradation has seriously affected their lives.

In the last two decades, out-migration has been in boom, which resulted in rapid population decrease. Forest villagers, usually located in remote areas of the upper-catchment, have been affected more seriously. Liberalization of trade also brought about the negative impact on their life through the decrease in log price as well as meat price.

In this Paper, the socio-economic situation of the Coruh river catchment as well as people in the Forest Villages in the catchment is presented based on the available data and on the results of the rural socio-economic survey which was conducted as a part of the Study.

C.2 PRESENT SOCIO-ECONOMIC SITUATION OF THE CORUH RIVER CATCHMENT

C.2.1 Area and Population

C.2.1.1 Study area and administrative boundaries

The Coruh river catchment is located in the north-eastern part of Turkey. Originating from the south-western part of the Bayburt province, the river flows east-northeast-ward along the southern Kackar mountain range, change direction towards north at the junction with the Oltu river up to Borcka, and then again change direction towards north-east to pass the Georgian border. The total catchment area of the river is some 2 million ha.

The Coruh river catchment largely coincides with the administrative boundary of 17 districts of three provinces of Artvin, Erzurum and Bayburt: six districts (Artvin, Ardanuc, Borcka, Murgul, Savsat and Yusufeli) in Artvin, eight districts (Ispir, Narman, Oltu, Olur, Pazaryolu, Senkaya, Tortum and Uzundere) in Erzurum, and three districts (Bayburt, Aydintepe and Demirozu) in Bayburt as shown in Figure 2.2. The catchment area accounts for 55% of the sum of three provinces.

C.2.1.2 Population and its growth

The population in the whole Coruh catchment totals 432,259 as of year 2000 with the rural population of 268,459. The population in the catchment shares 35% of total population in the three provinces with 1,226,681. Urbanization rate is 38% compared to 65% in Turkey as a whole), as shown in Table 2.1.

Population density in the basin is as low as 22 people/km^2 compared to 34 people/km^2 for the three province and 88 people/km^2 for the whole Country. Population density does not vary much among districts ranging from 13 people/km^2 in Yusufeli of Artvin to 35 people/km^2 in Borcka of Artvin.

During the last decade the population decreased by 49,275 or 10.2% from 481,534 in 1990. Annual average population growth rate in the last decade was –1.1% on average. In contrast to the increase in urban population at 1.6% per annum on average, rural population has decreased annually at 2.4% on average during the same period. Population decrease occurred rapidly in Murgul, Savsat and Yusufeli districts of Artvin and in Olur, Oltu and Ispir districts of Erzurum with annual average population growth rate of –3.5% or less.

On the other hand, population in the three provinces increased by 58,317 or 5.0% during the last decade with average annual growth rate of 3.0% for urban and –2.0% for rural, respectively. Population decrease has been attributed to out-migration from rural areas to urban centers not only within the catchment but also regional centers and mega cities such as Ankara and Istanbul.

There are only two districts (Tortum of Erzurum and Demirozu of Bayburt) at which rural population has increased during the last decade, while urban population in three districts (Murgul of Artvin, Bayburt and Demirozu of Bayburt) has decreased during the same period.

Table 2.1 Demographic Features of the Coruh River Catchment

Province / District	Population as of 2000			Annual average growth rate (1990-2000; %)			Surface area (km^2)	Pop. density (nos./km^2)
	Urban	Rural	Total	Urban	Rural	Total		
Artvin	84,198	107,736	191,934	2.45	-3.04	-1.03	7,367	26.1
Coruh basin in the prov.	*54,674*	*85,329*	*140,003*	*2.07*	*-3.28*	*-1.55*	*6,856*	*20.4*
Artvin (Center)	*23,157*	*11,415*	*34,572*	*1.32*	*-1.96*	*0.10*	*1,085*	*31.9*
Ardanuc	*5,278*	*9,199*	*14,477*	*0.44*	*-3.20*	*-2.04*	*989*	*14.6*
Borcka	*9,008*	*18,646*	*27,654*	*3.97*	*-2.58*	*-0.92*	*799*	*34.6*
Murgul	*3,801*	*4,742*	*8,543*	*-1.18*	*-4.70*	*-3.30*	*336*	*25.4*
Savsat	*7,325*	*18,299*	*25,624*	*4.21*	*-3.97*	*-2.28*	*1,377*	*18.6*
Yusufeli	*6,105*	*23,028*	*29,133*	*4.44*	*-3.56*	*-2.38*	*2,270*	*12.8*
Erzurum	560,551	376,838	937,389	3.41	-1.70	1.00	25,323	37.0
Coruh basin in the prov.	*67,770*	*127,128*	*194,898*	*2.19*	*-2.03*	*-0.77*	*9,265*	*21.0*
Ispir	*11,188*	*18,149*	*29,337*	*3.37*	*-3.58*	*-1.51*	*2,012*	*14.6*
Narman	*9,025*	*18,590*	*27,615*	*2.59*	*-0.06*	*0.72*	*903*	*30.6*
Oltu	*23,064*	*16,473*	*39,537*	*0.56*	*-3.85*	*-1.55*	*1,394*	*28.4*
Olur	*3,271*	*7,600*	*10,871*	*1.89*	*-5.07*	*-3.48*	*798*	*13.6*
Pazaryolu	*4,826*	*4,827*	*9,653*	*4.44*	*-3.16*	*-0.13*	*747*	*12.9*
Senkaya	*3,676*	*23,956*	*27,632*	*1.94*	*-2.17*	*-1.72*	*1,536*	*18.0*
Tortum	*7,905*	*30,792*	*38,697*	*3.98*	*0.69*	*1.27*	*1,467*	*26.4*
Uzundere	*4,815*	*6,741*	*11,556*	*3.24*	*-2.57*	*-0.58*	*408*	*28.3*
Bayburt	41,356	56,002	97,358	0.01	-1.63	-0.97	3,739	26.0
Coruh basin in the prov.	*41,356*	*56,002*	*97,358*	*0.01*	*-1.63*	*-0.97*	*3,739*	*26.0*
Bayburt (Center)	*32,285*	*38,982*	*71,267*	*-0.42*	*-2.02*	*-1.33*	*2,655*	*26.8*
Aydintepe	*7,010*	*5,604*	*12,614*	*3.10*	*-2.70*	*0.06*	*473*	*26.7*
Demirozu	*2,061*	*11,416*	*13,477*	*-1.72*	*0.49*	*0.12*	*611*	*22.1*
Provinces total	686,105	540,576	1,226,681	3.04	-1.98	0.49	36,429	33.7
Coruh basin total	*163,800*	*268,459*	*432,259*	*1.55*	*-2.37*	*-1.07*	*19,860*	*21.8*
TURKEY	44,109,336	23,735,567	67,844,903	2.74	0.40	1.85	769,604	88.2

Note: Urban population is the total population of province and district centers, while rural population consists of the population in sub-districts and villages.
Source: JICA Study Team based on Census of Population 2000, Artvin, Erzurum and Bayburt; SIS

C.2.1.3Age structure

Median age in the three provinces has increased during the last two decades as shown in Table 2.2.

Table 2.2 Median Age and Dependency Ratio by Province

Census year	Median age			Dependency ratio					
				Artvin		Erzurum		Bayburt	
	Artvin	Erzurum	Bayburt	65+	0-14	65+	0-14	65+	0-14
1960	19.4	19.3		8.6	81.6	5.7	79.8		
1970	18.8	18.2		9.9	80.1	6.8	83.8		
1980	20.6	17.6		11.1	65.3	6.4	84.0		
1990	24.8	19.0	20.3	12.4	50.1	6.5	73.5	8.3	65.2
2000	29.4	21.4	23.1	17.1	38.2	8.0	58.5	12.6	56.5

Note: Dependency ratio is calculated by dividing the population at 65 years of age and over or 0-14 age group by the population at 15-64 age group, and expressed as percentage.
Source: JICA Study Team based on Census of Population 2000, Artvin, Erzurum and Bayburt; SIS 2001

In Artvin it has increased from 20.6 in 1980 to 29.4 in 2000, from 17.6 to 21.4 in Erzurum during the same period and from 20.3 in 1990 to 23.1 in 2000 in Bayburt. This is reflected in dependency ratio. Dependency ratio of the population with the ages of 65 and over to the population with the age

between 15 and 64 (dependency ratio on 65+) has increased while that at 0-14 has decreased.

Dependency ratio on 65+ is higher in rural areas as shown in Table 2.3. dependency ratio on 65+ in sub-districts and villages in Artvin is 24.2 compared to 12.1 in Erzurum and 16.1 in Bayburt.

Table 2.3 Dependency Ratio by Locality and by Province

Province	Provincial center		District centers		Sub-districsts & villages	
	65+	0-14	65+	0-14	65+	0-14
Artvin	6.5	35.7	9.3	43.4	24.2	35.6
Erzurum	5.1	47.4	6.6	58.8	12.1	71.1
Bayburt	8.0	52.9	8.8	72.1	16.1	56.3

Source: JICA Study Team based on Census of Population 2000, Artvin, Erzurum and Bayburt; SIS 2001

C.2.1.4 Composition of population by sex

The population of male and female in the whole catchment is almost even; 216,995 for male and 215,294 for female, respectively, as shown in Table 2.4, but female population surpasses male population by 10,000 in rural areas (129,084 for male and 139,375 for female, respectively). There is a common tendency for the whole three provinces that more male in urban area and more female in rural areas. In Erzurum province particularly, urban male population is 14% more than urban female population.

Table 2.4 Urban and Rural Population by Sex in the Coruh River Catchment

Province	Urban population			Rural population			Total population		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Artvin	44,471	39,727	84,198	52,128	55,608	107,736	96,599	95,335	191,934
Coruh basin in Artvin	*29,402*	*25,272*	*54,674*	*41,299*	*44,030*	*85,329*	*70,701*	*69,302*	*140,003*
Erzurum	298,759	261,792	560,551	183,440	193,398	376,838	482,199	455,190	937,389
Coruh basin in Erzurum	*36,534*	*31,236*	*67,770*	*60,695*	*66,433*	*127,128*	*97,229*	*97,669*	*194,898*
Bayburt	21,945	19,411	41,356	27,090	28,912	56,002	49,035	48,323	97,358
Coruh basin in Bayburt	*21,945*	*19,411*	*41,356*	*27,090*	*28,912*	*56,002*	*49,035*	*48,323*	*97,358*
Provinces total	365,175	320,930	686,105	262,658	277,918	540,576	627,833	598,848	1,226,681
Coruh basin total	*87,881*	*75,919*	*163,800*	*129,084*	*139,375*	*268,459*	*216,965*	*215,294*	*432,259*

Source: JICA Study Team based on Census of Population 2000, Artvin, Erzurum and Bayburt; SIS

C.2.2 Economic Structure

C.2.2.1 Labor force and employment

According to the population census 2000, the number of labor force is 486,022 in total of Artvin, Erzurum and Bayburt provinces, as shown in Table 2.5.

Table 2.5 Labor Force by Locality and by Province

Province	Urban			Rural			Province total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Artvin	21,019	4,228	25,247	31,954	29,151	61,105	52,973	33,379	86,352
Erzurum	123,086	15,749	138,835	100,158	114,947	215,105	223,244	130,696	353,940
Bayburt	9,413	905	10,318	16,299	19,113	35,412	25,712	20,018	45,730

Total	153,518	20,882	174,400	148,411	163,211	311,622	301,929	184,093	486,022

Note: Labor force includes both employed and unemployed population.
Source: JICA Study Team based on Population Census 2000, Artvin, Erzurum and Bayburt, SIS

In urban area, the number of labor force totals 174,400 of which 153,518 are male. On the other hand in rural area, labor force totals 311,622, more than half of which are female. The majority of women in urban area stay at home as housewives while most rural women work in the field.

Employment opportunities in urban area are limited in all the provinces. Urban unemployment rates are 14% for Artvin, 22% for Erzurum and 18% for Bayburt, respectively, as shown in Table 2.6.

Table 2.6 Unemployment Rate by Locality and by Province

Province	Urban			Rural			Province total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Artvin	11%	31%	14%	6%	2%	4%	8%	6%	7%
Erzurum	21%	37%	22%	1%	0%	1%	12%	5%	9%
Bayburt	17%	31%	18%	1%	0%	1%	7%	2%	5%

Source: JICA Study Team based on Population Census 2000, Artvin, Erzurum and Bayburt, SIS, 2001

While the unemployment rate for male in urban area employment opportunity for urban female is very limited with the unemployment rates of more than 30%. On the other hand, most labor force both male and female in rural areas is employed.

C.2.2.2 Occupation

In all the three provinces, nearly half of the employed in urban areas are engaged in community, social and personal services including public administration, as shown in Table 2.7.

Table 2.7 Employed People in the Three Provinces by Locality, Sex and Occupation

Occupation	Urban			Rural			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Agriculture, hunting, forestry & fishery	6,217	894	7,111	113,902	160,819	274,721	120,119	161,713	281,832
Mining and quarrying	967	17	984	721	4	725	1,688	21	1,709
Manufacturing industry	9,954	659	10,613	2,638	153	2,791	12,592	812	13,404
Electricity, gas and water	1,770	67	1,837	302	7	309	2,072	74	2,146
Construction	12,226	123	12,349	5,717	20	5,737	17,943	143	18,086
Wholesale, retail, restaurants & hotels	20,977	1,167	22,144	2,576	93	2,669	23,553	1,260	24,813
Transport, communication and storage	7,387	356	7,743	2,607	12	2,619	9,994	368	10,362
Finance, insurance, real estate & business	4,381	954	5,335	710	85	795	5,091	1,039	6,130
Community, social and personal services	60,184	9,125	69,309	16,201	1,115	17,316	76,385	10,240	86,625
Activities not adequately defined	323	22	345	88	4	92	411	26	437
Total	124,386	13,384	137,770	145,462	162,312	307,774	269,848	175,696	445,544

Source: JICA Study Team based on Census of Population 2000, Artvin, Erzurum and Bayburt; SIS

Other important occupations are wholesale and retail trade, restaurants and hotels, construction, manufacturing, transport and communication and storage, etc. On the other hand, self-employment in the agricultural sector is by far dominant in rural areas. Some 80% of male and almost all female are

engaged in agriculture including livestock. Actually female in most cases are employed as unpaid family labor.

Agriculture sector absorbs 63% of the total employment in the whole three provinces, followed by community, social and personal services with 19%, wholesale and retail trade, restaurants and hotels with 5.6%, construction with 4.1%, manufacturing industry with 3.0%, transportation, communication and storage with 2.3%, etc.

C.2.2.3 Gross Regional Domestic Products (GRDP)

GRDP in the three provinces totals TL.935,071 x 10^6 as shown in Table 2.8.

Table 2.8 Gross Regional Domestic Products as of 2000 by Province and by Sector

Unit: million TL. at 1987 constant price

Sector	Artvin		Erzurum		Bayburt		Total		Turkey	
Sub-sector	Value	%	Value	%	Value	%	Value	%	Value	%
Agriculture	57,951	19.4	132,463	22.9	14,448	24.8	204,862	21.9	15,961,788	13.4
Agriculture and livestock	*43,329*	*14.5*	*128,926*	*22.3*	*14,251*	*24.5*	*186,506*	*19.9*	*14,888,229*	*12.5*
Forestry	*13,067*	*4.4*	*2,909*	*0.5*	*44*	*0.1*	*16,020*	*1.7*	*713,645*	*0.6*
Fishery	*1,555*	*0.5*	*628*	*0.1*	*154*	*0.3*	*2,337*	*0.2*	*359,914*	*0.3*
Industry	61,773	20.6	56,412	9.8	2,573	4.4	120,758	12.9	33,737,896	28.4
Mining and quarrying	*33,973*	*11.4*	*865*	*0.1*	*31*	*0.1*	*34,869*	*3.7*	*1,642,901*	*1.4*
Manufacturing	*21,464*	*7.2*	*44,849*	*7.8*	*1,959*	*3.4*	*68,272*	*7.3*	*28,277,751*	*23.8*
Electricity, gas, water	*6,336*	*2.1*	*10,698*	*1.9*	*583*	*1.0*	*17,617*	*1.9*	*3,817,244*	*3.2*
Construction	12,343	4.1	38,145	6.6	3,809	6.5	54,297	5.8	5,991,254	5.0
Trade	58,024	19.4	145,545	25.2	10,252	17.6	213,821	22.9	26,607,547	22.4
Wholesale and retail trade	*38,460*	*12.8*	*135,614*	*23.5*	*8,923*	*15.3*	*182,997*	*19.6*	*22,685,989*	*19.1*
Hotel restaurant services	*19,564*	*6.5*	*9,931*	*1.7*	*1,329*	*2.3*	*30,824*	*3.3*	*3,921,558*	*3.3*
Transportation & communication	77,302	25.8	63,734	11.0	14,998	25.7	156,034	16.7	15,655,071	13.2
Financial institutions	3,710	1.2	9,058	1.6	1,653	2.8	14,421	1.5	2,958,024	2.5
Ownership of dwelling	8,260	2.8	28,333	4.9	4,816	8.3	41,409	4.4	5,648,940	4.8
Business and personal services	2,360	0.8	8,023	1.4	251	0.4	10,634	1.1	2,687,629	2.3
Imputed bank services charges	2,230	0.7	4,889	0.8	1,321	2.3	8,440	0.9	2,393,293	2.0
Setoral total	279,493	93.4	476,823	82.6	51,478	88.4	807,794	96.4	106,854,856	90.0
Government services	18,154	6.1	87,559	15.2	6,762	11.6	112,475	12.0	4,965,378	4.2
Private non-profit institutions	31	0.0	1,012	0.2	0	0.0	1,043	0.1	411,203	0.3
Total	297,678	99.5	565,395	97.9	58,240	100.0	921,313	98.5	112,231,437	94.5
Import Duties	1,625	0.5	12,111	2.1	23	0.0	13,759	1.5	6,557,676	5.5
GDP (In purchasers' value)	299,303	100.0	577,505	100.0	58,263	100.0	935,071	100.0	118,789,113	100.0

Source: Gross Domestic Product by Province 2000; SIS 2002

The total GRDP accounts for 0.8% of the GDP. Major sectors contributing to GRDP in the provinces include trade with 22.9%, agriculture with 21.9%, transportation and communication with 16.7%, industry with 12.9%, government services with 12.0%, etc. Compared with the GDP, the composition of GRDP in the three provinces as a whole is characterized by higher share in agriculture and government services, and lower share in manufacturing industry.

C.2.2.4 Productivity

Labor productivity by sector is calculated by dividing sector GRDP by the number of employed labor

in each sector. The result is shown in Table 2.9.

Agriculture and livestock in which the largest number of employment is absorbed shows the lowest productivity with TL.664,153 per labor, followed by the government services with TL.1,417,704, construction with TL.3,040,827, etc.

On the other hand, high productivity sectors include fishery, mining and quarrying, forestry, transportation and communication, ownership and dwelling, wholesale and retail trade, etc. High productivity of mining and quarrying industry in Artvin province is due to the large scale copper mining in Murgul, which are to be closed in 2004. The productivity in Artvin is the highest among three provinces.

Table 2.9 Productivity by Sector and by Province as of 2000

Unit: TL/employment

Sector/*Sub-sector*	Artvin	Erzurum	Bayburt	Total
Agriculture	1,186,329	661,075	443,081	726,894
Agriculture and livestock	*899,838*	*644,334*	*437,496*	*664,153*
Forestry	*20,481,191*	*11,018,939*	*1,760,000*	*17,281,553*
Fishery	*26,355,932*	*33,052,632*	*17,111,111*	*26,862,069*
Industry	14,272,874	4,724,227	2,609,533	6,998,435
Mining and quarrying	*59,497,373*	*770,258*	*2,818,182*	*20,451,026*
Manufacturing	*6,354,056*	*4,880,727*	*2,340,502*	*5,093,405*
Electricity, gas, water	*16,717,678*	*6,567,219*	*4,224,638*	*8,209,226*
Construction	2,899,460	3,203,040	2,253,846	3,040,827
Trade	15,001,034	7,473,811	6,969,409	8,617,297
Wholesale and retail trade	*14,108,584*	*8,769,091*	*7,910,461*	*9,472,385*
Hotel restaurant services	*17,131,349*	*2,477,176*	*3,874,636*	*5,610,484*
Transportation and communication	35,672,358	8,543,432	20,405,442	15,058,290
Financial institutions	6,183,333	4,466,469	7,947,115	5,084,979
Ownership of dwelling	11,284,153	12,072,007	22,400,000	12,571,038
Business and personal services	2,071,993	1,395,062	629,073	1,458,911
Government services	1,282,968	1,462,779	1,269,144	1,417,704
Total	3,728,424	1,796,976	1,334,410	2,098,718

Source: JICA Study Team based on Gross Domestic Product by Province 2000; SIS 2002 and Census of Population 2000, Artvin, Erzurum and Bayburt; SIS

C.2.2.5 Rural economy

As mentioned above, rural economy mostly depends on agriculture sector. Among sub-sectors, crop and livestock are the major income sources as shown in Tables 2.10 and 2.11. More than 80% of the total households in the Coruh river catchment earn income from both crops and livestock. Some 13% earn from crops only while 2.5% earn from livestock only. Those households living on non-agricultural activities are less than 5%.

The crops and livestock are the two major earners in the villages of the Coruh river catchment. Of the total villages in the catchment, some 42% earn most from crops such as barley and fodder crops, and another 38% from livestock/poultry activity. Fruits are the major income source for 11% of the total, and vegetables and forest products for 2% each of the total, respectively.

Villages in Artvin have diversified income sources. Two thirds of the villages have three income sources including crops, fruits, vegetables, livestock/poultry, forest products and others. While in Bayburt, most villages have only two income sources: crops and livestock/poultry. This may reflect the difference in natural conditions such as topography and climate between the areas. Forest products as income source are more important in Artvin than other areas.

Table 2.10 Major Income Sources of Rural Households in the Coruh River Catchment

Province	District	Nos. of household	Agricultural household (%)					Non-agric. Household (%)
			Crop/ livestock	Crop	Livestock	fishery/ hunting	Sub-total	
Artvin	Merkez	3,105	75.4	19.5	1.1	0.1	96.1	3.9
	Ardanuc	2,875	80.6	15.8	0.2	0.0	96.6	3.4
	Borckca	3,600	82.3	16.4	0.0	0.0	98.7	1.3
	Murgul	734	89.6	9.5	0.0	0.0	99.2	0.8
	Savsat	6,008	80.4	16.7	1.6	0.0	98.7	1.3
	Yusufeli	6,131	83.7	11.4	0.5	0.0	95.6	4.4
	Coruh basin	22,453	81.2	15.3	0.7	0.0	97.2	2.8
	Province Total	27,842	77.2	18.7	0.7	0.0	96.6	3.4
Erzurum	Ispir	4,269	91.0	4.0	1.0	0.0	96.0	4.0
	Narman	2,797	85.2	6.3	1.9	0.0	93.4	6.6
	Oltu	3,615	87.1	9.2	0.6	0.0	96.9	3.1
	Olur	3,405	84.1	11.7	0.2	0.0	96.1	3.9
	Pazaryolu	1,031	89.4	8.5	1.7	0.0	99.7	0.3
	Senkaya	5,206	81.0	10.9	1.5	0.0	93.4	6.6
	Tortum	4,733	65.8	22.4	8.1	0.1	96.3	3.7
	Uzundere	1,621	60.3	32.5	1.2	0.0	94.1	5.9
	Coruh basin	26,677	80.6	12.5	2.3	0.0	95.5	4.5
	Province Total	61,635	80.1	8.9	4.5	0.0	93.5	6.5
Bayburt	Merkez	6,536	77.1	6.9	7.5	0.0	91.5	8.5
	Aydintepe	1,055	73.4	6.2	10.0	0.0	89.6	10.4
	Demirozu	1,674	81.8	4.8	3.0	0.0	89.7	10.3
	Coruh basin (Province total)	9,265	77.6	6.4	7.0	0.0	91.0	9.0
Coruh basin total		31,818	80.4	12.6	2.5	0.0	95.4	4.6
Provinces total		37,207	79.0	11.4	3.7	0.0	94.1	5.9

Source: Village inventory 1997, Artvin, Erzurum, Bayburt; SIS

Table 2.11 Distribution of Villages by Important Income Sources

Unit: %

Province	Area	Order of importance	Income source							Total
			Crop	Fruits	Vegetable	Livestock/ poultry	Forest products	Handicraft	Others	
Artvin	Coruh catchment	1	33	18	3	33	9	0	3	100
		2	22	20	11	31	3	0	3	92
		3	14	17	9	17	6	0	3	66
	Province total	1	29	31	4	27	7	0	2	100
		2	30	18	9	30	3	0	3	93
		3	14	14	13	19	5	0	3	69
Erzurum	Coruh catchment	1	47	11	2	36	1	0	3	100
		2	38	18	5	30	1	0	0	93
		3	7	11	15	7	2	0	3	45
	Province total	1	31	7	1	57	1	0	2	100
		2	57	8	2	26	1	0	1	94
		3	4	4	8	3	1	0	3	24
Bayburt	Coruh catchment	1	44	1	2	50	0	0	3	100

(Province total)	2	50	1	2	42	0	0	1	96
	3	2	1	4	3	0	0	0	10
Coruh basin total	1	42	11	2	38	3	0	3	100
	2	36	15	6	33	2	0	1	93
	3	8	11	11	9	3	0	2	44
Three Provinces total	1	32	11	2	50	2	0	3	100
	2	51	9	4	28	1	0	1	94
	3	6	6	8	7	2	0	3	32

Source: Village inventory 1997, Artvin, Erzurum, Bayburt; SIS

C.2.2.6 Land holding size and number of animals

(1) Land holding size

Due to the harsh topographic conditions, available farmland area in each household is generally limited with many parcels as shown in Table 2.12.

Table 2.12 Number of Households and Land Parcels by Land Size Category in the Coruh River Catchment

	Category	Land size groups (ha)					
		0-0.5	0.6-1.1	1.2-2.0	2.1-5.0	5.0+	Total
Artvin	Nos. of household	6,333	6,210	5,211	3,325	587	21,666
	Nos. of land	31,610	40,154	38,275	27,884	7,589	145,512
	Average nos. of land	5.0	6.5	7.3	8.4	12.9	6.7
	Total land area (ha)	2,758	5,422	8,877	12,083	4,548	33,688
	Average land area (ha)	0.44	0.87	1.70	3.63	7.75	1.55
Erzurum	Nos. of household	5,323	4,534	5,324	5,977	2,677	23,835
	Nos. of land	18,371	22,235	31,022	49,569	30,539	151,736
	Average nos. of land	3.5	4.9	5.8	8.3	11.4	6.4
	Total land area (ha)	2,124	4,004	8,528	20,784	23,307	58,746
	Average land area (ha)	0.40	0.88	1.60	3.48	8.71	2.46
Bayburt	Nos. of household	668	757	1,438	2,658	2,260	7,781
	Nos. of land	960	1,641	4,050	11,960	21,974	40,585
	Average nos. of land	1.4	2.2	2.8	4.5	9.7	5.2
	Total land area (ha)	311	685	2,391	9,980	26,966	40,333
	Average land area (ha)	0.47	0.90	1.66	3.75	11.93	5.18
Total	Nos. of household	12,324	11,501	11,973	11,960	5,524	53,282
	Nos. of land	50,941	64,030	73,347	89,413	60,102	337,833
	Average nos. of land	4.1	5.6	6.1	7.5	10.9	6.3
	Total land area (ha)	5,193	10,111	19,796	42,847	54,821	132,767
	Average land area (ha)	0.42	0.88	1.65	3.58	9.92	2.49

Note: Data shown are confined to the Coruh river catchment only.
Source: Village inventory 1997, Artvin, Erzurum, Bayburt; SIS

Average land holding size per household in the Coruh river catchment is 2.5 ha with 6.3 parcels. It is the smallest In Artvin with an area of 1.6 ha, while largest in Bayburt with 5.2 ha. Average land holding size per land parcel is 0.2 ha in Artvin, 0.4 ha in Erzurum and 1.0 ha in Bayburt, respectively, with the overall average area of 0.4 ha. In Artvin, average number of land parcels per household is 6.7, larger than the other two provinces. Even in the land size category of 0 – 0.05 ha, average number of land parcels is 5.0, compared to 3.5 in Erzurum and 1.4 in Bayburt. The share of the number of

households having not more than 2.0 ha of land is 67% in the whole catchment, ranging from 37% in Bayburt to 82% in Artvin, while that having more than 5.0 ha of land is 10% in the Coruh river catchment as a whole, ranging from 3% in Artvin to 29% in Bayburt. As a comparison, the average land holding size per household in the Country is 5.9 ha, according to the 1991 Agricultural Census. Also the share of the number of household having not more than 2.0 ha of land in the whole Turkey is 35%, and that having more than 5.0 ha is 33%.

(2) Number of animals

Average number of animals raised per household in the Coruh river catchment is shown in Table 13.

Table 2.13 Average Number of Raised Animals per Household in the Coruh River Catchment

Prov.	Cattle	Sheep	Goat
Artvin	3.4	3.7	0.7
Erzurum	6.0	4.0	0.8
Bayburt	5.9	9.2	0.2
Coruh basin	5.0	4.7	0.7

Note: Data shown are confined to the Coruh river catchment only.
Source: Village inventory 1997, Artvin, Erzurum, Bayburt; SIS

Average number of animals raised per household in the whole Coruh river catchment is 5.0 for cattle, 4.7 for sheep and 0.7 for goat, respectively. The average number of cattle raised per household is 3.4 in Artvin, 6.0 in Erzurum and 5.9 in Bayburt. As for sheep it is 3.7 in Artvin, 4.0 in Erzurum and 9.2 in Bayburt. The number of goat per household is less than one in all provinces. As a matter of fact, cattle are raised by most of the agricultural households while sheep and goat are raised by limited number of farm households. The number of sheep and goat per raiser is much more large.

C.2.3 Social Aspects

C.2.3.1 Size of Household

Number of households, distribution of household size and average household size in the three provinces are shown in Table 2.14. Average household size in each province is 4.5 for Artvin, 5.7 for Erzurum and 5.6 for Bayburt, respectively. In all provinces, average houshold size is the smallest in the province center. Average household size in the district centers and rural areas of Erzurum and in rural areas of Bayburt is more than 6.0 due to higher percentage of the households with more than 10 members. Noteworthy is the higher percentage of the households with the size of 2 in rural areas of all the provinces, which may suggest the outmigration of younger generation leaving older couple behind. Particularly in Artvin, 18% of the households in the rural area are 2 members only.

Table 2.14 Distribution of Households by Size and Average Household Size by Locality

Province	Locality	Total nos. of hh*	Size of household										Total population	Average hh size
			1	2	3	4	5	6	7	8	9	10+		
Artvin	Provincial Center	5,259	4%	12%	19%	31%	21%	8%	4%	1%	0%	0%	21,248	4.0
	Total of district centers	13,569	4%	11%	15%	27%	21%	12%	6%	2%	1%	2%	59,639	4.4
	Rural areas	27,382	6%	18%	12%	15%	16%	13%	8%	5%	3%	5%	129,145	4.7
	Province Total	46,210	5%	15%	14%	20%	18%	12%	7%	4%	2%	3%	210,032	4.5
Erzurum	Provincial Center	70,006	3%	9%	13%	20%	20%	15%	12%	4%	2%	2%	343,370	4.9
	Total of district centers	28,368	2%	6%	9%	14%	15%	14%	18%	5%	4%	14%	178,758	6.3
	Rural areas	64,773	3%	9%	7%	11%	13%	14%	14%	8%	6%	15%	412,138	6.4
	Province total	163,147	3%	8%	10%	15%	16%	14%	14%	6%	4%	9%	934,266	5.7
Bayburt	Provincial Center	6,002	3%	9%	12%	20%	20%	15%	12%	4%	2%	3%	29,820	5.0
	Total of district centers	1,289	2%	5%	5%	10%	14%	14%	25%	6%	4%	15%	8,852	6.9
	Rural areas	10,649	3%	11%	8%	11%	15%	16%	16%	7%	4%	9%	62,009	5.8
	Province Total	17,940	3%	10%	9%	14%	17%	15%	15%	6%	4%	8%	100,681	5.6
Total	Provincial Center	81,267	3%	9%	14%	21%	20%	14%	12%	3%	2%	2%	394,438	4.9
	Total of district centers	43,226	3%	8%	11%	18%	17%	13%	14%	5%	3%	10%	247,249	5.7
	Rural areas	102,804	4%	12%	9%	12%	14%	14%	13%	7%	5%	12%	603,292	5.9
	Province Total	227,297	3%	10%	11%	16%	17%	14%	13%	5%	3%	8%	1,244,979	5.5

Remarks: hh means household.
Source: Census of Population 2000, Artvin, Erzurum, Bayburt, SIS 2001

C.2.3.2 Housing facilities

Common housing facilities including toilet, bath, kitchen and piped water are well equipped in urban areas of all the three provinces, as shown in Table 2.15.

Table 2.15 Provision of Housing Facilities by Locality and by Province

Facility		Artvin			Erzurum			Bayburt			Total		
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Toilet	Inside the house	97%	60%	75%	93%	34%	69%	98%	83%	89%	93%	46%	72%
	Outside the house	3%	39%	24%	7%	47%	23%	2%	14%	9%	6%	42%	22%
	Doesn't exist	0%	1%	1%	1%	18%	8%	0%	2%	2%	1%	12%	6%
	Unknown	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bath	Inside the house	97%	69%	80%	94%	55%	79%	97%	86%	91%	95%	62%	80%
	Outside the house	1%	4%	2%	1%	5%	3%	0%	1%	1%	1%	4%	3%
	Doesn't exist	2%	27%	17%	5%	39%	18%	3%	13%	8%	4%	33%	17%
	Unknown	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Kitchen	Inside the house	98%	81%	88%	96%	65%	84%	98%	92%	94%	97%	72%	86%
	Outside the house	0%	2%	1%	1%	6%	3%	0%	1%	0%	1%	4%	2%
	Doesn't exist	1%	17%	11%	3%	29%	13%	1%	8%	5%	3%	24%	12%
	Unknown	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Piped water	Inside the house	99%	73%	83%	96%	49%	78%	98%	94%	95%	97%	60%	80%
	Outside the house	1%	13%	8%	1%	9%	5%	0%	2%	1%	1%	10%	5%
	Doesn't exist	1%	14%	9%	2%	41%	18%	2%	4%	3%	2%	30%	15%
	Unknown	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
	Total	18,828	27,382	46,210	98,374	64,773	163,147	7,291	10,649	17,940	124,493	102,804	227,297

Source: JICA Study Team based on Population Census 2000, Artvin, Erzurum and Bayburt, SIS 2001

More than 90% of the urban houses are equipped with those facilities. But the provision conditions of those facilities differ much in rural areas among provinces. In Bayburt rural houses are also well equipped with those facilities: 97% with toilet; 87% with bath; 93% with kitchen and 96% with piped water. However, in Erzurum provision conditions are lower: 81% with toilet, 60% with bath, 71% with kitchen, and 58% with piped water. In rural houses of Artvin, provision of housing facilities is intermediate except toilet with which almost all rural houses are equipped.

C.2.3.3 Literacy and education

Literacy rate of the populace with six years old and over in the three provinces is 84.4%, male having higher literacy rate of 92.7% while female being 75.7%, as shown in Table 2.16.

Table 2.16 Literacy Rate by Locality, Sex and Province

Province	Urban			Rural			Province		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Artvin	97.0	88.4	92.9	92.0	72.7	82.0	94.3	79.2	86.8
Erzurum	95.1	82.2	89.1	87.2	64.0	75.2	92.2	74.6	83.6
Bayburt	96.4	84.9	91.0	92.3	74.7	83.1	94.2	78.8	86.5
Average	95.4	83.1	89.7	88.8	67.0	77.5	92.7	75.7	84.4

Source: JICA Study Team based on Population Census 2000, Artvin, Erzurum and Bayburt, SIS 2001

There is little difference in literacy rate among urban areas of the three provinces. Literacy rate in rural areas is lower than that in urban areas: 90% in urban versus 78% in rural. The literacy rate of female in rural areas is much lower than that in urban arreas.

Educational attainment of literate population varies among provinces. Those literate who did not finish school accounts for 22% in Artvin, 30% in Erzurum and Bayburt, respectively, and those who attained high school and higher education shares 22% in Artvin, 21% in Erzurum and 15% in Bayburt, as shown in Table 2.17. Noteworthy is high rate of higher education attainment (high school and higher) in the rural areas of Artvin. Some 15% of the literate finished higher education, compared to 8% in Erzurum and Bayburt.

Female do not attain higher education in both urban and rural areas in general. Those male who attained high school or higher education shares 21 to 27% in three provinces, only 7 to 15% of female attained the same education level. Particularly in rural areas of Erzurum and Bayburt, not more than 3% of females finished high school or higher education.

Table 2.17 Educational Attainment among Literate by Locality, Sex and Province

Unit: % of population

	Educational attainment	Urban			Rural			Province total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Artvin	No school completed	18.8	24.4	21.3	20.2	25.0	22.4	19.6	24.7	21.9
	Primary school/education	33.9	46.2	39.4	49.0	62.8	55.3	41.8	55.1	47.9
	Junior high school	12.4	6.7	9.8	10.4	4.2	7.5	11.3	5.3	8.6
	High school and higher	34.8	22.5	29.3	20.4	7.9	14.6	27.2	14.7	21.5
	Education level unknown	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.1	0.1
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Erzurum	No school completed	24.8	29.6	26.8	34.5	39.7	36.8	28.2	33.2	30.3
	Primary school/education	29.0	43.9	35.4	46.7	55.9	50.8	35.2	48.2	40.8
	Junior high school	12.3	6.6	9.8	7.1	1.7	4.7	10.5	4.8	8.0
	High school and higher	33.9	19.9	27.9	11.6	2.8	7.7	26.2	13.8	20.8
	Education level unknown	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Bayburt	No school completed	27.2	30.5	28.6	30.7	32.5	31.5	29.1	31.6	30.2
	Primary school/education	29.9	48.9	38.1	50.2	63.6	56.5	40.9	57.3	48.3
	Junior high school	11.9	6.7	9.7	6.7	1.6	4.3	9.1	3.8	6.7
	High school and higher	31.0	13.7	23.5	12.3	2.3	7.6	21.0	7.2	14.7
	Education level unknown	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: JICA Study Team based on Census of Population 2000, Artvin, Erzurum and Bayburt; SIS

C.2.4 Forest Villages

C.2.4.1Forest village inventory

(1) Definition of forest village

According to the Forest Villagers Development Fund Regulations prepared in 1977 by ORKOY, MOF, forest village is defined as “the village that has forest within its boundaries”. Forest villages are classified into two categories: (i) “within forest villages” and (ii) “forest neighboring villages”. Within forest village is defined as “the village that has forest within its boundaries and its lands around village settlement is surrounded by forest in four directions”. While, forest neighboring village is defined as “the village that has forest within its boundaries and its land around village settlement is surrounded by forest in at least one direction”.

According to the census of population 2000 and Orkoy, MOF, in the Coruh river catchment there are 832 villages, 62% of which or 514 are forest villages, as shown in Table 2.18.

Table 2.18 Number and Population of Villages and Forest Villages in the Coruh River Catchment by District

Province	District	All villages			Forest village total		
		no.	population 2000	Annual growth 1990-2000 (%)	no.	population 2000	Annual growth 1990-2000 (%)
Artvin	Artvin (Center)	36	11,415	-1.20	36	11,415	-1.20
	Ardanuc	49	9,199	-3.20	49	9,199	-3.20
	Borcka	36	18,646	-2.58	34	15,088	-2.54
	Murgul	11	4,742	-4.70	10	2,201	-4.19
	Savsat	62	18,299	-4.32	62	18,299	-4.32
	Yusufeli	60	23,028	-3.56	59	20,369	-3.91
	Sub-total	254	85,329	-3.28	250	76,571	-3.32
Erzurum	Ispir	90	18,149	-3.58	47	9,741	-3.72
	Narman	43	18,590	-0.06	14	5,201	-1.30
	Oltu	65	16,473	-3.76	52	14,399	-3.70
	Olur	40	7,600	-5.07	27	6,633	-4.74
	Pazaryolu	35	4,827	-3.16	0	0	-
	Senkaya	69	23,956	-2.25	56	17,718	-2.25
	Tortum	51	30,792	0.69	22	8,674	-1.89
	Uzundere	10	6,741	-2.57	10	6,741	-2.57
	Sub-total	403	127,128	-1.26	228	69,107	-2.97
Bayburt	Bayburt (Center)	123	38,982	-1.26	31	9,423	-2.67
	Aydintepe	23	5,604	-2.70	3	284	-4.09
	Demirozu	29	11,416	0.49	3	745	-4.86
	Sub-total	175	56,002	-1.09	37	10,452	-2.89
Total		832	268,459	-2.27	515	156,130	-3.14

Source: JICA Study Team based on Census of Population 2000, Artvin, Erzurum, Bayburt; SIS 2001 and ORKOY, MOF

In Artvin 250 out of 254 villages are under the category of forest village, while in Bayburt only 37 out of 175 villages are forest villages. In Erzurum, 228 villages out of the total 403 villages are forest

villages. Population in the forest villages has decreased at higher rate with 3.14% per annum during the last decade than all villages with 2.27% per annum.

Forest village inventory

All the forest villages are listed and presented in an appendix 1 of this Paper, and the summary table is shown in Table 2.19. Spatial distribution of the forest villages in the Catchment is shown in Figure 2.1.

Table 2.19 Summary of Forest Village Inventory

Province	District	Within forest village			Forest neighboring village			Forest village total		
		nos.	population 2000	Annual growth 1990-2000 (%)	nos.	population 2000	Annual growth 1990-2000 (%)	nos.	population 2000	Annual growth 1990-2000 (%)
Artvin	Artvin (Center)	22	6,332	-1.26	14	5,083	-1.12	36	11,415	-1.20
	Ardanuc	12	2,228	-2.72	37	6,971	-3.34	49	9,199	-3.20
	Borcka	32	13,946	-3.13	2	1,142	12.72	34	15,088	-2.54
	Murgul	8	1,906	-5.56	2	295	-	10	2,201	-4.19
	Savsat	61	18,120	-4.36	1	179	0.82	62	18,299	-4.32
	Yusufeli	20	6,493	-4.28	39	13,876	-3.73	59	20,369	-3.91
	Sub-total	155	49,025	-3.64	95	27,546	-2.72	250	76,571	-3.32
Erzurum	Ispir	13	2,636	-3.72	34	7,105	-3.72	47	9,741	-3.72
	Narman	4	1,051	-2.90	10	4,150	-0.85	14	5,201	-1.30
	Oltu	12	3,397	-4.49	40	11,002	-3.44	52	14,399	-3.70
	Olur	2	973	-4.80	25	5,660	-4.73	27	6,633	-4.74
	Senkaya	12	5,045	-0.89	44	12,673	-2.74	56	17,718	-2.25
	Tortum	0	0	-	22	8,674	-1.89	22	8,674	-1.89
	Uzundere	0	0	-	10	6,741	-2.57	10	6,741	-2.57
	Sub-total	43	13,102	-2.99	185	56,005	-2.97	228	69,107	-2.97
Bayburt	Bayburt (Center)	0	0	-	31	9,423	-2.67	31	9,423	-2.67
	Aydintepe	0	0	-	3	284	-4.09	3	284	-4.09
	Demirozu	2	530	-4.37	1	215	-5.95	3	745	-4.86
	Sub-total	2	530	-4.37	35	9,922	-2.80	37	10,452	-2.89
Total		200	62,657	-3.51	315	93,473	-2.88	515	156,130	-3.14

Source: JICA Study Team based on Census of Population 2000, Artvin, Erzurum, Bayburt; SIS 2001 and ORKOY, MOF

Out of 515 forest villages, there are 200 “within forest villages”, 77% of which or 155 are in Artvin province, and merely two are in Bayburt. The remaining 315 are “forest neighboring villages”, 59% of which or 185 are in Erzurum. The forest village population in the Coruh catchment totals 156,130, of which 62,657 or 40% live in “within forest villages” and the remaining 93,473 or 60% reside in “forest neighboring villages”. Average village size in terms of population does not differ between two forest village categories: 313 per village for “within forest village” and 298 per village for “forest neighboring village”. Population decrease has occurred in both categories of villages but at faster rate in “within forest villages” with –3.51% per annum on average during the last decade than in “forest neighboring villages” with –2.88% per annum during the same period.

Figure 2.1 Spatial Distribution of Forest Villages

Same as Figure 3.5-1 of the Interim Report (Page 3-72)

C.2.4.2 Socio-economic conditions of the Forest Villages

(1) Rural Socio-Economic Survey

In order to grasp the socio-economic conditions of the forest villages in the Coruh river catchment, a rural socio-economic survey was conducted in villages in the selected six micro-catchments[1]. Total of 27 forest villages, one normal villages (to be a forest village in the future), and one municipality (nearby forest) in the six micro-catchments were selected for the survey, considering accessibility, spatial distribution of the villages, topographic features, population, etc., through map study and through consultation with Turkish counterparts. The name of the villages and their demographic data in each micro-catchment are shown in Table 2.20.

Table 2.20 Villages to which Rural Socio-Economic Survey was Conducted

No.	District/village	Population in 2000			Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total			inside forest	nearby forest
Oltu (OL-04)								
009	Ballica	80	102	182	425	-8.13%		●
010	Basakli	280	319	599	948	-4.49%		●
044	Orucuk	213	302	515	701	-3.04%		●
045	Ozdere	254	304	558	724	-2.57%		●
057	Tutmac	176	205	381	780	-6.91%		●
Uzundere (TR-06)								
001	Altincanak	105	135	240	306	-2.40%		●
003	Cevizli	483	553	1,036	1,361	-2.69%		●
004	Caglayan	217	256	473	553	-1.55%		●
008	Kirazli	446	529	975	1,225	-2.26%		●
009	Sapaca	254	274	528	702	-2.81%		●
Ispir (UC-14)								
016	Durukoy	229	258	487	676	-3.23%		
025	Koc	103	144	247	497	-6.75%		●
026	Koprukoy	235	264	499	702	-3.36%		●
030	Numanpasa	97	118	215	243	-1.22%		●
009	Gockoy	65	77	142	208	-3.75%		●
Savsat (BT-04)								
006	Cavdarli	84	71	155	271	-5.43%	●	
008	Ciftilik	134	123	257	386	-3.99%	●	
013	Hanli	153	162	315	553	-5.47%	●	
019	Kirecli	299	329	628	960	-4.16%	●	
025	Savaskoy	177	168	345	668	-6.39%	●	
Yusufeli (MC-03)								
000	Kilickaya*	1,434	1,225	2,659	2,762	-0.38%		
001	Alanbasi	277	352	629	783	-2.17%		●
003	Bakirtepe	62	68	130	234	-5.71%		●
004	Celtikduzu	195	240	435	696	-4.59%		●
Bayburt (UC-03)								
050	Heybetepe	85	106	191	224	-1.58%		●
000	Maden**	193	159	352	529	-3.99%		●
008	Gezkoy	78	70	148	174	-1.61%		●
013	Masat	941	936	1,877	1,890	-0.07%		●
019	Yaylapinar	192	207	399	558	-3.30%		●

Remarks: * Municipality; ** Sub-district Center
Source: JICA Study Team based on Population Census 2000, SIS and Ministry of Environment and Forestry

[1] The method for selecting micro-catchments is explained in Chapter 6 of the Master Plan Report

The rural socio-economic survey consisted of key informant survey to muhtar in each village and household survey to 20 households in each village. For both surveys, a questionnaire was prepared by the JICA Study Team in consultation with the Ministry of Forestry. Those questionnaires are presented in Appendixes 2 to 5 in both English and Turkish. Six survey teams, consisting of two members each, were organized by the Department of Agricultural Economics of the Ataturk University so that each team would cover one of the six micro-catchments. The survey was conducted in about a month from June to July 2003. It took three days for each team to finish the survey each village. The survey results were encoded into computer for analysis. The data arrangement and analysis were made by the JICA Study Team.

Aside from the questionnaire survey,

(2) Results of the Rural Socio-Economic Survey

The results of the survey are shown by micro-catchments and by village in Tables 2.21 to 2.26. Socio-economic features of the forest villages in each micro-catchment are generally described below.

Oltu micro-catchment (OL-04) (refer to Table 2.21)

Location and pattern of the villages

The villages are located generally in mountain slopes or bottom of valley in mountainous area. Ballica and Tutmac show compacted village pattern while others consist of two to three settlements or “mahalles”. Distance from the district center of Oltu to the villages ranges from 15 km to 35 km, taking 20 to 35 minutes by vehicle.

Educational attainment of the head of households

This MC shows the lowest educational attainment of the head of households with more than 90% being primary school graduates or lower.

Household size and land holding size

Average household size is 5.1 ranging from 4.3 in Basakli to 6.2 in Ballica. Average cultivated land area is 1.9 ha, ranging from 1.1 ha in Orcuk to 3.7 ha in Basakli.

Agricultural activities

In the MC on average, wheat shares the largest area with 44% of the cultivated land, fodder crops come next with 26%, followed by barley with 14% and vegetables with 11%. In Ozdere and Tutmac villages, fodder crops shares more than 50% of the area cultivated, while wheat is dominant in the other three villages. Yield of wheat is some 1,500 kg/ha on average, ranging from 930 kg/ha in Basakli to 1,870 kg/ha in Tutmac.

The use of manure is popular only in Ozdere and Tutmac, where about half of the households use manure with the amount of 3.7 ton to 10.9 ton per household. On the other hand, most farmers in all villages use chemical fertilizer with the average amount of 323 kg per household. Chemical fertilizer is applied mainly to wheat, barley and vegetables.

More than 50% of the farmers use agro-chemicals on average, ranging from 30% in Orcuk to 90% in Tutmac. Hiring tractor is rather common in all the villages. More than 80% of the farmers rented tractor for cultivation.

Livestock activities

Livestock raising, especially cattle, is common practice in the villages. More than 80% of the farmers raise cattle. Average number of raised cattle per household is eight. The share of local breed cattle in the total number of cattle is 31%, ranging from 0% in Ozdere to 76% in Ballica.

Other animals raised are sheep and goat. Some 24% of the farmers raise sheep and 6% raise goat. Average number of raised 15 for sheep and 7 for goat. Sheep raising is more popular in Orcuk (40% of the farmers) than in Ozdere (10%) and Basakli (11%). On the other hand, scale of sheep raising is larger in Ozdere with the average number of raised sheep per household of 30, compared to seven in Ballica.

On average more than 50% of the farmers raise chicken. Average number of chicken raised per household is 10. Chicken raising is more popular in Ballica. Three quarters of the farmers raise 11 chicken on average.

Other agricultural activities

More than 30% of the villagers practice beekeeping. It is more popular in Orcuk, Ozdere and Tutmac. Average number of beehives per household is 14, ranging from 23 in Ballica to 7 in Basakli and Ozdere. Some 30% of the villagers grow fruit trees, ranging from zero in Ozdere to 40% in Orcuk and Ozdere. Average number of fruit trees per household is 26, ranging from zero in Ozdere to 37 in Basakli.

Greenhouse is less developed in the MC. That can be seen only in Basakli and Orcuk. There is only one inland aquaculture in Basakli.

Source of income, income level and income composition

Some 80% of the villagers derive their income from agriculture including crop and livestock. Remaining 20% derive income from non-agricultural activities like construction, taxi driver, etc. Some 5% of the villagers earn from honey production. Unearned incomes such as pension, support from other family members and revenue from rent are also important for many villagers. More than 65% of the villagers have such income.

Annual household cash income, calculated from the sale of agricultural products (gross income) and other incomes (non-agricultural income and unearned income), averages TL.5,497 million or US$3,665, ranging from TL.3,915 million in Orcuk to TL.7,740 million in Ozdere. Agricultural income shares some 44% of the total income or US$1,613. Average per capita annual cash income is US$739.

Livestock shares 36% of the total income, followed by crops (6%) and bee keeping (2%) on average, while unearned income accounts for 41% and while 13% for non-agricultural income. The income composition varies from village to village. Income from crop accounts for 12% of the total income in Tutmac while 33% in livestock. The share of livestock income in the total income is 46% in Ballica, while the share of unearned income is as low as 2%.

Debts

Some 23% of the villagers have debts with the average amount of TL.889 million, which is some 16 % of the average annual cash income. Many borrow from their friends at interest free, otherwise from merchants who are more accessible.

Gender aspects

In almost all household matters, decision is made by men. Accordingly women's activities are controlled by men. In general, men mainly do work outside while women do housework. In the field men mainly do cultivation, fertilizer application, sowing, irrigation and harvesting. Women mainly do hoeing and weeding, and do harvesting together with men. In barn, feeding is mainly done by men, while milking and processing milk are done mainly by women. Cowdung making is done by both men and women. Marketing agro-products and shopping is predominantly done by men. Women are responsible for all the housework including cleaning, bread making, cooking and childcare, etc.

As described above, women are responsible for various works both inside and outside houses. Although women's house works have been eased as many households have vacuum cleaner and washing machine, they have to work from early morning till late night. Walking long distance on a poor conditioned road to their farm is one of their serious problems.

Assets

Almost all households have refrigerator, TV set and telephone. More than 75% of the households have electric oven, and more than half have washing machine and vacuum cleaner. Some 15% of households have mobile phone, and more than 10% own private vehicle.

More than 30% of the households have properties such as house, lot and shop in town.

Energy sources for heating and cooking

Most villagers depend their heating energy mainly on fuelwood and coal. Consumption volume of the fueldwood varies from two (2) to six (6) sters with the average volume of four (4) sters,. The shortfall is filled mainly with coal, which have been becoming popular although expensive. The use of LPG, as cooking energy, has been very common.

Infrastructure

All the villages are electrified, and have telephone line. Drinking water supply system has also been established in almost all villages. A primary school has been constructed in most villages. Clinic is not always available in the villages. Ballica and Ozdere do not have clinic, and even if exists, it is poorly equipped and staffed.

Natural environment

Being located in the bottom of the valley in steep mountain ranges, and due to fragile geological condition in nature, natural disasters such as flood and landslide are among others serious concern of the villagers. Ballica, Orcuk and Tutmac have experienced flood disaster during the last five years.

In Basakli, Ozdere and Tutmac, Muhtars think that forest resources within their territory have increased during the last decade, and those in the remaining villages think the resources have deteriorated. Most Muhtars think that their pastureland/rangeland has been improved. Only Muhtar in Tutmac think it has not been changed.

Problems/constraints on living

According to the villagers, the most serious problem in Ballica, Basakli and Orcuk is insufficient irrigation water. Nearly half of the villagers interviewed identified this as the problem. On the other hand, bad condition of farmroad is the most serious problem in Ozdere, and low income is the most important problem in Tutmac. Problems varies from village to village depending on their conditions. However, irrigation water insufficiency, low income, bad farm road conditions, floods are among others important concerns among villagers.

Other important problem raised by many villagers is lack of knowledge on agriculture. Due to the lack of agricultural extension activities, the forest villagers are facing several problems including pest and diseases, low productivity, etc.

Development ideas

Livelihood improvement through irrigation is among others important development idea by many villagers. Prevention of natural disasters like flood, erosion control, etc., is another priority concern among villagers who live in disaster prone areas.

Table 2.21 Results of the Rural Socio-Economic Survey - Oltu (OL-04) (1/3)

Village (no. of HH interviewed)	Ballica (20)	Basakli (20)	Orcuk (20)	Ozdere (20)	Tutmac (20)
Location	Mountain slope	Mountain slope; valley bottom	Mountain slope; valley bottom	Mountain slope	Mountain slope
Distance from District Center	15 km (20 minutes by car)	24 km (25 minutes by car)	20 km (20 minutes by car)	35 km (35 minutes by car)	30 km (35 minutes by car)
Village pattern	Compact	3 mahalles	2 mahalles	2 mahalles	Compact
Population (2000)	182	599	515	558	381
Average annual population growth rate 1990-2000	-8.13%	-4.49%	-3.04%	-2.57%	-6.91%
Average age of the head of households interviewed (20)	63 max.: 76 min: 50	60 max.: 76 min: 34	54 max.: 76 min: 27	58 max.: 78 min: 38	53 max.: 79 min: 29
Educational attainment of the head of households (number)					
- Illiterate	2	0	2	0	3
- Literate	5	2	0	2	3
- Primary school	12	17	16	16	12
- Secondary school	1	1	1	2	1
- High school	0	0	1	0	1
- College/university	0	0	0	0	0
Average household size (no. of persons)	6.2	4.3	4.6	4.6	5.6
Average no. of land parcels owned	11	16	8	14	11
Average land holding size (ha)	2.1	4.8	1.4	2.5	2.2
Average cultivated land area (ha)	1.4	3.7	1.1	1.5	1.6
Cultivated crops (% of area cultivated by the crop)					
- Wheat	47	52	57	32	30
- Barley	26	18	17	4	3
- Vegetables	11	9	12	13	11
- Maize	9	0	9	0	0
- Fodder crops	0	17	5	50	56
Average yield of wheat (kg/ha)	1,560 kg/ha	930 kg/ha	1,350 kg/ha	1,710 kg/ha	1,870 kg/ha
Average dosage of manure (kg/HH) (no. of HH using manure)	0	5,250 kg/HH (4/20) (Wheat, barley, vegetables)	1,000 kg/HH (1/20) (Wheat, Barley)	10,900 kg/HH (11/20) (Wheat, Vegetables, Fodder)	3,670 kg/HH (9/20) (Wheat, vegetables)
Average dosage of chemical fertilizer (kg/HH) (no. of HH use fertilizer) (crops to which fertilizer is applied)	280kg/HH (20/20) (Wheat, barley, vegetables)	379 kg/HH (17/19) (Wheat, barley, maize, vegetables)	263 kg/HH (19/20) (Wheat, barley, maize, vegetables, fodder)	465 kg/HH (17/19) (Wheat, vegetables, fodder)	247 kg/HH (17/20) (Wheat, vegetables)
% of HH who use agro-chemicals	50%	68% (vegetables)	30% (vegetables)	55% (vegetables)	90% (vegetables)
% of HH who rented Tractor	70%	90%	85%	95%	70%
% of HH who raise cattle	90%	84%	70%	85%	85%
Average no. of cattle per HH	4	9	4	12	11
% of local breed of cattle in total cattle	76%	27%	45%	0%	7%
% of HH who raise sheep	30%	11%	40%	10%	30%
Average no. of raised sheep per HH	7	17	12	30	11
% of HH who raise goat	0%	0%	20%	10%	0%
Average no. of raised goat per HH	0	0	8	5	0
% of HH who raise chicken	75%	50%	45%	65%	30%
Average no. of chicken per HH	11	10	7	11	11

Table 2.21 Results of the Rural Socio-Economic Survey - Oltu (OL-04) (2/3)

Village (no. of HH interviewed)	Ballica (20)			Basakli (20)			Orcuk (20)			Ozdere (20)			Tutmac (20)		
% of HH who practise bee keeping	25%			25%			40%			40%			35%		
Average no. of beehives kept per HH	23 max.: 80 min.: 3			7 max.: 10 min.: 2			20 max.: 52 min.: 2			7 max.: 20 min.: 4			12 max.: 50 min.: 3		
% of HH who grow fruit trees	0%			40%			40%			0%			10%		
Average no. of fruit trees per HH	29			37			18			0			20		
% of HH who have greenhouses	0%			5%			5%			0%			0%		
Average area (m^2) of greenhouses per HH	0			150			150			0			0		
% of HH who practise fish culture	0%			0%			0%			0%			0%		
Average area (m^2) of fish pond	0%			0%			0%			0%			0%		
Main cash income sources (no. of households derive income)															
- Livestock	14			15			11			17			16		
- Crops	5			7			4			13			13		
- Bee keeping	1			0			2			9			1		
- Unearned income (pension, support, revenue from rent)	13			15			15			14			8		
- Other incomes	2			4			5			2			7		
Average annual HH income (million TL) (US$)	5,830 (US$3,890)			5,208 (US$3,470)			3,915 (US$2,610)			7,740 (US$5,160)			4,791 (US$3,190)		
Per capita annual income (US$)	627			807			567			1,122			570		
% of income by source in total income															
- Livestock	50			33			19			46			33		
- Crops	2			6			4			8			12		
- Bee keeping	0			0			6			0			5		
- Unearned income (pension, support, revenue from rent)	35			45			54			44			29		
- Other incomes	12			15			17			2			21		
% of HH who have debts	30%			25%			20%			5%			35%		
Average debt amount	1,670 million TL.			768 million TL.			425 million TL.			300 million TL.			1,280 million TL.		
Lender	Friends			Friends Merchant			Friends			Friends			Friends		
Division of works	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common
- Cultivation	17	0	0	18	0	1	19	0	0	20	0	0	20	0	1
- Fertilizer appl.	20	0	0	18	0	1	19	0	0	20	0	0	19	0	1
- Sowing	20	0	0	18	0	1	19	0	0	19	0	1	19	0	1
- Irrigation	19	0	1	19	0	0	19	0	0	19	0	1	20	0	1
- Hoeing	1	14	0	0	16	3	1	16	3	0	20	0	0	18	9
- Weeding	7	5	0	9	2	4	7	7	3	9	10	0	5	9	7
- Harvesting	9	0	2	1	3	15	5	0	10	6	1	13	3	0	10
- Barn cleaning	15	1	0	13	0	3	11	0	0	12	0	5	10	2	0
- Cowdung making	0	0	0	9	2	4	0	3	0	11	3	2	2	11	0
- Feeding	14	0	1	15	0	1	12	0	1	15	0	2	12	3	0
- Milking	0	15	0	9	16	0	0	14	0	0	17	0	0	17	0
- Processing	1	16	0	9	15	1	0	14	0	0	17	0	0	17	0
- Marketing	14	1	0	14	0	2	9	0	0	14	4	0	13	1	0
- Shopping	20	0	0	17	0	3	20	0	0	20	0	0	20	0	0
- House cleaning	1	18	0	0	20	0	0	20	0	0	20	0	0	20	0
- Bread making	1	18	0	0	20	0	0	20	0	0	20	0	0	20	0
- Cooking	1	18	0	0	20	0	0	20	0	0	20	0	0	20	0
- Child care	1	18	0	0	20	0	0	20	0	0	20	0	0	20	0

Table 2.21 Results of the Rural Socio-Economic Survey - Oltu (OL-04) (3/3)

Village (no. of HH interviewed)	Ballica (20)	Basakli (20)	Orcuk (20)	Ozdere (20)	Tutmac (20)
Assets (no. of HH having each item)					
- Refrigerator	18	18	19	20	20
- Oven	18	10	16	17	16
- Washing machine	5	14	13	16	11
- Vacuum cleaner	11	10	10	19	13
- TV set	16	16	14	18	18
- Telephone	18	18	19	20	20
- Mobile phone	1	3	3	5	4
- Private car	2	2	1	4	0
Properties in town (no. of HH having properties)	10	6	6	6	5
- House	9	5	4	6	2
- Lot	3	1	2	2	4
- Shop	2	0	0	2	2
Influential people in the village	Muhtar (18) Imam (7)	Muhtar (19) Imam (7)	Muhtar (19) Imam (10)	Muhtar (18) Imam (6)	Muhtar (18) Imam (10)
Wishness of migration to other place (% of HH)	40%	20%	25%	30%	30%
Energy source for heating in winter (% of HH use)	Fuelwood (90%) Coal (90%)	Fuelwood (95%) Coal (90%)	Fuelwood (100%) Coal (95%)	Fuelwood (90%) Coal (95%)	Fuelwood (100%) Coal (85%)
Average annual HH consumption of fuel wood (sters)	3	6	3	2	6
Electricity	Available	Available	Available	Available	Available
Telephone	Available	Available	Available	Available	Available
Water supply	Available	Available	Available	Available	Available
Primary school	Available	Available	Available	Available	Available
Clinic	None	Available	Available	None	Available
Natural disasters	Flood	-	Flood	-	Flood
Change in forest resources in the last decade	Deteriorated	Increased	Deteriorated	Increased	Increased
Change in pasture/rangeland in the last decade	Improved	Improved	Improved	Improved	Unchanged
Past projects	Irrigation (GDRS); Credit for dairy cow and bee keeping (ORKOY); Soil erosion control (AGM)	Irrigation (GDRS); Credit for dairy cows (ORKOY)	Irrigation (GDRS); Credit for dairy cows (ORKOY)	Credit for dairy cows (ORKOY)	Credit for dairy cows (ORKOY)
Constraints/ problems identified by the muhtar	1. Sediments on low agricultural land 2. Low productivity of livestock 3. Low irrigation coverage	1. Lack of water troughs in rangeland	1. Sediments on agricultural land 2. Erosion 3. Insufficient irrigation water	1.Road is not asphalted 2. Removal of sediments in riverbed 3. Insufficient irrigation water	1.Soil erosion 2. Construction of revetment along the Sivri Cayi 3. Insufficient irrigation water
Top 5 problems identified by villagers (no. of households)	1. Insufficient irrigation water (15) 2. Insufficient supply of drinking water (10) 3. Low income; Lack of manpower; Flood; Access to potential agricultural area; Livestock; Lack of sewerage (2)	1. Insufficient irrigation water (9) 2. Lack of farmroad (7) 3. Low income; Flood; Insufficient heating energy; Low productivity of crops (3)	1. Flood; Insufficient irrigation water (9) 3. Low income (7) 4. Erosion (5) 5. Insufficient heating energy; Infertile land for agriculture (3)	1. Lack of and bad condition of farmroad (12) 2. Flood (9) 3. Insufficient irrigation water (8) 4. Low income; No clinic (7)	1. Low income (11) 2. Lack of and bad condition of farmroad (7) 3. Insufficient irrigation water (4) 4. Erosion; No health service; Insufficient heating energy (3)
Projects proposed by the Muhtar	1. Rehabilitation of agricultural land 2. Road to potential agricultural fields 3. Water pond for irrigation	1. Livestock development project (especially sheep)	1. Rehabilitation of agricultural land	1. Riverbed rehabilitation project	1. Erosion control project
Willingness of the Muhtar to participate in project activities	Yes	Yes	Yes	Yes	Yes

Uzundere micro-catchment (TR-06) (refer to Table 2.22)

Location and pattern of the villages

The villages are located generally in mountain slopes or bottom of valley in very steep mountainous area. None of the villages show compacted village pattern, and they consist of three to 10 settlements or “mahalles”. Distance from the district center of Uzundere to the villages ranges from 9 km to 30 km, taking 10 to 40 minutes by vehicle.

Educational attainment of the head of households

More than 50% of the head of households attained the highest education at primary school or lower. In Altincanak, 25% of the interviewed head of household received no education and illiterate. On the other hand, 35% finished secondary school. In Sapaca, 90% finished primary school education and the rest finished high school.

Household size and land holding size

Average household size is 5.5 ranging from 4.5 in Kirazli to 6.6 in Cevizli. Average cultivated land area is 2.8 ha, ranging from 1.3 ha in Altincanak to 4.1 ha in Kirazli.

Agricultural activities

On average, fruit trees shares the largest area with 34% of the cultivated land, wheat comes next with 32%, followed by fodder crops with 12% and vegetables and barley with 11% each.

In Altincanak, fruits trees shares nearly 70 % of the area cultivated, while wheat shares only 8%. In Sapaca, wheat is the most dominant crop with 58% share of cultivated land. Importance in fodder crops is high in Kirazli with 21% share, and low in Caglayan with 4% share. Yield of wheat is some 1,300 kg/ha on average, ranging from 1,000 kg/ha in Kirazli to 1,750 kg/ha in Caglayan.

The use of manure is popular in the villages except Caglayan where livestock raising is not active. On average, 67% of interviewed use manure with average dosage of 5,840 kg per household. The use of chemical fertilizer is more common in the villages. Nearly 75% use chemical fertilizer with the average dosage of 357 kg per household. Farmers in Sapaca use less chemical fertilizer with 168 kg per household while those in Caglayan use more with 586 kg per household. Chemical fertilizer is applied mainly to wheat, vegetables and fodder crops.

Less than 30% of the farmers use agro-chemicals on average, ranging from zero in Cevizli to 65% in Altincanak. Hiring tractor is rather common in all the villages. More than 70% of the farmers rented tractor for cultivation ranging from 40% in Altincanak to 90% in Kirazli and Sapaca.

Livestock activities

Livestock raising, especially cattle, is common practice in the villages except Caglayan where greenhouse farming is dominant. On average 60 % of the households raise cattle ranging from 30% in Caglayan to 80% in Cevizli. Average number of raised cattle per household is four (4). The share of local breed cattle in the total number of cattle is 46%, ranging from 0% in Altincanak to 98% in Cevizli.

Other animals raised are sheep and goat. Some 18% of the farmers raise sheep and 13% raise goat. Average number of raised 12 for sheep and 14 for goat. Sheep households is more popular in Cevizli (40% of the farmers) than in Caglayan and Altincanak (11%). On the other hand, scale of sheep raising is larger in Kirazli with the average number of raised sheep per household of 25, compared to seven in Caglayan. In Sapaca, a quarter of farmers raise goat with an average number of 47.

On average some 15% of the households raise chicken. Average number of chicken raised per household is six (6). Chicken raising is more popular in Sapaca. Some 35% of the farmers raise five (5) chicken on average.

Other agricultural activities

More than 30% of the households interviewed practice beekeeping. Average number of beehives possessed per household is 13, ranging from four (4) in Caglayan to 31 in Kirazli.

Nearly all of the households grow fruit trees. Average number of fruit trees per household is 173, ranging from 150 in Altincanak to 187 in Cevizli.

Greenhouse is most developed in the MC. Some 33% of the farmers have greenhouses ranging from 10% in Cevizli to 60% in Altincanak. The average floor area of greenhouses per household is more than 400 m^2 on average, ranging from 180 m^2 in Kirazli to 840 m^2 in Altincanak.

Inland fishery activity is seen in Sapaca. Some 15% of the interviewed in the village have fish pond with average area of 850 m^2.

Source of income, income level and income composition

Some 74% of the households derive their income from agriculture including crop and livestock. Remaining 26% derive income from non-agricultural activities like construction, taxi driver, etc. Some 9% of the villagers earn from honey production. Unearned incomes such as pension, support from other family members and revenue from rent are also important for many villagers. More than 50% of the households have such income.

Annual household cash income, calculated from the sale of agricultural products (gross income) and other incomes (non-agricultural income and unearned income), averages TL.5,710 million or

US$3,806, ranging from TL.3,468 million in Cevizli to TL.7,758 million in Altincanak. Agricultural income shares some 39% of the total income or US$1,484. Average per capita annual cash income is US$705, ranging from US$350 in Cevizli to US$976 in Altincanak.

Crops shares 28% of the total income, followed by livestock (6%) and bee keeping (5%) on average, while unearned income accounts for 44% and while 17% for non-agricultural income. The income composition varies from village to village. Income from crop accounts for 44% of the total income in Altincanak and 12% in beekeeping. In general, share of livestock income in the total income is not more than 10%. In Caglayan income from crops is the sole agricultural income. While unearned income shares nearly half of the total income in most villages, that in Altincanak is 26% only.

Debts

Some 64% of the households have debts with the average amount of TL.1,994 million, which is some 35 % of the average annual cash income. Many borrow from their friends at interest free, otherwise from cooperatives and merchant.

Gender aspects

In almost all household matters, decision is made by men. Accordingly women's activities are controlled by men. In general, men mainly do work outside while women do housework. In the field men mainly do cultivation, fertilizer application, sowing, weeding, irrigation and harvesting. Women mainly do hoeing and do harvesting together with men. In barn, feeding is mainly done by men or both, while milking and processing milk are done mainly by women. Marketing agro-products and shopping is predominantly done by men. Women are responsible for all the housework including cleaning, bread making, cooking and childcare, etc.

As described above, women are responsible for various works both inside and outside houses. Although women's house works have been eased as many households have vacuum cleaner and washing machine, they have to work from early morning till late night. Walking long distance on a poor conditioned road to their farm is one of their serious problems.

Assets

Almost all households have refrigerator, and telephone. More than 80% of the households have TV sets, and more than half have oven, washing machine and vacuum cleaner. More than 30% of households have mobile phone, and nearly 20% own private vehicle.

Reflecting the lower income level, household assets possessed by villagers in Cevizli are less than those in other villages. Except telephone, refrigerator and TV set, all of which are possessed by more than half of the villagers, other assets are hardly possessed by villagers. Especially washing machine is possessed by merely one villagers out of 20 interviewed.

Less than 20% of the households have properties such as house, lot and shop in town.

Energy sources for heating and cooking

Most of the households depends their heating energy mainly on fuelwood and coal. Consumption volume of the fueldwood varies from two (2) to three (3) sters with the average volume of three (3) sters,. The shortfall is filled mainly with coal, which have been becoming popular although expensive.

The use of LPG, as cooking energy, has been very common.

Infrastructure

All the villages are electrified, and have telephone line. Drinking water supply system has also been established in almost all villages. A primary school has been constructed in most villages.

Clinic is not always available in the villages. Altincanak and Sapaca do not have clinic, and even if exists, it is poorly equipped and staffed.

Natural environment

Being located in the bottom of the valley in steep mountain ranges, due to degraded vegetation, and due to fragile geological condition in nature, natural disasters such as flood and landslide are among others serious concern of the villagers. All villages but Sapaca have experienced flood or landslide during the last five years.

In all villages except Sapaca, Muhtars think that forest resources within their territory have increased during the last decade, and that in Sapaca thinks the resources have deteriorated.

In Altincanak Muhtars thinks that their pastureland/rangeland has been deteriorated. Two muhtars in Caglayan and Cevizli think it has been unchanged, and the other two Muhtars think it has been improved.

Problems/constraints on living

According to the villagers, the most serious problem in Altincanak, Caglayan and Cevizli is no enough income. More than half of the villagers interviewed identified this as the problem. On the other hand, bad condition of road is the most serious problem in Sapaca, and insufficient irrigation water is the most important problem in Kirazli. Problems vary from village to village depending on their conditions. However, irrigation water insufficiency, low income and bad farm road conditions are among others important concerns among villagers.

Other important problem raised by many villagers is lack of knowledge on agriculture. Due to the lack of agricultural extension activities, the forest villagers are facing several problems including pest and diseases, low productivity, etc.

Development ideas

Livelihood improvement through irrigation is among others important development idea by many villagers. Prevention of natural disasters like flood, erosion control, etc., is another serious concern among villagers who live in disaster prone areas.

Table 2.22 Results of the Rural Socio-Economic Survey - Uzundere (TR-06) (1/3)

Village (no. of HH interviewed)	Altincanak (20)	Caglayan (20)	Cevizli (20)	Kirazli (20)	Sapaca (20)
Location	Mountain slope	Mountain slope	Mountain slope	Valley bottom	Valley bottom
Distance from District Center	10 km (10 minutes by car)	28 km (20 minutes by car)	30 km (40 minutes by car)	15 km (20 minutes by car)	9 km (15 minutes by car)
Village pattern	6 mahalles	3 mahalles	10 mahalles	8 mahalles	5 mahalles
Population (2000)	240	473	1,036	975	528
Average annual population growth rate 1990-2000	-2.40%	-1.60%	-2.70%	-2.30%	-2.80%
Average age of the head of HH interviewed	52 max.: 76 min: 24	50 max.: 67 min: 28	48 max.: 65 min: 23	51 max.: 79 min: 24	53 max.: 70 min: 29
Educational attainment of the head of HH (number)					
- Illiterate	5	1	1	0	0
- Literate	2	2	0	0	0
- Primary school	4	13	16	14	18
- Secondary school	7	2	1	3	0
- High school	1	2	2	1	2
- College/university	0	0	0	2	0
Average no. of family member	5.3	4.8	6.6	4.5	6.4
Average no. of land parcels owned	5	7.5	9.2	10.6	8
Average land holding size (ha)	1.3	4.5	3.9	4.9	3.6
Average cultivated land area (ha)	1.3	3.4	2.9	4.1	2.3
Cultivated crops (% of area cultivated by the crop)					
Wheat	8	30	30	36	58
Barley	0	16	21	12	7
Fruits	69	37	23	24	20
Vegetables	11	12	11	7	13
Fodder crops	11	4	14	21	9
Average yield of wheat (kg/ha)	1,270 kg/ha	1,750 kg/ha	1,080 kg/ha	1,000 kg/ha	1,400 kg/ha
Average dosage of manure (kg/HH) (no. of HH using manure)	6,900 kg/HH (14/20) (Vegetables, fruits)	5,670 kg/HH (9/20) (Vegetables, fruits, wheat)	4,750 kg/HH (17/20) (Vegetables, fruits)	5,800 kg/HH (15/20) (Wheat, vegetables, fruits)	6,080 kg/HH (12/20) (Wheat, vegetables, fruits)
Average dosage of chemical fertilizer (kg/HH) (no. of HH using fertilizer) (crops to which fertilizer applied)	227 kg/HH (13/20) (Vegetables, fruits)	586 kg/HH (18/20) (Vegetables, fruits, wheat)	473 kg/HH (17/20) (Wheat, barley, vegetables)	330 kg/HH (15/20) (Wheat, barley, vegetables)	168 kg/HH (11/20) (Wheat, vegetables, fruits)
% of HH who use agro-chemicals	65 % (Vegetables, fruits)	30 % (Vegetables, fruits)	0 % ()	35 % (Vegetables, fruits)	10%
% of HH who rented Tractor	40%	65%	75%	90%	90%
% of HH who raise cattle	70%	30%	80%	65%	60%
Average no. of cattle per HH	4	3	3	7	4
% of local breed of cattle in total cattle	0%	30%	98%	8%	92%
% of HH who raise sheep	5%	5%	40%	25%	15%
Average no. of raised sheep per HH		7	8	25	8
% of HH who raise goat	5%	0%	5%	30%	25%
Average no. of raised goat per HH	2	0	5	14	47
% of HH who raise chicken	15%	5%	10%	10%	35%
Average no. of chicken per HH	3	3	6	13	5

Table 2.22 Results of the Rural Socio-Economic Survey - Uzundere (TR-06) (2/3)

Village (no. of HH interviewed)	Altincanak (20)			Caglayan (20)			Cevizli (20)			Kirazli (20)			Sapaca (20)		
% of HH who practise bee keeping	35%			25%			35%			25%			40%		
Average no. of beehives per HH	13 max.: 35			4 max.: 15			9 max.: 15			31 max.: 60			9 max.: 40		
% of HH who grow fruit trees	95%			100%			90%			95%			90%		
Average no. of fruit trees per HH	150			178			187			171			181		
% of HH who have greenhouses	60%			35%			10%			30%			30%		
Average area (m^2) of greenhouses per HH	840 m^2 max: 3,000 m^2 min: 20m^2			600m^2 max: 1,000 m^2 min:200 m^2			260m^2 max: 264 m^2 min:256 m^2			180m^2 max: 500 m^2 min:40 m^2			190m^2 max: 800 m^2 min:40 m^2		
% of HH who practise fish culture	0%			0%			0%			0%			15%		
Average area (m^2) of fish pond	0			0			0			0			853m^2 max: 2,000 m^2 min:200 m^2		
Main income sources (no. of HH having income)															
Livestock	7			1			7			7			7		
Crops	19			13			13			12			12		
Bee keeping	2			0			0			4			0		
Unearned income (pension, support, revenue from rent)	11			12			6			12			12		
Other incomes	6			5			10			6			6		
Average annual HH income (million TL)	7,758 (US$5,172)			5,182 (US$3,455)			3,468 (US$2,312)			4,872 (US$3,248)			7,269 (US$4,846)		
Per capita annual income (US$)	976			720			350			722			757		
% of income by source in total income															
Livestock	10			0			5			7			6		
Crops	44			31			30			19			14		
Bee keeping	12			0			0			15			0		
Unearned income (pension, support, revenue from rent)	26			58			43			44			50		
Other incomes	8			10			21			15			30		
% of HH who have debts	65%			65%			65%			80%			45%		
Average debt amount	2,710 million TL.			860 million TL.			1,470 million TL.			2,500 million TL.			2,430 million TL.		
Lender	Cooperatives Merchant			Friends Agricultural Bank Merchant			Friends Merchant			Friends Cooperative Merchant			Friends Cooperative Merchant		
Division of works	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common
- Cultivation	8	0	2	15	0	0	16	0	3	13	0	1	18	0	0
- Fertilizer appl.	15	0	2	15	0	1	16	0	2	14	0	3	18	0	0
- Sowing	5	0	9	12	0	5	14	0	4	11	1	5	12	0	3
- Irrigation	12	0	3	14	0	4	16	0	2	11	0	6	16	0	2
- Hoeing	3	7	4	0	7	10	1	15	2	1	11	5	0	15	2
- Weeding	11	0	3	11	0	5	18	0	0	9	1	6	12	3	3
- Harvesting	6	0	10	6	0	10	9	0	9	6	1	9	12	0	6
- Barn cleaning	4	1	7	1	3	3	6	3	5	8	0	3	7	4	3
- Cowdung making	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Feeding	1	2	9	2	1	4	10	2	2	7	1	5	6	4	4
- Milking	0	8	3	0	5	2	0	14	0	1	9	1	0	13	0
- Processing	0	10	4	1	6	2	0	7	3	1	8	2	2	11	0
- Marketing	9	0	3	9	0	0	10	0	0	11	0	0	13	1	1
- Shopping	19	0	0	20	0	0	20	0	0	20	0	0	18	0	2
- House cleaning	0	20	0	0	20	0	0	19	0	0	19	0	0	20	0
- Bread making	0	20	0	0	20	0	0	19	0	0	19	0	0	20	0
- Cooking	0	20	0	0	20	0	0	19	0	0	19	0	0	20	0
- Child care	0	14	0	0	8	0	0	13	0	0	13	0	0	18	0

Table 2.22 Results of the Rural Socio-Economic Survey - Uzundere (TR-06) (3/3)

Village (no. of HH interviewed)	Altincanak (20)	Caglayan (20)	Cevizli (20)	Kirazli (20)	Sapaca (20)
Assets (no. of HH having each item)					
- Refrigerator	20	20	16	20	20
- Oven	12	16	7	13	15
- Washing machine	13	16	1	11	18
- Vacuum cleaner	13	15	2	16	17
- TV set	18	18	12	17	16
- Telephone	18	17	19	19	19
- Mobile phone	9	9	4	5	6
- Private car	4	3	2	5	5
Properties in town (no. of HH having properties)	3	3	2	2	8
- House	2	3	2	1	6
- Lot	0	1	0	0	2
- Shop	1	0	0	0	4
Influential people in the village	Muhtar (19) Imam (14) Teacher (2)	Muhtar (17) Imam (10) Rich (6)	Muhtar (17) Imam (4) Rich (4)	Muhtar (18) Imam (7) Rich (5)	Muhtar (18) Imam (7) Rich (5)
Wish to migrate to other place (% of HH)	20%	10%	60%	35%	25%
Energy source for heating in winter (% of HH use)	Fuelwood (100%) Coal (85%)	Fuelwood (100%) Coal (55%)	Fuelwood (100%) Coal (35 %)	Fuelwood (100%) Coal (100%)	Fuelwood (95%) Coal (90%)
Average annual HH consumption of fuel wood (sters)	3	3	3	3	2
Electricity	Available	Available	Available	Available	Available
Telephone	Available	Available	Available	Available	Available
Water supply	Available	Available	Available	Available	Available
Primary school	Available	Available	Available	Available	Available
Clinic	None	Available	Available	Available	None
Natural disasters	Flood (every year)	Landslide (2003)	Flood (every year)	Flood (every year)	-
Change in forest resources in the last decade	Improved	Improved	Improved	Improved	Deteriorated
Change in pasture/rangeland in the last decade	Deteriorated	Unchanged	Unchanged	Improved	Improved
Past projects	Pump irrigation (TKV)	Flood protection dike (DSI)	Riverbed improvement (DSI)	-	Flood protection wall (DSI)
Constraints/ problems identified by the Muhtar	1. Insufficient irrigation water 2. No sewerage system 3. Marketing in fruits	1. Greenhouses are not modernized 2. Sheep husbandry is not popular 3. Fruit trees are old	1. No sewerage system 2. No road to “Mezra”	1. No enough irrigation water 2. Flood 3. No sewerage 4. No road to “Mezra”	1. Road 2. Lack of irrigation water
Top 5 problems identified by villagers (no. of households)	1. No enough income (14) 2. Lack of irrigation water (10) 3. Lack of drinking water; Marketing in products (3) 5.Unemployment; Health; Difficult living in the village; No sewerage system (2)	1. No enough income (8) 2. Transportation (6) 3. Health; Lack of drinking water; Difficult living in the village (3)	1. No enough income (13) 2. Transportation (12) 3. Lack of irrigation water (8) 4. Unemployment; Difficult living in the village (3)	1. Lack of irrigation water (10) 2. No enough income (8) 3. Transportation (7) 4. Health (5) 5. Low agricultural income; Lack of drinking water (4)	1. Transportation (8) 2. No enough income; No social activity (6) 4. Health (5) 5. No sewerage system (4)
Projects proposed by the Muhtar	1. Riverbed rehabilitation 2. Irrigation development	1. Cold storage	1. Rehabilitation of 18 small streams	1. Flood control 2. Erosion control 3. Sewerage system establishment 4. Sheep husbandry	1. Technical assistance in bee keeping 2. Road improvement 3. Irrigation pond construction
Willingness of the Muhtar to participate in project activities	Yes	Yes	No	Yes	No

Ispir micro-catchment (UC-14) (refer to Table 2.23)

Location and pattern of the villages

The villages are located either on mountain slopes, at the bottom of valleys or mountain tops. Three of five villages show compact village pattern, while the other two villages consist of several settlements or “mahalles”. Distance from the district center of Ispir to the villages ranges from 9 km to 26 km, taking 10 to 60 minutes by vehicle.

Educational attainment of the head of households

More than 85% of the head of households attained the highest education at primary school or lower. In Durukoy, Gockoy and Kockoy, there are no head of households interviewed, who attained higher than primary school. There are only five (5) out of 100 head of households who attained secondary school education or higher.

Household size and land holding size

Average household size is 3.9 ranging from 3.5 in Gockoy to 4.7 in Koprukoy. Average cultivated land area is 3.3 ha, ranging from 1.8 ha in Gockoy to 5.8 ha in Numanpasa.

Agricultural activities

In the area, fodder crops are most widely cultivated. The share of the area under fodder crops in the total cultivated area is 64%, followed by wheat with 17%, vegetables with 11% and barley with 8%. In Durukoy and Kockoy, the share of fodder crops in the total cultivated area is particularly high with 80%. In Koprukoy the share of vegetables is as high as 26%.

Yield of wheat is some 1,342 kg/ha on average, ranging from 1,078 kg/ha in Numanpasa to 1,643 kg/ha in Durukoy.

The use of manure is popular in the villages. On average 58% of interviewed use manure with average dosage of 7,936 kg per household. In Numanpasa, 75% of the villagers interviewed use more manure with 19,300 kg per household. The use of chemical fertilizer is less common in the villages. Nearly 39% use chemical fertilizer with the average dosage of 335 kg per household. Villagers in Durukoy use chemical fertilizer more commonly with 65%. Farmers in Kockoy use less chemical fertilizer with 200 kg per household while those in Numanpasa use more with 693 kg per household. Chemical fertilizer is applied mainly to wheat, vegetables and fodder crops.

Less than 20% of the farmers use agro-chemicals on average, ranging from 10% in Kockoy to 25% in Numanpasa. Hiring tractor is rather common in all the villages. More than 70% of the farmers rented tractor for cultivation ranging from 25% in Koprukoy to 95% in Numanpasa. The reason for low tractor hire rate in Koprukoy is small size of farms and not easy access.

Livestock activities

Livestock raising, especially cattle, is common practice in the area. On average, 74 % of the farmers raise cattle ranging from 65% in Koprukoy to 85% in Durukoy. Average number of raised cattle per household is 10, ranging from seven in Gockoy and Koprukoy to 15 in Numanpasa. The share of local breed cattle in the total number of cattle is 65%, ranging from 22% in Kockoy to 97% in Gockoy.

Raising of other animals is not active. Merely some 2% of the farmers raise sheep and 1% raise goat. Average number raised is five (5) for sheep and one (1) for goat. In Kockoy and Numanpasa, there is no households which raise sheep or goat.

Some 25% of the households raise chicken. Average number of chicken raised per household is seven (7). Chicken raising is more popular in Numanpasa. Some 35% of the households raise eight (8) chicken on average.

Other agricultural activities

More than 40% of the households interviewed practice beekeeping on average. Some 60% of Durukoy households practice beekeeping while 20% in Numanpasa. In Numanpasa, beekeepers from Black Sea region come to settle every year. Average number of beehives possessed per household is nine (9), ranging from three (3) in Durukoy to 19 in Numanpasa.

More than half of the households interviewed grow fruit trees on average, ranging from 10% in Durukoy to 90% in Numanpasa. Average number of fruit trees per household is 33, ranging from 11 in Koprukoy to 64 in Gockoy.

Greenhouse is seldom seen in villages. No inland fish culture is seen.

Source of income, income level and income composition

More than 80% of the households derive their income from agriculture including crop and livestock. Remaining 20% derive income from non-agricultural activities like construction, taxi driver, etc. Some 15% of the villagers earn from honey production. Unearned incomes such as pension, support from other family members and revenue from rent are also important for many villagers. More than 65% of the households have such income.

Annual household cash income, calculated from the sale of agricultural products (gross income) and other incomes (non-agricultural income and unearned income), averages TL.5,115 million or US$3,410, ranging from TL.4,073 million in Durukoy to TL.6,457 million in Koprukoy. Agricultural income shares some 35% of the total income or US$1,194. Average per capita annual cash income is US$874, ranging from US$696 in Durukoy to US$1,112 in Numanpasa.

Income from livestock shares 25% of the total income, followed by crops (6%) and bee keeping (4%)

on average, while unearned income accounts for 43% and while 22% for non-agricultural income. The income composition varies from village to village. Income from livestock accounts for 41% of the total income in Numanpasa, followed by 5% in crops, 3% in bee keeping. The share of income from crops in Gockoy is 15%, followed by 14% in livestock and 6% in bee keeping. The share of unearned income varies from 23% in Numanpasa to 62% in Gockoy. The share of non-agricultural income also varies from 4% in Gockoy to 38% in Kockoy.

Debts

Some 30% of the villagers have debts with the average amount of TL.1,930 million, which is some 38 % of the average annual cash income. Many borrow from their friends at interest free, otherwise from cooperatives and merchant.

Gender aspects

In almost all household matters, decision is made by men. Accordingly women's activities are controlled by men. In general, men mainly do work outside while women do housework. In the field men mainly do cultivation, fertilizer application, sowing, weeding, irrigation and harvesting. Women mainly do hoeing and do harvesting together with men. Preparation of cowdung cake for energy is done by both male and female. In barn, feeding is mainly done by men or both, while milking and processing milk are done mainly by women. Marketing agro-products and shopping is predominantly done by men. Women are responsible for all the housework including cleaning, bread making, cooking and childcare, etc.

As described above, women are responsible for various works both inside and outside houses. Although women's house works have been eased as many households have vacuum cleaner and washing machine, they have to work from early morning till late night. Walking long distance on a poor conditioned road to their farm is one of their serious problems.

Assets

Almost all households have refrigerator, and telephone. More than 60% of the households have TV set and washing machine, and more than half have oven. Some 15% of households have mobile phone, and less than 10% own private vehicle.

Reflecting the higher income level, household assets possessed by households in Numanpasa are more than those in other villages. All the households interviewed in Numanpasa possess telephone and refrigerator, 90% possess TV set, and more than 70% possess oven, washing machine and vacuum cleaner. 35% possess mobile phone and 15% possess private vehicle.

Less than 20% of the households have properties such as house, lot and shop in town.

Energy sources for heating and cooking

Most villagers depend their heating energy mainly on fuelwood and coal. Consumption volume of the fueldwood varies from three (3) to six (6) sters with the average volume of four (4) sters. The shortfall is filled with grasses, cowdung or coal, depending on the availability of the material and on financial capacity.

The use of LPG, as cooking energy, is very common.

Infrastructure

All the villages are electrified, and have telephone line. Drinking water supply system has also been established in almost all villages. A primary school has been constructed in most villages.

Clinic is available in all villages, but most of them are poorly equipped and staffed.

Natural environment

Those villages located in the bottom of the valley in steep mountain ranges, natural disasters such as flood and avalanche are among others serious concern of the villagers. Durukoy, Gockoy and Koprukoy have experienced flood during the last five years.

In those villages, Muhtar thinks that forest resources within their territory have deteriorated during the last decade, while Muhtar in the other villages thinks they have increased.

In all villages except Kockoy, Muhtar thinks that their pastureland/rangeland condition has been improved. The Muhtar in Kockoy thinks it has been unchanged.

Problems/constraints on living

According to the head of households interviewed, the most serious problem in Durukoy, Gockoy, Kockoy and Numanpasa is poor road conditions, while that in Koprukoy and Numanpasa is lack of irrigation water. Problems varies from village to village depending on their conditions. However, irrigation water insufficiency, bad farm road conditions, loneliness and harsh winter conditions are among others important concerns among villagers.

Other important problem raised by many villagers is lack of knowledge on agriculture. Due to the lack of agricultural extension activities, the forest villagers are facing several problems including pest and diseases, low productivity, etc.

Development ideas

Development ideas vary from village to village, depending on the conditions of villages.

Table 2.23 Results of the Rural Socio-Economic Survey - Ispir (UC-14) (1/3)

Village (no. of HH interviewed)	Durukoy (20)	Gockoy (20)	Kockoy (20)	Koprukoy (20)	Numanpasa (20)
Location	Valley	Valley, Mountain slope	Top of mountain	Valley bottom	Top of mountain
Distance from District Center	16 km (40 minutes by car)	26 km (60 minutes by car)	17 km (30 minutes by car)	9 km (10 minutes by car)	18 km (30 minutes by car)
Village pattern	Compact	3 mahalles	Compact	7 mahalles	Compact
Population (2000)	487	142	247	499	215
Average annual population growth rate 1990-2000	-3.20%	-3.80%	-6.80%	-3.40%	-1.20%
Average age of the head of HH interviewed	58 max.: 77 min: 27	60 max.: 83 min: 28	56 max.: 75 min: 27	59 max.: 77 min: 23	49 max.: 70 min: 27
Educational attainment of the head of HH (number)					
- Illiterate	1	1	1	2	1
- Literate	4	5	5	6	1
- Primary school	15	13	14	10	15
- Secondary school	0	0	0	1	1
- High school	0	0	0	0	2
- College/university	0	0	0	1	0
Average household size	3.9	3.5	3.8	4.7	3.7
Average no. of land parcels owned	14	7	16	9	12
Average land holding size (ha)	4.3	2.9	5.0	3.1	13.0
Average cultivated land area (ha)	3.3	1.8	3.8	2.0	5.8
Cultivated crops (% of area cultivated by the crop)					
- Wheat	9	24	12	12	26
- Barley	8	9	4	7	10
- Vegetables	4	17	4	26	2
- Fodder crops	79	46	80	53	61
Average yield of wheat (kg/ha)	1,643 kg/ha	1,510 kg/ha	1,170 kg/ha	1,310 kg/ha	1,078 kg/ha
Average dosage of manure (kg/HH) (no. of HH using manure)	5,000 kg/HH (12/20) (Wheat, barley, vegetables, fodder crops)	6,770 kg/HH (13/20) (Wheat, vegetables, fodder crops)	3,800 kg/HH (10/20) (Vegetables, fodder crops)	4,810 kg/HH (8/20) (Vegetables, fodder crops)	19,300 kg/HH (15/20) (Wheat, vegetables, fodder crops)
Average dosage of chemical fertilizer (kg/HH) (no. of HH use fertilizer) (crops to which fertilizer is applied)	350 kg/HH (13/20) (Wheat, vegetables, fodder crops)	256 kg/HH (9/20) (Wheat, barley, vegetables)	200 kg/HH (5/20) (Vegetables)	175 kg/HH (8/20) (Vegetables fodder crops, wheat)	693 kg/HH (4/20) (Wheat, vegetables, fodder crops)
% of HH who use agro-chemicals	20 % (vegetables)	20 % (vegetables)	10 % (Vegetables)	15 % (Vegetables)	25 % (vegetables)
% of HH who rented Tractor	85%	80%	80%	25%	95%
% of HH who raise cattle	85%	70%	75%	65%	75%
Average no. of cattle per HH	8	7	11	7	15
% of local breed of cattle in total cattle	92%	97%	22%	89%	63%
% of HH who raise sheep	5%	0%	0%	5%	0%
Average no. of raised sheep per HH	4	0	0	5	0
% of HH who raise goat	0%	5%	0%	0%	0%
Average no. of raised goat per HH	0	1	0	0	0
% of HH who raise chicken	20%	25%	25%	15%	35%
Average no. of chicken per HH	7	7	8	7	8

Table 2.23 Results of the Rural Socio-Economic Survey - Ispir (UC-14) (2/3)

Village (no. of HH interviewed)	Durukoy (20)			Gockoy (20)			Kockoy (20)			Koprukoy (20)			Numanpasa (20)		
% of HH who practise bee keeping	60%			40%			50%			35%			20%		
Average no. of beehives kept per HH	3 max.: 5 min.: 1			14 max.: 40 min.: 2			7 max.: 25 min.: 2			12 max.: 30 min.: 1			19 max.: 60 min.: 1		
% of HH who grow fruit trees	10%			65%			55%			40%			90%		
Average no. of fruit trees per HH	45			64			16			11			31		
% of HH who have greenhouses	0%			0%			0%			5%			0%		
Average area (m^2) of greenhouses per HH	m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2			20 m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2		
% of HH who practise fish culture	0%			0%			0%			0%			0%		
Average area (m^2) of fish pond	0%														
Main income sources (no. of HH having income)															
Livestock	14			12			13			4			14		
Crops	2			12			4			11			10		
Bee keeping	0			3			1			4			2		
Unearned income (pension, support, revenue from rent)	15			17			15			10			11		
Other incomes	5			2			10			11			6		
Average annual HH income (million TL) (US$)	4,073 (US$2,715)			4,452 (US$3,035)			4,425 (US$2,950)			6,457 (US$4,305)			6,172 (US$4,115)		
Per capita annual income (US$)	696			867			776			915			1,112		
% of income by source in total income															
Livestock	27			14			14			28			41		
Crops	1			15			2			8			5		
Bee keeping	0			6			3			8			3		
Unearned income (pension, support, revenue from rent)	55			62			43			30			23		
Other incomes	16			4			38			26			28		
% of HH who have debts	30%			35%			35%			25%			20%		
Average debt amount	2,910 million TL.			1,130 million TL.			1,090 million TL.			1,020 million TL.			3,500 million TL.		
Lender	Friends Merchant			Friends			Friends Merchant			Friends Merchant			Friends Merchant		
Division of works	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common
- Cultivation	14	0	3	16	0	2	14	0	1	17	0	2	12	0	0
- Fertilizer appl.	14	0	3	12	0	6	13	0	2	15	0	4	18	0	0
- Sowing	12	0	4	12	1	6	13	0	2	14	0	5	17	0	1
- Irrigation	12	0	5	10	0	8	8	0	7	11	2	6	17	0	1
- Hoeing	2	13	1	0	12	5	1	10	2	3	9	7	2	13	4
- Weeding	2	12	1	1	11	5	1	11	1	3	9	7	2	12	4
- Harvesting	8	0	9	8	0	9	7	1	8	9	0	9	11	1	6
- Barn cleaning	10	3	4	2	2	9	2	3	9	2	4	9	6	1	8
- Cowdung making	3	3	10	0	0	0	0	3	10	0	0	0	0	0	3
- Feeding	7	0	8	2	1	10	3	0	11	8	2	4	13	0	1
- Milking	0	16	0	0	14	0	0	14	0	0	14	0	0	12	1
- Processing	0	8	9	1	7	2	1	8	5	1	13	0	1	6	7
- Marketing	18	1	0	15	0	0	18	0	0	17	0	0	16	0	1
- Shopping	17	0	0	17	0	1	15	0	0	17	2	1	18	0	0
- House cleaning	2	17	0	1	18	1	2	17	0	1	18	1	1	19	0
- Bread making	0	17	0	1	18	0	0	17	0	0	18	1	0	18	0
- Cooking	2	17	0	1	18	0	2	17	0	0	18	1	0	18	1
- Child care	0	6	0	0	6	0	0	5	0	0	6	0	1	3	0

Table 2.23 Results of the Rural Socio-Economic Survey - Ispir (UC-14) (3/3)

Village (no. of HH interviewed)	Durukoy (20)	Gockoy (20)	Kockoy (20)	Koprukoy (20)	Numanpasa (20)
Assets (no. of HH having each item)					
- Refrigerator	18	19	18	18	20
- Oven	12	12	10	9	14
- Washing machine	9	15	10	13	17
- Vacuum cleaner	6	8	5	7	16
- TV set	12	12	12	13	18
- Telephone	19	19	19	19	20
- Mobile phone	3	3	2	0	7
- Private car	0	1	1	3	3
Properties in town (no. of HH having properties)	5	3	5	0	3
- House	4	2	2	0	2
- Lot	1	1	3	0	1
- Shop	1	2	0	0	0
Influential people in the village	Muhtar (18) Imam (12)	Teacher (16) Muhtar (11)	Rich (10) Muhtar (7)	Muhtar (19) Imam (14)	Muhtar (18) Imam (9)
Wishness of migration to other place (% of HH)	35%	20%	30%	35%	20%
Energy source for heating in winter (% of HH use)	Fuelwood (100%) Cowdung (90%)	Fuelwood (95%) Grasses (20%)	Fuelwood (90%) Cowdung (85%)	Fuelwood (100%) Grasses (30%)	Fuelwood (100%) Coal (80%)
Average annual HH consumption of fuel wood (sters)	3	6	3	4	3
Electricity	Available	Available	Available	Available	Available
Telephone	Available	Available	Available	Available	Available
Water supply	Available	Available	Available	Available	Available
Primary school	Available	Available	Available	Available	Available
Clinic	Available	Available	Available	Available	Available
Natural disasters	Flood (2002)	Flood (2001, 2002)	-	Avalanche (2002); Flood (every year)	-
Change in forest resources in the last decade	Deteriorated	Deteriorated	Improved	Deteriorated	Improved
Change in pasture/rangeland in the last decade	Improved	Improved	Unchanged	Improved	Improved
Past projects	-	Irrigation (GDRS); Drinking water supply (GDRS)	-	Afforestation (AGM)	-
Constraints/ problems identified by the muhtar	1. Poor road condition; 2 Lack of irrigation water; 3. Scarce fuelwood	1. Landslide; 2. Forest degradation; 3. Poor road conditions	1. Poor road condition; 2. Lack of fuelwood; 3. Lack of irrigation water	1. Lack of irrigation water; 2. Flood; 3. No road to fields	1. No irrigation water; 2. Health problem; 3. Poor condition of road
Top 5 problems identified by villagers (no. of households)	1. Poor road condition (13); 2. Lack of wood for heating (11); 3. Lack of irrigation water (7); 4. Loneliness (6); 5. Low income; Harsh winter condition (4)	1. Poor road condition (13); 2. No sewerage system; Landslide; Lack of drinking water (6); 5. Loneliness (5)	1. Poor road condition (18); 2. Harsh winter condition (10); 3. Lack of irrigation water (8); 4. No sewerage system; Health problem (3)	1. Lack of irrigation water; Loneliness (8); 3. Poor road condition (7); 4. Low income; Insufficient agricultural land; Scattered land parcels (4)	1. Lack of irrigation water; Poor road condition (16); 3. Health problem (5); 4. Low income (4); 5. Harsh winter condition; Marketing; Loneliness (3)
Projects proposed by the Muhtar	1. Afforestation; 2. Sewerage system; 3. Irrigation	1. Fattening; 2. Marketing; 3. Fruit processing	1. Road improvement; 2. Irrigation improvement	1. Rehabilitation of the river; 2. Bee keeping; 3. Aquaculture	1. Soil erosion control by terracing and afforestaton; 2. Cooperative development; 3. Pond
Willingness of the Muhtar to participate in project activities	Yes	Yes	No	Yes	Yes

Savsat micro-catchment (BT-04) (refer to Table 2.24)

Location and pattern of the villages

The villages are located either on mountain slopes, at the bottom of valleys or mountaintop. All the villages consist of three (3) to 10 settlements or "mahalles". Distance from the district center of Savsat to the villages ranges from 11 km to 21 km, taking 30 to 85 minutes by vehicle.

Educational attainment of the head of households

This MC is characterized by higher educational attainment. Nearly half of the head of households attained higher than primary school, 19% finished secondary school, 18% finished high school, and 11% finished college/university.

Household size and land holding size

Average household size is 3.8 ranging from 3.0 in Ciftllik to 4.5 in Kirecli. Average cultivated land area is 3.7 ha, ranging from 2.5 ha in Kirecli to 5.8 ha in Cavdarli.

Agricultural activities

Fodder crops are dominantly cultivated in the area. The share of the area under fodder crops in the total cultivated area is 80%, followed by vegetables with 9%, wheat and maize with 4% each and barley with 2%. The share of fodder crops is particularly high in Hanli with 91%.

Yield of wheat is some 1,670 kg/ha on average, ranging from 1,110 kg/ha in Ciftlik to 2,470 kg/ha in Kirecli.

The use of both manure and chemical fertilizer is not common in the area. Merely 8% of the households use manure with an average dosage of 4,824 kg per household, and 6% use chemical fertilizer with 122 kg per household.

None of the household use agro-chemicals. Some 60% of the farmers rented tractor for cultivation ranging from 30% in Savaskoy to 95% in Cavdarli.

Livestock activities

Livestock raising, especially cattle, is common practice in the area. On average, 78 % of the households raise cattle, ranging from 65% in Savaskoy to 85% in Ciftlik and Hanli. Average number of raised cattle per household is five (5), ranging from four (4) in Savaskoy to seven (7) in Cavdarli. The share of local breed cattle in the total number of cattle is 17%, ranging from 10% in Cavdarli to 27% in Savaskoy.

Other animals raised include sheep and goat. Some 10% of the household raise 59 head of sheep on average. Particularly in Cavdarli, 30% keep 133 head of sheep on average. On the other hand, goat is

raised in Cavdarli only with average number of four (4).

Some 40% of the households raise chicken. Average number of chicken raised per household is nine (9). Chicken raising is more popular in Cavdarli. Some 60% of the households raise eight (8) chicken on average.

Other agricultural activities

Nearly 15% of the households interviewed practice beekeeping on average, ranging from 0% in Cavdarli to 25 % in Hanli. Average number of beehives possessed per household is 12, ranging from three (3) in Ciftlik to 21 in Hanli.

More than 9% of the households interviewed grow fruit trees on average, ranging from 70% in Savaskoy to 100% in Ciftlik, Hanli and Kirecli. Average number of fruit trees per household is 30, ranging from 19 in Hanli to 40 in Ciftlik and Savaskoy.

Greenhouse is seldom seen in area. No inland fish culture is seen.

Source of income, income level and income composition

More than 80% of the households derive their income from agriculture including crop and livestock. Remaining 20% derive income from non-agricultural activities like construction, taxi driver, etc. Some 15% of the villagers earn from honey production. Unearned incomes such as pension, support from other family members and revenue from rent are also important for many villagers. More than half of the households have such income.

Annual household cash income, calculated from the sale of agricultural products (gross income) and other incomes (non-agricultural income and unearned income), averages TL.5,203 million or US$3,469, ranging from TL.3,962million in Savaskoy to TL.5,858 million in Hanli. Agricultural income shares some 43% of the total income or US$1,492. Average per capita annual cash income is US$926, ranging from US$713 in Savaskoy to US$1,078 in Ciftlik.

Income from livestock shares 29% of the total income, followed by crops (11%) and bee keeping (3%) on average, while unearned income accounts for 43% and while non-agricultural income for 10%. The income composition varies from village to village. Income from livestock accounts for 53% of the total income in Cavdarli, followed by 14% in crops. The share of income from crops in Savaskoy is 14%, followed by livestock with 13% and beekeeping with 6%. The share of unearned income varies from 27% in Cavdarli to 63% in Savaskoy. The share of non-agricultural income also varies from 6% in Cavdarli and Savaskoy to 14% in Kirecli.

Debts

More than half of the households have debts with the average amount of TL.2,023 million, which is

some 39 % of the average annual cash income. Many borrow from their friends at interest free, otherwise from Agricultural Bank and merchant.

Gender aspects

In almost all household matters, decision is made by men. Accordingly women's activities are controlled by men. In general, men mainly do work outside while women do housework. In the field men mainly do cultivation, fertilizer application, sowing, weeding, irrigation and harvesting, while women mainly do hoeing and also help men's works. In barn, feeding is mainly done by men or both, while milking and processing milk are done mainly by women. Marketing agro-products and shopping is predominantly done by men. Women are responsible for all the housework including cleaning, bread making, cooking and childcare, etc.

As described above, women are responsible for various works both inside and outside houses. Although women's house works have been eased as many households have vacuum cleaner and washing machine, they have to work from early morning till late night. Walking long distance on a poor conditioned road to their farm is one of their serious problems.

Assets

More than 85% of the households interviewed have refrigerator, TV set and telephone. More than 70% of the households have vacuum cleaner, and more than 60% have washing machine. Oven is possessed by some 30%. Some 18% of households have mobile phone, and less than 10% own private vehicle.

All the households interviewed in Kirecli possess telephone, 95% possess refrigerator and TV set, and more than 80% possess washing machine and vacuum cleaner. 35% possess mobile phone and 10% possess private vehicle.

More than 30% of the households have properties such as house, lot and shop in town.

Energy sources for heating and cooking

Most villagers depend their heating energy mainly on fuelwood and coal. Consumption volume of the fueldwood varies from six (6) to 12 sters with the average volume of 10 sters. The shortfall is, if there is, filled with grasses or coal.

The use of LPG, as cooking energy, is very common.

Infrastructure

All the villages are electrified, and have telephone line. Drinking water supply system has also been established in almost all villages. A primary school has been constructed in Ciftlik, Kirecli and Savaskoy but none in two other villages.

Clinic is not available at any of the villages.

Natural environment

Hanli and Kirecli experienced flood in 2002.

In three villages of Ciftlik, Hanli and Kirecli, Muhtar thinks that forest resources within their territory have deteriorated during the last decade, while Muhtar in the other villages thinks they have increased.

In all three villages of Ciftlik, Kirecli and Savaskoy, Muhtar thinks that their pastureland/rangeland condition has been improved, while in Hanli Muhtar thinks they have unchanged and while deteriorated in Cavdarli.

Problems/constraints on living

According to the head of households interviewed, the most serious problem in all the villages is poor road conditions, followed by health problem and irrigation.

Other important problem raised by many villagers is lack of knowledge on agriculture. Due to the lack of agricultural extension activities, the forest villagers are facing several problems including pest and diseases, low productivity, etc.

Development ideas

Livelihood improvement through irrigation and livestock including dairy industry is among others important development idea by many villagers. Road upgrading and rehabilitation is the next priority.

Table 2.24 Results of the Rural Socio-Economic Survey - Savsat (BT-04) (1/3)

Village (no. of HH interviewed)	Cavdarli (20)	Ciftlik (20)	Hanli (20)	Kirecli (20)	Savaskoy (20)
Location	Mountain slope	Mountain slope	Mountain slope	Valley bottom	Mountain slope
Distance from District Center	21 km (80 minutes by car)	15 km (60 minutes by car)	21 km (65 minutes by car)	11 km (30 minutes by car)	17 km (45 minutes by car)
Village pattern	10 mahalles	3 mahalles	7 mahalles	6 mahalles	6 mahalles
Population (2000)	155	257	315	628	345
Average annual population growth rate 1990-2000	-5.40%	-4.00%	-5.50%	-4.20%	-6.40%
Average age of the head of HH interviewed	47 max.: 71 min: 20	53 max.: 78 min: 28	53 max.: 73 min: 18	48 max.: 72 min: 24	59 max.: 79 min: 38
Educational attainment of the head of HH (number)					
- Illiterate	0	0	1	1	1
- Literate	0	0	0	0	0
- Primary school	9	11	10	9	10
- Secondary school	5	3	4	4	3
- High school	5	4	2	5	2
- College/university	1	2	3	1	4
Average no. of family member	3.7	3.0	4.0	4.5	3.7
Average no. of land parcels owned	10.0	9.3	11.0	9.1	8.0
Average land holding size (ha)	5.8	4.4	3.7	2.8	3.4
Average cultivated land area (ha)	5.8	3.5	3.7	2.5	2.9
Cultivated crops (% of area by crops)					
- Wheat	2	6	0	3	7
- Barley	6	0	0	0	2
- Vegetables	13	10	7	9	7
- Fruits	0	0	0	0	6
- Maize	0	6	2	6	6
- Fodder crops	79	77	91	82	72
Average yield of wheat (kg/ha)	1,740 kg/ha	1,110 kg/ha	-	2,470 kg/ha	1,360 kg/ha
Average dosage of manure (kg/HH) (no. of HH using manure)	0 kg/HH (0/20)	3,000 kg/HH (1/20) (Fodder crops)	0 kg/HH (0/20)	3,140 kg/HH (4/20) (Vegetables)	8,333 kg/HH (3/20) ()
Average dosage of chemical fertilizer (kg/HH) (no. of HH using fertilizer) (crops)	0 kg/HH (0/20)	100 kg/HH (2/20) (Wheat)	0 kg/HH (0/20)	150 kg/HH (1/20) (Vegetables)	117 kg/HH (3/20) (Barley)
% of HH who use agro-chemicals	0%	0%	0%	0%	0%
% of HH who rented Tractor	95%	50%	75%	50%	30%
% of HH who raise cattle	80%	85%	85%	75%	65%
Average no. of cattle per HH	7	5	5	5	4
% of local breed of cattle in total cattle	10%	11%	23%	16%	27%
% of HH who raise sheep	30%	5%	0%	10%	10%
Average no. of raised sheep per HH	133	50		35	17
% of HH who raise goat	10%	0%	0%	0%	0%
Average no. of raised goat per HH	4	0		0	
% of HH who raise chicken	60%	45%	50%	40%	5%
Average no. of chicken per HH	8	7	8	5	15

Table 2.24 Results of the Rural Socio-Economic Survey - Savsat (BT-04) (2/3)

Village (no. of HH interviewed)	Cavdarli (20)			Ciftlik (20)			Hanli (20)			Kirecli (20)			Savaskoy (20)		
% of HH who practise bee keeping	0%			5%			25%			20%			20%		
Average no. of beehives kept per HH	max.: min.:			3 max.: min.:			19 max.: 40 min.: 3			5 max.: 10 min.: 2			21 max.: 60 min.: 2		
% of HH who grow fruit trees	90%			100%			100%			100%			70%		
Average no. of fruit trees per HH	23			40			19			30			40		
% of HH who have greenhouses	10%			0%			0%			0%			0%		
Average area (m^2) of greenhouses per HH	10 m^2 max: 10 m^2 min: 10 m^2			m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2		
% of HH who practise fish culture	0%			0%			0%			0%			0%		
Average area (m^2) of fish pond															
Main income sources (no. of HH having income)															
- Livestock	16			14			15			13			8		
- Crops	14			9			11			10			11		
- Bee keeping	0			0			3			2			2		
- Unearned income (pension, support, revenue from rent)	7			12			12			10			13		
- Other incomes	2			1			4			7			4		
Average annual HH income (million TL) (US$)	5,641 (US$3,761)			4,851 (US$3,234)			5,858 (US$3,905)			5,704 (US$3,803)			3,962 (US$2,641)		
Per capita annual income (US$)	1,016			1,078			976			845			713		
% of income by source in total income															
- Livestock	53			39			21			21			13		
- Crops	14			4			11			11			14		
- Bee keeping	0			0			8			1			4		
- Unearned income (pension, support, revenue from rent)	27			47			48			52			63		
- Other incomes	6			11			12			14			6		
% of HH who have debts	60%			45%			50%			80%			25%		
Average debt amount	3,004 million TL.			1,810 million TL.			1,950 million TL.			1,981 million TL.			1,370 million TL.		
Lender	Friends			Friends Merchant			Agricultural Bank Friends			Friends Agricultural Bank Merchant			Cooperative Agricultural Bank		
Division of works	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common
- Cultivation	11	0	9	18	1	1	11	0	9	15	0	5	14	0	6
- Fertilizer appl.	11	0	9	18	1	1	10	0	9	15	0	5	10	1	6
- Sowing	8	1	10	15	4	1	8	1	10	12	3	4	10	2	6
- Irrigation	5	1	12	15	2	3	10	0	9	6	7	6	7	2	8
- Hoeing	1	8	11	3	5	11	1	10	9	2	13	4	1	9	9
- Weeding	5	1	14	10	2	8	8	0	11	9	5	5	10	2	9
- Harvesting	6	0	14	12	1	6	7	2	11	10	2	7	7	1	10
- Barn cleaning	6	1	11	8	3	6	4	6	8	0	7	8	3	5	8
- Cowdung making	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
- Feeding	8	0	9	10	2	3	8	0	9	7	4	4	8	2	6
- Milking	0	18	0	0	18	0	0	15	2	0	16	0	0	16	1
- Processing	1	15	2	0	18	1	1	14	2	1	15	0	2	14	2
- Marketing	11	3	4	9	2	1	15	0	0	15	1	1	10	2	1
- Shopping	18	1	0	19	0	1	19	0	1	20	0	0	16	0	1
- House cleaning	0	19	0	1	19	0	0	18	1	1	18	0	1	18	0
- Bread making	0	19	0	0	19	0	0	18	1	0	18	0	1	19	0
- Cooking	0	19	0	0	19	0	0	18	1	1	18	0	1	19	0
- Child care	0	19	0	0	19	0	0	18	1	0	18	0	0	19	0

Table 2.24 Results of the Rural Socio-Economic Survey - Savsat (BT-04) (3/3)

Village (no. of HH interviewed)	Cavdarli (20)	Ciftlik (20)	Hanli (20)	Kirecli (20)	Savaskoy (20)
Assets (no. of HH having each item out of 20 HH)					
- Refrigerator	14	19	16	19	19
- Oven	3	7	5	10	8
- Washing machine	11	9	12	16	15
- Vacuum cleaner	16	14	14	17	14
- TV set	16	17	17	19	19
- Telephone	18	20	19	20	19
- Mobile phone	4	4	2	7	2
- Private car	0	2	0	2	3
Properties in town (no. of HH having properties)	4	8	6	9	5
- House	2	6	6	6	4
- Lot	2	3	1	3	2
- Shop	0	0	0	2	0
Influential people in the village (no. of HH out of 20)	Muhtar (19) Imam (5) Teacher (4)	Muhtar (19) Imam (9) Teacher (6)	Muhtar (19) Imam (11) Teacher (5)	Muhtar (19) Imam (6) Teacher (10)	Muhtar (16) Imam (12) Teacher (5)
Wishness of migration to other place (% of HH)	35%	30%	40%	30%	35%
Energy source for heating in winter (% of HH use)	Fuelwood (100%) LPG (20%)	Fuelwood (85%) Grasses (15%)	Fuelwood (95%) Coal (5%)	Fuelwood (100%) Coal (10%)	Fuelwood (100%) Coal (10%)
Average annual HH consumption of fuel wood (sters)	12	6	10	12	10
Electricity	Available	Available	Available	Available	Available
Telephone	Available	Available	Available	Available	Available
Water supply	Available	Available	Available	Available	Available
Primary school	None	Available	None	Available	Available
Clinic	None	None	None	None	None
Natural disasters	-	-	Flood (2002)	Storm (2002); Flood (2001)	-
Change in forest resources in the last decade	Increased	Deteriorated	Deteriorated	Deteriorated	Increased
Change in pasture/rangeland in the last decade	Deteriorated	Improved	Unchanged	Improved	Improved
Past projects	Drinking water supply (GDRS)	Drinking water supply (GDRS)	Drinking water supply (GDRS)	Drinking water supply (GDRS); Livestock dev't (MARA)	Drinking water supply (GDRS)
Constraints/ problems identified by the muhtar	1. Poor road condition; 2. Marketing of products; 3. Low income	1. Poor road condition; 2. Lack of health and technical services; 3. Lack of technical training and extension	1. Poor road condition; 2. High interest of agricultural credit; 3. Lack of irrigation canals	1. Poor road condition; 2. Lack of irrigation; 3. Lack of technology in dairy industry	1. Poor road conditions; 2. Bad condition of irrigation canal; 3. Fragmented small plots
Top 5 problems identified by villagers (no. of households)	1. Poor road condition (20); 2. Health problem (11); 3. Lack of knowledge on agriculture (7); 4. Lack of wood for heating; Marketing problem (4)	1. Poor road condition (18); 2. Lack of irrigation water; Health problem (12); 4. Lack of knowledge of agriculture (6); 5. Lack of sawmill (4)	1. Poor road condition (20); 2. Health problem (12); 3. Lack of wood for heating (11); 4. Harsh winter season; Lack of irrigation water (4)	1. Poor road condition (19); 2. Health problem (14); 3. Lack of knowledge in agriculture; Marketing; Low productivity (4)	1. Poor road condition (20); 2. Health problem (8); 3. Irrigation (6); 4. Lack of knowledge of agriculture (5); 5. Poor conditions of irrigation canal (4)
Projects proposed by the Muhtar	1. Livestock and dairy processing; 2. Provision of new livestock breed; 3. Irrigation canal improvement	1. Road upgrading; 2. Irrigation development; 3. Farmers' training in livestock, apiculture and handicraft	1. Irrigation development; 2. Road rehabilitation; 3. Livestock support project	1. Dairy industry modernization; 2. Road rehabilitation; 3. Irrigation development	1. Upgrade of the irrigation canal; 2. Milk processing; 3. Marketing promotion
Willingness of the Muhtar to participate in project activities	Yes	No	Yes	Yes	Yes

Yusufeli micro-catchment (MC-03) (refer to Table 2.25)

Location and pattern of the villages

The villages are located generally in mountain slopes or bottom of valley in very steep mountainous area. Except for Kilickaya municipality which is compacted pattern, other three villages consist of two (2) to five (5) settlements or “mahalles”. Distance from the district center of Yusufeli to the villages ranges from 13 km to 41 km, taking 30 to 90 minutes by vehicle.

Educational attainment of the head of households

More than 70% of the head of households attained the education at primary school or lower. In Celtikduzu, 25% of the interviewed head of households received no education. In Bakirtepe, 65% finished primary school education, 5% finished secondary school, 10% finished high school and 15% finished college/university.

Household size and land holding size

Average household size is 4.0 ranging from 3.5 in Kirecli to 4.8 in Alanbasi. Average cultivated land area is 3.1 ha, ranging from 2.3 ha in Celtikduzu to 4.6 ha in Bakirtepe.

Agricultural activities

On average, Fodder crops shares the largest area with 53% of the cultivated land, wheat comes next with 14%, followed by barley with 12%, paddy rice with 11% and vegetables with 9%.

In Bakirtepe, fodder crops shares 54 % of the area cultivated, while wheat shares 26%. In Celtikduzu, fodder crops are the dominant crop with 61% share of cultivated land, followed by vegetables with 13% and rice with 11%. Yield of wheat is some 917 kg/ha on average, ranging from 583 kg/ha in Bakirtepe to 1,329 kg/ha in Kilickaya.

The use of manure is popular in the area except Celtikduzu where cattle raising is not active. On average, 77% of interviewed use manure with average dosage of 4,025 kg per household. Nearly 51% use chemical fertilizer with the average dosage of 293 kg per household. Some 90% of households interviewed villagers in Bakirtepe use manure with the highest dosage of 7.830 kg per household. In Celtikduzu 65% of the households use 139 kg of chemical fertilizer per household on average. Chemical fertilizer is applied mainly to rice, vegetables and fodder crops.

More than 20% of the households interviewed use agro-chemicals on average, ranging from 15% in Alanbasi and Bakirtepe to 38% in Kilickaya. Hiring tractor is rather common in all the villages. Some 65% of the households rented tractor for cultivation ranging from 30% in Celtikduzu to 65% in Alanbasi.

Livestock activities

Livestock raising, especially cattle, is common practice in the area. On average 65 % of the households raise cattle ranging from 60% in Kilickaya to 80% in Alanbasi. Average number of raised cattle per household is six (6), ranging from three (3) in Celtikduzu and Kilickaya to 11 in Alanbasi. The share of local breed cattle in the total number of cattle is 47%, ranging from 29% in Celtikduzu to 87% in Alanbasi.

Other animals raised include sheep and goat. Some seven (7) % of the households raise sheep with 39 heads each on average. While, five (5) % raise goat with 62 heads each.

On average some eight (8) % of the households raise chicken ranging from 0% in Celtikduzu to 20% in Alanbasi. Average number of chicken raised per household is seven (7), ranging from 0 in Celtikduzu to 18 in Alanbasi.

Other agricultural activities

Some 15% of the households practice beekeeping. Average number of beehives possessed per household is 18, ranging from seven (4) in Kilickaya to 28 in Bakirtepe.

About 40% of the households grow fruit trees. Average number of fruit trees per household is 40, ranging from zero in Bakirtepe to 60 in Kilickaya.

None of households interviewed has greenhouse nor fish ponds.

Source of income, income level and income composition

Some 57% of the villagers derive their income from agriculture including crop and livestock. Remaining 43% derive income from non-agricultural activities like construction, taxi driver, etc. Some 7% of the villagers earn from honey production. Unearned incomes such as pension, support from other family members and revenue from rent are also important for many villagers. More than 69% of the villagers have such income.

Annual household cash income, calculated from the sale of agricultural products (gross income) and other incomes (non-agricultural income and unearned income), averages TL.4,830 million or US$3,220, ranging from TL.3,870 million in Alanbasi to TL.5,885 million in Bakirtepe. Agricultural income shares some 34% of the total income or US$1,095. Average per capita annual cash income is US$825, ranging from US$538 in Alanbasi to US$1,060 in Bakirtepe.

Income from livestock shares 19% of the total income, followed by bee keeping (8%) and crops (7%) on average, while unearned income accounts for 53% and while non-agricultural income for 14%. The income composition varies from village to village. Income from livestock accounts for 27% of the total income in Alanbasi and 8% in beekeeping. In general, share of crop income in the total income is

not more than 10%. Income from bee keeping accounts for 17% of the total income in Bakirtepe. While unearned income shares nearly half of the total income in most villages, that in Celtikduzu is as high as 64%.

Debts

Some 30% of the villagers have debts with the average amount of TL.2,096 million, which is some 43 % of the average annual cash income. Many borrow from their friends at interest free, otherwise from cooperatives and merchant.

Gender aspects

In almost all household matters, decision is made by men. Accordingly women's activities are controlled by men. In general, men mainly do work outside while women do housework. In the field men mainly do cultivation, fertilizer application, sowing, weeding, irrigation and harvesting. Women mainly do hoeing and do harvesting together with men. In barn, feeding is mainly done by men or both, while milking and processing milk are done mainly by women. Marketing agro-products and shopping is predominantly done by men. Women are responsible for all the housework including cleaning, bread making, cooking and childcare, etc.

As described above, women are responsible for various works both inside and outside houses. Although women's house works have been eased as many households have vacuum cleaner and washing machine, they have to work from early morning till late night. Walking long distance on a poor conditioned road to their farm is one of their serious problems.

Assets

Almost all households have refrigerator, and telephone. More than 80% of the households have TV sets, and more than 70% have oven and washing machine. Some 20% of households have mobile phone, and nearly 20% own private vehicle.

Nearly 40% of the households have properties such as house, lot and shop in town.

Energy sources for heating and cooking

Most villagers depend their heating energy mainly on fuelwood. Consumption volume of the fueldwood varies from three and half (3.5) to six (6) sters with the average volume of five (5) sters,. The shortfall is filled mainly with coal, which have been becoming popular although expensive.

The use of LPG, as cooking energy, has been very common.

Infrastructure

All the villages are electrified, and have telephone line. Drinking water supply system has also been

established in all the villages. A primary school has been constructed in all the villages except for Bakirtepe where no school is available.

Clinic is only available in the Alanbasi. But even in Alanbasi staff and equpment are short.

Natural environment

Being located in the mountain slope in steep mountain ranges, natural disasters such as flood and hailstorm are among others serious concern of the villagers. Villages of Alanbasi and Celtikduzu experienced flood in 2001.

Muhtars in Alanbasi and Celtikduzu think that forest resources have been degrading, while other Muhtars thinks they are deteriorate.

Muhtar in all the villages thinks that their pastureland/rangeland has been improved.

Problems/constraints on living

According to the villagers, the most serious problem in the area is poor quality of road. More than half of the head of households interviewed identified this as the problem. Other important problems include no sewerage system, health related, difficult living conditions and marketing.

Other important problem raised by many villagers is lack of knowledge on agriculture. Due to the lack of agricultural extension activities, the forest villagers are facing several problems including pest and diseases, low productivity, etc.

Development ideas

Livelihood improvement through livestock and apiculture is among others important development idea by many villagers.

Table 2.25 Results of the Rural Socio-Economic Survey - Yusufeli (MC-03) (1/3)

Village (no. of HH interviewed)	Alanbasi (20)	Bakirtepe (20)	Celtikduzu (20)	Kilckaya (40)
Location	Mountaiin slope; Valley bottom	Mountain slope	Mountain slope	Mountaiin slope; Valley bottom
Distance from District Center	30 km (60 minutes by car)	41 km (90 minutes by car)	13 km (30 minutes by car)	24 km (40 minutes by car)
Village pattern	5 mahalles	5 mahalles	2 mahalles	compact
Population (2000)	629	130	435	2,859
Average annual population growth rate 1990-2000	-2.17%	-5.71%	-4.59%	-0.38%
Average age of the head of HH interviewed	56 max.: 80 min: 33	51 max.: 72 min: 31	64 max.: 84 min: 37	55 max.: 80 min: 28
Educational attainment of the head of HH (number)				
- Illiterate	0	1	3	1.5
- Literate	4	0	2	1.5
- Primary school	14	13	11	8.5
- Secondary school	2	1	2	5
- High school	0	2	1	2.5
- College/university	0	3	1	1
Average no. of family member	4.8	3.7	4.1	3.5
Average no. of land parcels owned	15.0	14.0	21.0	11.0
Average land holding size (ha)	3.0	4.1	4.2	2.6
Average cultivated land area (ha)	3.0	4.6	2.3	2.4
Cultivated crops (% of area cultivated by the crop)				
- Wheat	24	26	0	6
- Barley	12	16	8	7
- Vegetables	6	4	13	13
- Fruits	0	0	5	2
- Rice	17	0	11	12
- Fodder crops	35	54	61	60
Average yield of wheat (kg/ha)	756 kg/ha	583 kg/ha	1,000 kg/ha	1,329 kg/ha
Average dosage of manure (no. of HH using manure)	5,125 kg/HH (16/20) (Wheat, rice, fodder crops)	7,833 kg/HH (18/20) (Vegetables, wheat, fodder crops)	4,220 kg/HH (9/20) (Rice, vegetables, fodder crops)	2,950 kg/HH (33/40) (Rice, vegetables, fodder crops)
Average dosage of chemical fertilizer (kg/HH) (no. of HH using fertilizer)	415 kg/HH (16/20) (Wheat, rice, fodder crops, vegetables)	377 kg/HH (11/20) (Wheat, barley, vegetables, fodder crops)	139 kg/HH (13/20) (Rice, vegetables, fodder crops)	229 kg/HH (26/40) (Fodder crops, rice, vegetables)
% of HH who use agro-chemicals	15 % (rice)	15 % (vegetables)	30 % (rice)	38% (rice)
% of HH who rented Tractor	65%	50%	30%	45%
% of HH who raise cattle	80%	70%	65%	60%
Average no. of cattle per HH	11	7	3	3
% of local breed of cattle in total cattle	87%	32%	29%	40%
% of HH who raise sheep	0%	20%	5%	3%
Average no. of raised sheep per HH	0	37	50	70
% of HH who raise goat	0%	10%	5%	5%
Average no. of raised goat per HH	0	6	150	90
% of HH who raise chicken	20%	10%	0%	3%
Average no. of chicken per HH	18	5	0	5

Table 2.25 Results of the Rural Socio-Economic Survey - Yusufeli (MC-03) (2/3)

Village (no. of HH interviewed)	Alanbasi (20)			Bakirtepe (20)			Celtikduzu (20)			Kilckaya (40)		
% of HH who practise bee keeping	25%			30%			15%			10%		
Average no. of beehives kept per HH	18 max.: 50 min.: 2			28 max.: 70 min.: 10			20 max.: 50 min.: 2			7 max.: 14 min.: 1		
% of HH who grow fruit trees	75%			0%			35%			55%		
Average no. of fruit trees per HH	56			0			45			60		
% of HH who have greenhouses	0%			0%			0%			0%		
Average area (m^2) of greenhouses per HH	m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2		
% of HH who practise fish culture	0%			0%			0%			0%		
Average area (m^2) of fish pond												
Main income sources (no. of HH having income)												
- Livestock	10			9			4			16		
- Crops	6			4			8			11		
- Bee keeping	1			4			2			1		
- Unearned income (pension, support, revenue from rent)	14			12			17			26		
- Other incomes	5			5			5			15		
Average annual HH income (million TL) (US$)	3,870 (US$2,580)			5,885 (US$3,923)			4,305 (US$2,870)			5,261 (US$3,507)		
Per capita annual income (US$)	538			1,060			700			1,002		
% of cash income by source in total income												
- Livestock	27			24			10			13		
- Crops	9			1			9			9		
- Bee keeping	8			17			4			1		
- Unearned income (pension, support, revenue from rent)	48			49			64			49		
- Other incomes	8			8			13			27		
% of HH who have debts	30%			20%			30%			38%		
Average debt amount	2,725 million TL.			2,550 million TL.			1,670 million TL.			1,439 million TL.		
Lender	Cooperative Agricultural Bank Merchant			Cooperative Friends			Friends			Cooperative Friends Agricultual Bank		
Division of works	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common
- Cultivation	17	0	1	14	0	3	8	0	8	18	0	13
- Fertilizer appl.	15	0	2	14	0	2	10	0	8	22	0	11
- Sowing	12	2	1	14	0	3	10	0	9	20	0	13
- Irrigation	8	1	6	8	1	2	9	0	9	17	1	15
- Hoeing	2	12	1	2	9	4	7	0	11	8	15	12
- Weeding	11	1	2	6	1	3	7	0	12	19	1	14
- Harvesting	7	2	7	9	1	9	5	0	13	18	0	4
- Barn cleaning	8	2	5	6	1	6	2	1	9	15	4	7
- Cowdung making	0	0	0	1	0	0	0	0	1	0	0	0
- Feeding	6	0	5	7	0	5	1	1	5	11	7	6
- Milking	0	15	0	0	13	0	1	8	0	1	26	0
- Processing	0	7	0	1	8	0	2	1	1	3	6	0
- Marketing	7	1	0	7	0	0	10	0	2	17	0	1
- Shopping	20	0	0	18	0	1	18	0	2	37	0	2
- House cleaning	0	19	0	2	18	0	2	18	0	2	38	0
- Bread making	0	19	0	2	18	0	2	18	0	2	38	0
- Cooking	0	19	0	2	18	0	2	18	0	2	38	0
- Child care	0	13	0	2	12	0	0	12	0	0	30	0

Table 2.25 Results of the Rural Socio-Economic Survey - Yusufeli (MC-03) (3/3)

Village (no. of HH interviewed)	Alanbasi (20)	Bakirtepe (20)	Celtikduzu (20)	Kilckaya (40)
Assets (no. of HH having each item)				
- Refrigerator	20	18	19	39
- Oven	12	12	19	31
- Washing machine	15	14	6	38
- Vacuum cleaner	13	9	5	34
- TV set	20	13	17	39
- Telephone	20	14	19	38
- Mobile phone	5	5	1	9
- Private car	4	4	2	7
Properties in town (no. of HH having properties)	5	9	10	6
- House	3	9	9	6
- Lot	2	1	3	0
- Shop	0	0	2	0
Influential people in the village	Muhtar (19) Imam (6) Teacher (7)	Muhtar (13) Imam (9) The rich (2)	Muhtar (19) Imam (14) Teacher (3)	Muhtar (29) Teacher (5) Others (35)
Wishness of migration to other place (% of HH)	25%	40%	40%	35%
Energy source for heating in winter (% of HH use)	Fuelwood (100%) Coal (20%)	Fuelwood (100%) Coal (20%)	Fuelwood (100%) Coal (60%)	Fuelwood (100%) Coal (70%)
Average annual household consumption of fuel wood (sters)	6	5	5	3.5
Electricity	Available	Available	Available	Available
Telephone	Available	Available	Available	Available
Water supply	Available	Available	Available	Available
Primary school	Available	None (Kilickaya)	Available	Available
Clinic	Available	None	None	None
Natural disasters	Hailstorm (1999); Flood (2000)	-	Flood (2001)	-
Change in forest resources in the last decade	Deteriorated	Unchanged	Deteriorated	Unchanged
Change in pasture/rangeland in the last decade	Improved	Improved	Improved	Improved
Past projects	Credit for dairy cow, sheep and poultry (ORKOY);	Credit for dairy cow and sheep (ORKOY)	Irrigation (GDRS); Credit for dairy cow, oxen, sheep, apiculture, chainsaw and greenhouse (ORKOY)	Credit for dairy cow, sheep, apiculture, and poultry (ORKOY)
Constraints/ problems identified by the muhtar	Poor condition of access road	Poor road condition; no school	Lack of agro-machinery;	Lack of employment oppo
Top 5 problems identified by villagers (no. of households)	1. Transportation (16); 2. No sewerage system (12); 3. Health (9); 4. Marketing (5); 5. Lack of fuelwood; Difficult living conditions (3)	1. No sewerage system (10); 2. Transportation; Lack of drinking water (9); 4. Health problem; Harsh winter (6)	1. Transportation (11); 2. Marketing; Health; No sewerage system (6); 5. Lack of drinking water (5)	1. Transportation (24); 2. Difficult living conditions (9); 3. Lack of social activity; Unemployment (7); 5. Low incomes (6)
Projects proposed by the Muhtar	Livestock development; Apiculture	Livestock development; Apiculture	Education	Livestock (cattle); Apiculture; Handicraft
Willingness of the Muhtar to participate in project activities	No	Yes	Yes	Yes

Bayburt micro-catchment (UC-03) (refer to Table 2.26)

Location and pattern of the villages

The villages are located generally in mountain slopes or bottom of valley in gentle mountainous area. Two of the five villages show compact pattern, and the others consist of a few settlements or "mahalles". Distance from the district center as well as provincial center of Bayburt to the villages ranges from 3 km to 34 km, taking 7 to 40 minutes by vehicle.

Educational attainment of the head of households

More than 90% of the head of households attained the education at primary school level or lower. In Heybetepe, 50% of the interviewed head of households received no education, half of which are illiterate, and the remaining 50% finished primary school.

Household size and land holding size

Average household size is 5.4 ranging from 4.4 in Gezkoy to 6.5 in Masat. Average cultivated land area is 4.3 ha, ranging from 2.8 ha in Masat to 5.9 ha in Yaylapinar.

Agricultural activities

On average, fodder crops shares the largest area with 66% of the cultivated land, wheat comes next with 22%, followed by barley with 10%. Crops are not diversified.

In Yaylapinar, fodder crops share 85 % of the area cultivated, while wheat shares 15 % only. In Maden, Fodder crops share 61%, and wheat 36%. Yield of wheat is 1,281 kg/ha on average, ranging from 617 kg/ha in Maden to 1,890 kg/ha in Gezkoy.

The use of manure is not popular in the area despite there are many cattle. On average, 22% of interviewed use manure with average dosage of 27,264 kg per household. The use of chemical fertilizer is more common in the area. Nearly 50% use chemical fertilizer with the average dosage of 505 kg per household, ranging from 333 kg in Masat to 892 kg in Maden.

The use of agro-chemicals is not common. Merely 4% of the households interviewed use agro-chemicals. None of households interviewed in Heybetepe, Masat and Yaylapinar use agro-chemicals

Some 55% of the households rented tractor for cultivation.

Livestock activities

Livestock raising, especially cattle, is common practice. On average more than 80 % of the farmers raise cattle, ranging from 70% in Gezkoy and Maden to 100% in Heybetepe. Average number of raised cattle per household is eight (8). The share of local breed cattle in the total number of cattle is 31%,

ranging from 3% in Maden to 78% in Masat.

Other animals raised are sheep and goat. Some 22% of the farmers raise sheep and 9% raise goat. Average number of raised 30 for sheep and 9 for goat. Sheep raising is more popular in Heybetepe (75% of the households interviewed) than in Gezkoy and Yaylapinar (5% each). Scale of sheep raising is larger in Yaylapinar with the number of raised sheep per household of 80, compared to four (4) in Masat. Goat is raised more in Heybetepe. Some 35% of the households interviewed raise five goat each.

On average some 35% of the farmers raise chicken. Average number of chicken raised per household is eight (8). Chicken raising is more popular in Maden. Some 75% of the farmers raise 12 chicken each on average.

Other agricultural activities

Some 14 % of the households practice beekeeping. Average number of beehives possessed per household is 13, ranging from zero in Heybetepe to 30 in Yaylapinar.

Only some households in Gezkoy grow fruit trees with average tree number of 39. Also some households in Gezkoy possess greenhouse with the average area of 114 m^2. No fish culture is seen in the area.

Source of income, income level and income composition

Some 95 % of the households derive their income from agriculture including crop and livestock. Remaining 5 % derive income from non-agricultural activities like construction, taxi driver, etc. Some 8% of the villagers earn from honey production. Unearned incomes such as pension, support from other family members and revenue from rent are also important for many villagers. Some 30% of the villagers have such income.

Annual household cash income, calculated from the sale of agricultural products (gross income) and other incomes (non-agricultural income and unearned income), averages TL. 6,859 million or US$4,572, ranging from TL.4,248 million in Heybetepe to TL.8,892 million in Maden. Agricultural income shares some 66% of the total income or US$3,017. Average per capita annual cash income is US$887, ranging from US$506 in Heybetepe to US$1,253 in Gezkoy.

Livestock shares 43% of the total income, followed by crops (23%) and bee keeping (3%) on average, while unearned income accounts for 15% and while 15% for non-agricultural income. The income composition varies from village to village. Income from livestock accounts for 70% of the total income in Heybetepe, followed by crops with 26% and non-agricultural income with 4%. In Maden income from livestock share merely 29% of the total, followed by unearned income with 20% and crops with 8%, while non-agricultural income shares as high as 42%.

Debts

Some 57% of the households have debts with the average amount of TL.3,939 million, which is some 57 % of the average annual cash income. Many borrow from their friends at interest free, otherwise from cooperatives, Agricultural Bank and merchant.

Gender aspects

In almost all household matters, decision is made by men. Accordingly women's activities are controlled by men. In general, men mainly do work outside while women do housework. In the field men mainly do cultivation, fertilizer application, sowing, hoeing, weeding, irrigation and harvesting. Some women work together with men in doing hoeing, weeding and harvesting. In barn, barn cleaning is done by both men and women, feeding is mainly done by men, while milking and processing milk are done mainly by women. Marketing agro-products and shopping is predominantly done by men. Women are responsible for all the housework including cleaning, bread making, cooking and childcare, etc.

As described above, women are responsible for various works both inside and outside houses. Although women's house works have been eased as many households have vacuum cleaner and washing machine, they have to work from early morning till late night. Walking long distance on a poor conditioned road to their farm is one of their serious problems.

Assets

More than 90% of the households have refrigerator, TV set and telephone. More than 70% of the households have washing machine, and more than half have vacuum cleaner and oven. More than 20% of households have mobile phone, and some 20% own private vehicle.

Assets possessed by households in Masat are less than those in other villages. Except telephone, refrigerator, washing machine and TV set, all of which are possessed by more than half of the households, other assets are possessed by less than half of the households.

Some 25 % of the households have properties such as house, lot and shop in town.

Energy sources for heating and cooking

Most villagers depend their heating energy mainly on fuelwood. Consumption volume of the fueldwood varies from three (3) to five (5) sters with the average volume of four (4) sters,. The shortfall is filled mainly with cowdung and coal, which have been becoming popular although expensive. Cowdung is more important energy source in Heybetepe and Masat.

The use of LPG, as cooking energy, has been very common.

Infrastructure

All the villages are electrified, and have telephone line. Drinking water supply system has also been established. A primary school has been constructed in all the villages, but pupils in Gezkoy go to a primary school in Bayburt.

Clinic is not always available in the villages. Gezkoy and Yaylapinar do not have clinic, and even if exists, it is poorly equipped and staffed.

Natural environment

As the topographic conditions of the area is not so harsh, the fear of natural disaster is less than other micro-catchments. Only Gezkoy experienced landslide in 2002.

In Gezkoy, Heybetepe and Masat, Muhtar thinks that forest resources within their territory have increased during the last decade, while in the other villages Muhtar thinks the resources have deteriorated.

While the Muhtar in Masat thinks pasture/rangeland conditions have been unchanged, Muhtar in the other villages thinks the conditions have been improved.

Problems/constraints on living

According to the villagers, the most serious problem in the area is poor road conditions, followed by no sewerage system, lack of irrigation water, no enough income and unemployment. Problems vary from village to village depending on their conditions. However, irrigation water insufficiency, low income and bad farm road conditions are among others important concerns among villagers.

Other important problem raised by many villagers is lack of knowledge on agriculture. Due to the lack of agricultural extension activities, the forest villagers are facing several problems including pest and diseases, low productivity, etc.

Development ideas

Livelihood improvement through livestock and bee keeping is among others important development idea by many villagers.

Table 2.26 Results of the Rural Socio-Economic Survey - Bayburt (UC-03) (1/3)

Village (no. of HH interviewed)	Gezkoy (20)	Heybetepe (20)	Maden (20)	Masat (20)	Yaylapinar (20)
Location	Mountain slope, valley bottom	Valley bottom	Valley bottom	Valley bottom	High mountain side
Distance from District Center	10 km (10 minutes by car)	13 km (15 minutes by car)	3 km (7 minutes by car)	34 km (40 minutes by car)	30 km (30 minutes by car)
Village pattern	2 mahalles	Compact	Compact	2 mahalles	3 mahalles
Population (2000)	148	191	352	1,877	399
Average annual population growth rate 1990-2000	-1.60%	-1.60%	-4.00%	-0.10%	-3.30%
Average age of the head of HH interviewed	54 max.: 71 min: 29	49 max.: 66 min: 38	58 max.: 75 min: 28	51 max.: 77 min: 37	57 max.: 82 min: 33
Educational attainment of the head of HH (number)					
- Illiterate	4	5	3	0	1
- Literate	2	5	2	2	3
- Primary school	12	10	13	18	13
- Secondary school	0	0	1	0	2
- High school	2	0	1	0	1
- College/university	0	0	0	0	0
Average no. of family member	4.4	5.6	4.9	6.5	5.5
Average no. of land parcels owned	11	10	3	8	8
Average land holding size (ha)	6.1	15.0	5.2	4.6	5.6
Average cultivated land area (ha)	3.1	5.4	4.1	2.8	5.9
Cultivated crops (% of area cultivated by the crop)					
- Wheat	19	15	36	27	15
- Barley	21	6	3	21	1
- Rye	1	0	0	6	0
- Fodder crops	59	78	61	47	83
Average yield of wheat (kg/ha)	1,890 kg/ha	1,210 kg/ha	617 kg/ha	1,530 kg/ha	1,160 kg/ha
Average dosage of manure (kg/HH) (no. of HH using manure)	46,000 kg/HH (5/20) (Fodder crops, barley)	23,000 kg/HH (4/20) (wheat, fodder crops)	24,500 kg/HH (4/20) (wheat, fodder crops)	13,250 kg/HH (2/20) (Fodder crops)	29,571 kg/HH (7/20) (wheat, fodder crops)
Average dosage of chemical fertilizer (kg/HH) (no. of HH using fertilizer) (crops to which fertilizer applied)	469 kg/HH (8/20) (Wheat, fodder crops, barley)	380 kg/HH (5/20) (wheat, fodder crops)	892 kg/HH (6/20) (wheat, fodder)	333 kg/HH (9/20) (Wheat, barley, fodder crops)	450 kg/HH (3/20) (Fodder crops, wheat)
% of HH who use agro-chemicals	5 % (wheat)	0%	15 % (wheat, fodder crops)	0%	0%
% of HH who rented Tractor	60%	45%	50%	65%	55%
% of HH who raise cattle	70%	100%	70%	85%	80%
Average no. of cattle per HH	8	5	7	5	16
% of local breed of cattle in total cattle	38%	22%	3%	78%	14%
% of HH who raise sheep	5%	75%	10%	15%	5%
Average no. of raised sheep per HH	30	16	19	4	80
% of HH who raise goat	0%	35%	5%	0%	5%
Average no. of raised goat per HH		5	3		20
% of HH who raise chicken	50%	0	75%	15%	35%
Average no. of chicken per HH	20	0	12	4	6

Table 2.26 Results of the Rural Socio-Economic Survey - Bayburt (UC-03) (2/3)

Village (no. of HH interviewed)	Gezkoy (20)			Heybetepe (20)			Maden (20)			Masat (20)			Yaylapinar (20)		
% of HH who practise bee keeping	20%			0%			10%			5%			35%		
Average no. of beehives kept per HH	22 max.: 40 min.: 2			max.: min.:			7 max.: 10 min.: 3			6 max.: min.:			30 max.: 80 min.: 6		
% of HH who grow fruit trees	15%			0%			0%			0%			0%		
Average no. of fruit trees per HH	39			0			0			0			0		
% of HH who have greenhouses	15%			0%			0%			0%			0%		
Average area (m^2) of greenhouses per HH	114 m^2 max: 192 m^2 min: 50 m^2			m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2			m^2 max: m^2 min: m^2		
% of HH who practise fish culture	0%			0%			0%			0%			0%		
Average area (m^2) of fish pond															
Main income sources (no. of HH having income)															
- Livestock	15			20			13			18			15		
- Crops	17			16			10			20			20		
- Bee keeping	1			0			1			0			6		
- Unearned income (pension, support, revenue from rent)	6			0			10			4			8		
- Other incomes	6			4			8			6			3		
Average annual HH cash income (million TL) (US$)	8,275 (US$5,517)			4,248 (US$2,832)			8,892 (US$5,928)			5,027 (US$3,351)			7,855 (US$5,236)		
Per capita annual cash income (US$)	1,253			506			1,209			515			952		
% of income by source in total income															
- Livestock	30			70			29			46			41		
- Crops	27			26			8			28			24		
- Bee keeping	3			0			0			0			13		
- Unearned income (pension, support, revenue from rent)	26			0			20			14			17		
- Other incomes	14			4			42			12			4		
% of HH who have debts	50%			70%			60%			65%			40%		
Average debt amount	1,565 million TL.			1,785 million TL.			7,208 million TL.			1,827 million TL.			7,312 million TL.		
Lender	Friends Agricultural Bank Cooperative			Friends			Friends Agricultural Bank Cooperative			Friends Cooperative Merchant			Friends Cooperative Merchant		
Division of works	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common	Male	Female	Common
- Cultivation	15	0	0	12	1	3	15	0	3	19	0	1	17	0	2
- Fertilizer appl.	14	0	2	15	1	0	17	0	1	18	1	1	17	0	2
- Sowing	14	0	2	15	1	0	15	0	3	16	0	4	15	0	4
- Irrigation	14	0	1	14	1	1	16	0	2	17	0	2	12	0	6
- Hoeing	7	0	6	5	5	6	9	3	6	8	5	7	7	3	9
- Weeding	10	1	4	13	1	2	14	1	3	4	7	9	8	1	10
- Harvesting	12	0	4	14	1	2	14	0	4	15	0	5	10	0	9
- Barn cleaning	9	2	4	4	11	6	11	3	3	8	10	1	3	9	5
- Cowdung making	3	8	0	1	19	0	1	8	1	1	16	1	0	13	3
- Feeding	15	0	0	14	2	4	6	8	1	16	1	2	13	1	3
- Milking	0	13	1	0	19	1	2	12	2	1	17	0	0	16	1
- Processing	0	13	0	1	19	0	4	10	2	1	17	0	0	17	0
- Marketing	14	0	0	18	1	0	16	0	0	17	1	0	17	0	0
- Shopping	19	0	0	19	1	0	15	2	1	19	1	0	19	0	0
- House cleaning	0	20	0	0	20	0	0	19	0	0	20	0	0	19	0
- Bread making	0	20	0	0	20	0	0	18	0	0	20	0	0	19	0
- Cooking	0	20	0	0	20	0	0	20	0	0	20	0	0	19	0
- Child care	0	20	0	0	20	0	0	20	0	0	19	0	0	18	0

Table 2.26 Results of the Rural Socio-Economic Survey - Bayburt (UC-03) (3/3)

Village (no. of HH interviewed)	Gezkoy (20)	Heybetepe (20)	Maden (20)	Masat (20)	Yaylapinar (20)
Assets (no. of HH having each item)					
- Refrigerator	19	19	20	17	15
- Oven	14	12	16	9	6
- Washing machine	17	12	16	12	15
- Vacuum cleaner	15	8	16	8	10
- TV set	19	19	19	18	17
- Telephone	19	20	20	19	16
- Mobile phone	6	3	6	2	5
- Private car	6	7	4	3	0
Properties in town (no. of HH having properties)	7	6	4	4	4
- House	6	3	4	1	4
- Lot	3	4	2	2	3
- Shop	0	0	1	1	1
Influential people in the village	Muhtar (19) Imam (17) Teacher (2)	Muhtar (19) Imam (18) Teacher (1)	Muhtar (19) Imam (6) Rich (5)	Muhtar (17) Imam (17) Teacher (1)	Muhtar (19) Imam (13) Teacher (5)
Wishness of migration to other place (% of HH)	40%	15%	20%	10%	45%
Energy source for heating in winter (% of HH use)	Fuelwood (95%) Coal (55%)	Fuelwood (70%) Cowdung (50%) Coal (15%)	Fuelwood (100%) Coal (70%)	Fuelwood (90%) Cowdung (55%) Coal (10%)	Fuelwood (95%) Coal (45%)
Average annual household consumption of fuel wood (sters)	3	3	4	4	5
Electricity	Available	Available	Available	Available	Available
Telephone	Available	Available	Available	Available	Available
Water supply	Available	Available	Available	Available	Available
Primary school	Go to Bayburt	Available	Available	Available	Available
Clinic	None	Available	Available	Available	None
Natural disasters	Landslide (2002)	-	-	-	-
Change in forest resources in the last decade	Improved	Improved	Deteriorated	Improved	Deteriorated
Change in pasture/rangeland in the last decade	Improved	Improved	Improved	Unchanged	Improved
Past projects	-	-	-	-	-
Constraints/ problems identified by the muhtar	1. Lack of irrigation water; 2. Poor condition of sewerage system	1. No sewerage system; 2. No road to field	1. High interest rate of agricultural credit; 2. No district status; 3. Marketing of livestock; 4. No soil analysis in farmland	1. Irrigation canal is not functioning; 2. No bridge to cross the Coruh river; 3. District status has not been approved	1. Not enough irrigation; 2. Not enough livestock activity; 3. Not enough bee keeping
Top 5 problems identified by villagers (no. of households)	1. Lack of irrigation water (9); 2. Transportation (3); 3. Insufficient agricultural land (3); 4. No sewerage system; Harsh winter conditions (2)	1. No road to rangeland and agric. fields (14); 2. No sewerage system (9); 3. Unemployment (4); 4. Low income; Insufficient agricultural land; Low productivity (3)	1. No sewerage system (8); 2. Low income (5); 3. Lack of irrigation water (4); 4. Harsh winter conditions; Unemployment (3)	1. Low income; Unemployment (7); 3. Transportation (5); 4. Lack of irrigation water; Education (3)	1. No sewerage system (9); 2. Transportation (7); 3. Lack of irrigation water; Low incomes (5); 5. Health (4)
Projects proposed by the Muhtar	1. Sheep raising; 2. Bee keeping	1. Rangeland rehabilitation; 2. Bee keeping; 3. Livestock development	1. Livestock improvement; 2. Bee keeping; 3. Aquaculture	1. Livestock development; 2. Bee keeping; 3. Trout	1. Livestock development; 2. Bee keeping; 3. Agricultural extension
Willingness of the Muhtar to participate in project activities	Yes	Yes	Yes	Yes (labor supply only)	Yes

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (1/11)

Artvin

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
00	**Artvin (Center)**	**5,877**	**5,538**	**11,415**	**36**	**317**	**12,877**	**-1.20%**	**22**	**14**
0	**Merkez bucagi**	**2,074**	**2,188**	**4,262**	**14**	**304**	**5,202**	**-1.97%**	**6**	**7**
001	Ahlat	55	55	110			170	-4.26%		●
002	Bakirkoy	56	71	127			170	-2.87%		●
003	Besagil	188	143	331			388	-1.58%		●
004	Erenler	145	200	345			575	-4.98%	●	
005	Fistikli	54	58	112			194	-5.35%	●	
006	Ormanli	108	115	223			274	-2.04%	●	
007	Salkimli	74	60	134			558	-13.29%		●
008	Seyitler	595	629	1,224			838	3.86%		●
009	Sumbullu	67	71	138			198	-3.55%		●
010	Sehitlik	237	231	468			332	3.49%	●	
011	Taslica	57	68	125			251	-6.73%	●	
012	Tutunculer	201	227	428			572	-2.86%		●
013	Varlik	143	161	304			388	-2.41%		
014	Vezirkoy	94	99	193			294	-4.12%	●	
1	**Ortakoy bucagi**	**1,844**	**1,937**	**3,781**	**8**	**473**	**3,539**	**0.66%**	**8**	**0**
000	Ortakoy (BM)	823	867	1,690			1,928	-1.31%	●	
001	Alabalik	114	113	227			300	-2.75%	●	
002	Bagcilar	61	73	134			211	-4.44%	●	
003	Cimenli	70	84	154			183	-1.71%	●	
004	Hamamli	107	107	214			256	-1.78%	●	
005	Pirnalli	142	135	277			325	-1.59%	●	
006	Sakalar	170	182	352			336	0.47%	●	
007	Yanikli	357	376	733					●	
2	**Zeytinlik bucagi**	**1,959**	**1,413**	**3,372**	**14**	**241**	**4,136**	**-2.02%**	**7**	**7**
000	Zeytinlik (BM)	854	169	1,023			439	8.83%		●
001	Agillar	34	42	76			123	-4.70%	●	
002	Asagimaden	355	407	762			1,082	-3.45%		●
003	Balliuzum	35	27	62			117	-6.15%	●	
004	Derinkoy	16	20	36			69	-6.30%	●	
005	Dikmenli	49	50	99			161	-4.75%		●
006	Dokuzoglu	69	101	170			256	-4.01%	●	
007	Hizarli	83	87	170			319	-6.10%	●	
008	Kalburlu	85	105	190			217	-1.32%		●
009	Koseler	35	28	63			121	-6.32%		●
010	Okumuslar	18	16	34			54	-4.52%	●	
011	Oruclu	79	82	161			261	-4.72%		●
012	Saribudak	119	114	233			401	-5.28%	●	
013	Yukarimaden	128	165	293			516	-5.50%		●

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (2/11)

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
01	**Ardanuc**	**4,522**	**4,677**	**9,199**	**49**	**188**	**12,730**	**-3.20%**	**12**	**37**
0	**Merkez bucagi**	**3,655**	**3,775**	**7,430**	**37**	**201**	**9,893**	**-2.82%**	**12**	**25**
001	Akarsu	73	75	148			207	-3.30%		●
002	Anacli	71	71	142			190	-2.87%	●	
003	Asiklar	43	36	79			159	-6.76%		●
004	Avcilar	136	141	277			307	-1.02%	●	
005	Aydinkoy	365	382	747			974	-2.62%		●
006	Balli	104	116	220			267	-1.92%		●
007	Beratli	28	37	65			115	-5.55%		●
008	Bereket	143	134	277			381	-3.14%	●	
009	Boyali	96	113	209			270	-2.53%		●
010	Bulanik	268	292	560			693	-2.11%		●
011	Ciralar	11	9	20			35	-5.44%	●	
012	Eksinar	53	42	95			104	-0.90%		●
013	Ferhatli	70	71	141			173	-2.02%		●
014	Gecitli	148	139	287			400	-3.27%		●
015	Gokce	55	61	116			140	-1.86%	●	
016	Gules	273	282	555			684	-2.07%		●
017	Gumushane	117	108	225			312	-3.22%		●
018	Hamurlu	53	60	113			145	-2.46%		●
019	Harmanli	78	87	165			187	-1.24%		●
020	Karli	53	46	99			175	-5.54%		●
021	Kasikci	15	11	26			61	-8.17%		●
022	Kizilcik	168	174	342			413	-1.87%		●
023	Konakli	74	75	149			202	-3.00%		●
024	Mesekoy	41	35	76			109	-3.54%	●	
025	Muezzinler	46	53	99			105	-0.59%		●
026	Naldoken	27	27	54			59	-0.88%		●
027	Ovacik	114	111	225			331	-3.79%	●	
028	Ortulu	31	40	71			128	-5.72%	●	
029	Peynirli	179	184	363			518	-3.49%	●	
030	Sakarya	109	113	222			364	-4.82%		●
031	Soganli	127	123	250			315	-2.28%	●	
032	Tepeduzu	123	127	250			181	3.28%	●	
033	Torbali	46	54	100			137	-3.10%		●
034	Tosunlu	75	86	161			301	-6.07%	●	
035	Tutunlu	97	113	210			335	-4.56%		●
036	Yolustu	102	107	209			277	-2.78%		●
037	Zekeriyakoy	43	40	83			139	-5.03%		●
1	**Asagirmaklar buca**	**867**	**902**	**1,769**	**12**	**147**	**2,837**	**-4.61%**	**0**	**12**
000	Asagirmaklar (BM)	189	181	370			521	-3.36%		●
001	Baglica	149	158	307			468	-4.13%		●
002	Cevizlik	66	80	146			229	-4.40%		●
003	Cakillar	57	59	116			188	-4.71%		●
004	Hisarli	43	44	87			128	-3.79%		●
005	Incilli	80	100	180			325	-5.74%		●
006	Kapikoy	47	41	88			155	-5.50%		●
007	Kutlu	101	97	198			336	-5.15%		●
008	Ustalar	17	22	39			57	-3.72%		●
009	Yaylacik	24	26	50			99	-6.60%		●
010	Yolagzi	27	25	52			115	-7.63%		●
011	Yukariirmaklar	67	69	136			216	-4.52%		●

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (3/11)

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
03	**Borcka ilcesi**	**7,389**	**7,699**	**15,088**	**34**	**444**	**19,507**	**-2.54%**	**32**	**2**
0	**Merkez bucagi**	**4,894**	**5,295**	**10,189**	**20**	**509**	**13,012**	**-2.42%**	**18**	**2**
001	Adagul	173	193	366			465	-2.37%	●	
002	Alaca	275	302	577			792	-3.12%	●	
003	Ambarli	230	238	468			994	-7.26%	●	
004	Aralik	249	265	514			700	-3.04%	●	
005	Arkakoy	318	354	672			345	6.89%		●
006	Atanoglu	213	221	434			593	-3.07%	●	
007	Avcilar	81	86	167			267	-4.58%	●	
008	Balci	255	277	532			705	-2.78%	●	
009	Civan	126	157	283			314	-1.03%	●	
010	Ciftekopru	251	293	544			764	-3.34%	●	
011	Demirciler	511	510	1,021			1,753	-5.26%	●	
012	Duzkoy	499	490	989			1,213	-2.02%	●	
013	Findikli	199	214	413			591	-3.52%	●	
014	Ibrikli	227	223	450			627	-3.26%	●	
015	Kale	231	239	470			0			●
016	Kaynarca	404	471	875			1,079	-2.07%	●	
017	Oruculer	100	115	215			328	-4.14%	●	
018	Suluklu	176	183	359			453	-2.30%	●	
019	Tarakli	195	238	433			549	-2.35%	●	
020	Zorlu	181	226	407			480	-1.64%	●	
1	**Camili bucagi**	**828**	**782**	**1,610**	**6**	**268**	**2,153**	**-2.86%**	**6**	**0**
000	Camili (BM)	169	102	271			288	-0.61%	●	
001	Duzenli	166	181	347			469	-2.97%	●	
002	Efeler	138	129	267			385	-3.59%	●	
003	Kayalar	39	48	87			123	-3.40%	●	
004	Maralkoy	192	187	379			530	-3.30%	●	
005	Ugurkoy	124	135	259			358	-3.19%	●	
2	**Muratli bucagi**	**1,667**	**1,622**	**3,289**	**8**	**411**	**4,342**	**-2.74%**	**8**	**0**
000	Muratli (BM)	417	298	715			960	-2.90%	●	
001	Cavuslukoyu	228	250	478			899	-6.12%	●	
002	Caylikoyu	321	336	657			924	-3.35%	●	
003	Guneslikoyu	233	249	482			609	-2.31%	●	
005	Guzelyurt	151	179	330					●	
007	Kayadibi	86	80	166					●	
008	Serefiyekoyu	172	162	334			659	-6.57%	●	
009	Yesilkoy	59	68	127			291	-7.96%	●	
05	**Murgul ilcesi**	**1,059**	**1,142**	**2,201**	**10**	**220**	**3,377**	**-4.19%**	**8**	**2**
0	**Merkez bucagi**	**1,059**	**1,142**	**2,201**	**10**		**3,377**	**-4.19%**	**8**	**2**
001	Akantas	142	144	286			482	-5.09%	●	
002	Ardicli	49	64	113						●
003	Baskoy	150	171	321			656	-6.90%	●	
011	Cimenli	86	96	182						●
005	Erenkoy	139	154	293			336	-1.36%	●	
006	Kabaca	80	60	140			247	-5.52%	●	
007	Korucular	142	177	319			425	-2.83%	●	
008	Kure	47	40	87			122	-3.32%	●	
009	Ozmal	127	138	265			759	-9.99%	●	
010	Petek	97	98	195			350	-5.68%	●	

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (4/11)

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
06	**Savsat**	**8,894**	**9,405**	**18,299**	**62**	**295**	**28,465**	**-4.32%**	**61**	**1**
0	**Merkez bucagi**	**4,614**	**4,832**	**9,446**	**35**	**270**	**15,718**	**-4.96%**	**35**	**0**
001	Arpali	143	153	296			415	-3.32%	●	
002	Atalar	46	39	85			168	-6.59%	●	
003	Cevizli	294	306	600			862	-3.56%	●	
004	Ciridduzu	189	182	371			505	-3.04%	●	
005	Camlica	57	54	111			183	-4.88%	●	
006	Cavdarli	84	71	155			271	-5.43%	●	
007	Cayagzi	109	132	241			395	-4.82%	●	
008	Ciftilik	134	123	257			386	-3.99%	●	
009	Dalkirmaz	78	93	171			260	-4.10%	●	
010	Duzenli	112	125	237			393	-4.93%	●	
011	Elmali	51	59	110			192	-5.42%	●	
012	Eskikale	488	556	1,044			988	0.55%	●	
013	Hanli	153	162	315			553	-5.47%	●	
014	Karaagac	95	90	185			437	-8.24%	●	
015	Karakoy	68	65	133			247	-6.00%	●	
016	Kayabasi	20	22	42			107	-8.93%	●	
017	Kayadibi	174	196	370			545	-3.80%	●	
018	Kirazli	132	143	275			458	-4.97%	●	
019	Kirecli	299	329	628			960	-4.16%	●	
020	Kocabey	266	255	521			638	-2.01%	●	
021	Kopruyaka	83	72	155			257	-4.93%	●	
022	Kurudere	88	84	172			349	-6.83%	●	
023	Kupluce	91	105	196			353	-5.71%	●	
024	Otluca	56	59	115			190	-4.90%	●	
025	Savaskoy	177	168	345			668	-6.39%	●	
026	Saylica	40	24	64			144	-7.79%	●	
027	Susuz	83	91	174			286	-4.85%	●	
028	Salci	106	118	224			397	-5.56%	●	
029	Senocak	82	97	179			329	-5.91%	●	
030	Tepekoy	291	318	609			945	-4.30%	●	
031	Uzumlu	47	61	108			228	-7.20%	●	
032	Yamacli	89	75	164			289	-5.51%	●	
033	Yanikli						1,036			
034	Yasarkoy	40	52	92			131	-3.47%	●	
035	Yavuzkoy	253	259	512			853	-4.98%	●	
036	Ziyaret	96	94	190			300	-4.46%	●	
1	**Meydancik bucagi**	**2,389**	**2,493**	**4,882**	**14**	**349**	**6,590**	**-2.96%**	**13**	**1**
000	Meydancik (BM) (B Balikli	1,114	945	2,059			867 711	9.03%	●	
001	Caglayan	79	113	192			344	-5.66%	●	
002	Caglipinar	51	56	107			202	-6.16%	●	
003	Cukurkoy	182	225	407			594	-3.71%	●	
004	Demirci	62	75	137			201	-3.76%	●	
005	Dereici	137	156	293			471	-4.64%	●	
006	Dutlu	167	173	340			685	-6.77%	●	
007	Erikli	148	180	328			658	-6.73%	●	
008	Madenkoy	116	162	278			396	-3.48%	●	
009	Obakoy	43	56	99			260	-9.20%	●	
010	Sebzeli	84	95	179			165	0.82%		●
011	Tepebasi	87	110	197			574	-10.14%	●	
012	Yagli	53	80	133			227	-5.21%	●	
013	Yesilce	66	67	133			235	-5.53%	●	
2	**Velikoy bucagi**	**1,891**	**2,080**	**3,971**	**13**	**305**	**6,157**	**-4.29%**	**13**	**0**
000	Velikoy (BM)	212	221	433			659	-4.11%	●	
001	Akdamla	110	119	229			371	-4.71%	●	
002	Asagikoyunlu	133	132	265			347	-2.66%	●	
003	Cermik	21	35	56			135	-8.42%	●	
004	Corakli	193	209	402			592	-3.80%	●	
005	Demirkapi	39	53	92			169	-5.90%	●	
006	Ilicakoy	192	245	437			652	-3.92%	●	
007	Koprulu	66	77	143			199	-3.25%	●	
008	Meseli	204	208	412			540	-2.67%	●	
009	Pinarli	458	495	953			1,554	-4.77%	●	
010	Senkoy	53	49	102			216	-7.23%	●	
011	Yoncali	122	151	273			503	-5.93%	●	
012	Yukarikoyunlu	88	86	174			220	-2.32%	●	

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (5/11)

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
07	**Yusufeli ilcesi**	**8,995**	**11,374**	**20,369**	**59**	**345**	**30,344**	**-3.91%**		
0	**Merkez bucagi**	**3,939**	**4,617**	**8,556**	**25**	**342**	**12,163**	**-3.46%**	**6**	**19**
001	Arpacik	61	70	131						●
002	Bademkaya	57	52	109			177	-4.73%		●
003	Bahceli (Avcilik)	77	125	202			490	-8.48%		●
004	Cevizlik	203	216	419			514	-2.02%		●
005	Camlica (Degirment	90	106	196			283	-3.61%	●	
006	Cevreli	384	476	860			1,130	-2.69%		●
007	Dagetegi	90	111	201			315	-4.39%		●
008	Darica	169	212	381			519	-3.04%		●
009	Demirkoy	142	156	298			397	-2.83%	●	
010	Dereici	308	327	635			955	-4.00%	●	
011	Esenyaka	165	222	387			542	-3.31%		●
012	Gumusozu	51	59	110			182	-4.91%		●
013	Havuzlu	39	53	92			217	-8.22%		●
014	Irmakyani	88	90	178			264	-3.86%		●
015	Ishan	258	316	574			866	-4.03%		●
016	Kinalicam	347	347	694			773	-1.07%		●
017	Morkaya	194	209	403			814	-6.79%		●
018	Narlik	193	205	398			502	-2.29%	●	
019	Pamukcular	298	334	632			943	-3.92%		●
020	Sebzeciler	35	43	78			150	-6.33%		●
021	Tarakcilar	32	44	76			171	-7.79%	●	
022	Tekkale	352	463	815			1,142	-3.32%		●
023	Yagcilar	138	164	302			472	-4.37%		●
024	Yarbasi	86	114	200			345	-5.31%	●	
025	Yenikoy	82	103	185						●
1	**Demirkent bucagi**	**843**	**1,061**	**1,904**	**7**	**272**	**3,084**	**-4.71%**	**0**	**7**
000	Demirkent (BM)	221	274	495			709	-3.53%		●
001	Cagliyan	30	40	70			111	-4.51%		●
002	Erenkoy	209	291	500			781	-4.36%		●
003	Gunyayla	154	191	345			595	-5.30%		●
004	Inanli	36	40	76			131	-5.30%		●
005	Kirazalan	125	147	272			520	-6.27%		●
006	Zeytincik	68	78	146			237	-4.73%		●
2	**Kilickaya**	**1,713**	**2,268**	**3,981**	**10**	**398**	**5,691**	**-3.51%**	**2**	**8**
001	Alanbasi	277	352	629			783	-2.17%		●
002	Avcilar	74	86	160			273	-5.20%	●	
003	Bakirtepe	62	68	130			234	-5.71%		●
004	Celtikduzu	195	240	435			696	-4.59%		●
005	Dokumacilar	246	396	642			946	-3.80%		●
006	Koprugoren	174	206	380			422	-1.04%		●
007	Ormandibi	79	127	206			302	-3.75%	●	
008	Yamacustu	279	374	653			907	-3.23%		●
009	Yokuslu	78	88	166			234	-3.38%		●
010	Yunculer	249	331	580			894	-4.23%		●
3	**Ogdem bucagi**	**659**	**906**	**1,565**	**7**	**224**	**2,584**	**-4.89%**	**6**	**1**
000	Ogdem (BM)	114	136	250			397	-4.52%	●	
001	Balalan	44	71	115			301	-9.17%		●
002	Boyali	89	102	191			359	-6.12%	●	
003	Cirah	175	263	438			695	-4.51%	●	
004	Esendal	134	200	334			482	-3.60%	●	
005	Komurlu	76	95	171			229	-2.88%	●	
006	Serinsu	27	39	66			121	-5.88%	●	
4	**Sarigol bucagi**	**1,841**	**2,522**	**4,363**	**10**	**436**	**6,822**	**-4.37%**	**6**	**4**
000	Taskiran (BM)	284	348	632			963	-4.12%	●	
001	Altiparmak	312	433	745			1,291	-5.35%	●	
002	Balcili	90	89	179			325	-5.79%		●
003	Bicakcilar	331	468	799			1,059	-2.78%	●	
004	Bostanci	300	416	716			1,000	-3.29%		●
005	Demirdoven	150	233	383			873	-7.91%	●	
006	Kupluce	80	118	198			252	-2.38%	●	
007	Ozguven	48	69	117			110	0.62%	●	
008	Yaylalar	144	237	381			594	-4.34%		●
009	Yuksekova	102	111	213			355	-4.98%		●
Coruh river basin in Artvin		**36,736**	**39,835**	**76,571**	**250**	**306**	**107,300**	**-3.32%**	**155**	**95**

Source: JICA Study Team based on Census of Population 1990 and 2000, Artvin; SIS and ORKOY, MOF

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (6/11)

Erzurum

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
06	**Ispir ilcesi**	**4,424**	**5,317**	**9,741**	**47**	**207**	**14,233**	**-3.72%**	**13**	**34**
0	**Merkez bucagi**	**2,074**	**2,528**	**4,602**	**21**	**219**	**6,622**	**-3.57%**	**0**	**21**
003	Armutlu	34	42	76			170	-7.74%		●
004	Asagifindikli	14	15	29			61	-7.17%		●
005	Bademli	106	141	247			357	-3.62%		●
006	Bahceli	168	220	388			530	-3.07%		●
008	Baskoy	231	384	615			1,122	-5.84%		●
011	Cankurtaran	32	35	67			88	-2.69%		●
012	Cakmakli	55	64	119			139	-1.54%		●
017	Duzkoy	61	78	139			219	-4.44%		●
023	Kaynakbasi	15	19	34			27	2.33%		●
024	Kirazli	104	144	248			304	-2.02%		●
025	Koc	103	144	247			497	-6.75%		●
026	Koprukoy	235	264	499			702	-3.36%		●
030	Numanpasa	97	118	215			243	-1.22%		●
032	Ozluce	74	83	157			212	-2.96%		●
034	Petekli	90	99	189			325	-5.28%		●
040	Tepecik	35	48	83			133	-4.61%		●
041	Ulubel	65	68	133			236	-5.57%		●
043	Yedigoze	44	56	100			176	-5.50%		●
044	Yesilyurt	122	159	281			490	-5.41%		●
045	Yukarifindikli	63	72	135			199	-3.81%		●
046	Yukariozbag	326	275	601			392	4.37%		●
1	**Camlikaya bucagi**	**1,675**	**2,029**	**3,704**	**17**	**218**	**5,280**	**-3.48%**	**13**	**4**
001	Ahlatli	70	91	161			251	-4.34%	●	
002	Aksu	295	344	639			992	-4.30%	●	
003	Arakoy	25	25	50			61	-1.97%	●	
004	Ardicli	126	154	280			366	-2.64%	●	
005	Catakkaya	36	69	105			173	-4.87%	●	
006	Demirbilek	50	59	109			165	-4.06%		●
007	Devedagi	68	84	152			206	-2.99%	●	
008	Gecitagzi	49	67	116			222	-6.28%	●	
009	Gockoy	65	77	142			208	-3.75%		●
010	Karakale	113	123	236			353	-3.95%	●	
011	Karakamis	107	145	252			374	-3.87%	●	
012	Sirakonak	242	224	466			612	-2.69%	●	
013	Senkoy	15	23	38			69	-5.79%	●	
014	Taslica	12	19	31			45	-3.66%	●	
015	Uzumbagi	205	253	458			621	-3.00%		●
016	Yedigol	142	217	359			434	-1.88%		●
017	Yildiztepe	55	55	110			128	-1.50%	●	
2	**Kirik bucagi**	**675**	**760**	**1,435**	**9**	**159**	**2,331**	**-4.74%**	**0**	**9**
003	Alacabuk	181	213	394			440	-1.10%		●
005	Avcikoy	52	56	108			265	-8.58%		●
007	Cibali	54	73	127			191	-4.00%		●
009	Degirmendere	49	61	110			176	-4.59%		●
016	Kirik	40	42	82			144	-5.48%		●
017	Kizilhasan	63	70	133			276	-7.04%		●
019	Mescitli	99	98	197			343	-5.39%		●
020	Mulkkoy	79	85	164			249	-4.09%		●
025	Yunuskoy	58	62	120			247	-6.96%		●

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (7/11)

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
10	**Narman ilcesi**	**2,410**	**2,791**	**5,201**	**14**	**372**	**5,930**	**-1.30%**	**4**	**10**
0	**Merkez bucagi**	**2,179**	**2,483**	**4,662**	**13**	**359**	**5,168**	**-1.03%**	**3**	**10**
001	Alabalik	264	266	530			379	3.41%		●
005	Baskale	348	420	768			752	0.21%		●
007	Bogakale	102	128	230			282	-2.02%		●
008	Cimenli	88	97	185			306	-4.91%		●
010	Dazlak	115	119	234			226	0.35%		●
011	Demirdag	74	76	150			225	-3.97%		●
012	Ergazi	234	281	515			600	-1.52%		●
014	Gollu	246	288	534			472	1.24%		●
019	Koyunoren	312	371	683			698	-0.22%		●
022	Mercimekli	137	143	280			315	-1.17%	●	
023	Otlutepe	161	160	321			580	-5.74%		●
030	Telli	33	62	95			145	-4.14%	●	
031	Toygarli	65	72	137			188	-3.12%	●	
1	**Kislakoy**	**231**	**308**	**539**	**1**	**539**	**762**	**-3.40%**	**1**	**0**
006	Sutpinar	231	308	539			762	-3.40%	●	
11	**Oltu ilcesi**	**6,612**	**7,787**	**14,399**	**52**	**277**	**20,991**	**-3.70%**	**12**	**40**
0	**Merkez bucagi**	**6,612**	**7,787**	**14,399**	**52**	**277**	**20,991**	**-3.70%**	**12**	**40**
001	Alatarla	137	154	291			476	-4.80%	●	
002	Aritas	63	82	145			275	-6.20%	●	
003	Asagircamli	71	86	157			274	-5.42%	●	
004	Asagikumlu	114	111	225			373	-4.93%		●
005	Ayvali	424	489	913			795	1.39%		●
007	Bahcecik	104	108	212			367	-5.34%		●
008	Bahcelikisla	134	143	277			426	-4.21%	●	
009	Ballica	80	102	182			425	-8.13%		●
010	Basakli	280	319	599			948	-4.49%		●
011	Basbaglar	50	43	93			125	-2.91%		●
012	Camlibel	187	191	378			562	-3.89%		●
013	Canakpinar	103	131	234			361	-4.24%	●	
014	Catakkoy	120	117	237			372	-4.41%		●
016	Cayustu	75	101	176			292	-4.94%		●
017	Cengelli	108	120	228			386	-5.13%		●
018	Dagdibi	163	179	342			318	0.73%		●
020	Demirtas	25	39	64			88	-3.13%		●
021	Derebasi	238	282	520			847	-4.76%	●	
022	Dokuzdegirmen	46	57	103			134	-2.60%		●
023	Duralar	27	33	60			71	-1.67%		●
024	Elmaduzu	106	138	244			410	-5.06%	●	
025	Erdogmus	27	28	55			50	0.96%		●
026	Esenyamac	44	56	100			267	-9.35%	●	
027	Gokcedere	330	484	814			963	-1.67%		●
028	Gunluce	138	183	321			513	-4.58%		●
029	Guryaprak	136	150	286			435	-4.11%	●	
030	Guzelsu	301	330	631			855	-2.99%		●
032	Inanmis	124	163	287			370	-2.51%		●
033	Incikoy	329	381	710			950	-2.87%	●	
034	Ipekcayir	67	75	142			241	-5.15%		●
035	Iragac	91	102	193			261	-2.97%		●
036	Kalebogazi	175	213	388			619	-4.56%		●
038	Kayaalti	76	110	186			219	-1.62%		●
039	Kemerkata	26	31	57			126	-7.63%		●
040	Konukseven	19	26	45			93	-7.00%		●
041	Kucukorucuk	53	71	124			211	-5.18%		●
043	Obayayla	69	89	158			286	-5.76%		●
044	Orucuk	213	302	515			701	-3.04%		●
045	Ozdere	254	304	558			724	-2.57%		●
047	Sarisaz	135	178	313			389	-2.15%		●
048	Subatuk	53	49	102			193	-6.18%		●
050	Sulunkaya	134	154	288			433	-4.00%	●	
051	Sendurak	87	103	190			301	-4.50%		●
052	Tekeli	89	96	185			231	-2.20%		●
056	Tutlu	325	363	688			930	-2.97%		●
057	Tutmac	176	205	381			780	-6.91%		●
058	Tuzlakoy	161	148	309			342	-1.01%		●
060	Visneli	86	92	178			216	-1.92%		●
062	Yaylacayir	61	84	145			222	-4.17%	●	
063	Yolboyu	89	104	193			295	-4.15%		●
064	Yukaricamli	55	51	106			290	-9.57%		●
065	Yukarikumlu	34	37	71			160	-7.80%		●

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (8/11)

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
12	**Olur ilcesi**	**3,090**	**3,543**	**6,633**	**27**	**246**	**10,784**	**-4.74%**	**2**	**25**
0	**Merkez bucagi**	**3,090**	**3,543**	**6,633**	**27**	**246**	**10,784**	**-4.74%**	**2**	**25**
001	Akbayir	37	35	72			155	-7.38%		●
003	Asagircayirli	115	135	250			421	-5.08%		●
004	Asagikaracasu	227	243	470			736	-4.39%		●
005	Atli	151	175	326			555	-5.18%		●
007	Baskaya	66	73	139			268	-6.35%		●
008	Bogazgoren	51	56	107			210	-6.52%		●
010	Coskunlar	80	90	170			239	-3.35%		●
011	Cataksu	237	291	528			814	-4.24%		●
012	Eglek	69	75	144			275	-6.26%		●
014	Filizli	57	68	125			205	-4.83%		●
017	Kaban	55	61	116			309	-9.33%	●	
018	Kaledibi	141	161	302			432	-3.52%		●
020	Kecili	35	31	66			115	-5.40%		●
021	Kekikli	110	141	251			438	-5.42%		●
022	Koprubasi	33	41	74			148	-6.70%		●
024	Olgun	48	51	99			174	-5.48%		●
025	Olurdere	43	65	108			249	-8.01%		●
026	Ormanagzi	407	450	857			1,283	-3.95%	●	
028	Sogukgoze	84	94	178			261	-3.76%		●
030	Salpazari	56	81	137			234	-5.21%		●
031	Tasgecit	92	106	198			320	-4.69%		●
032	Taslikoy	397	448	845			1,154	-3.07%		●
036	Yesilbaglar	132	159	291			447	-4.20%		●
037	Yildizkaya	81	107	188			316	-5.06%		●
038	Yolgozler	57	54	111			182	-4.82%		●
039	Yukaricayirli	40	53	93			155	-4.98%		●
040	Yukarikaracasu	189	199	388			689	-5.58%		●

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (9/11)

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
15	**Senkaya ilecsi**	**8,715**	**9,003**	**17,718**	**56**	**316**	**22,241**	**-2.25%**	**12**	**44**
0	**Merkez bucagi**	**716**	**767**	**1,483**	**8**	**185**	**2,232**	**-4.01%**	**1**	**7**
001	Dogankoy	93	103	196			271	-3.19%	●	
002	Gezenek	49	45	94			199	-7.23%		●
003	Ikizpinar	51	50	101			118	-1.54%		●
005	Sindiran	66	74	140			153	-0.88%		●
006	Teketas	116	127	243			362	-3.91%		●
007	Timurkisla	74	69	143			255	-5.62%		●
008	Turnali	150	177	327			479	-3.75%		●
011	Zumrut	117	122	239			395	-4.90%		●
1	**Aksar bucagi**	**4,795**	**4,896**	**9,691**	**22**	**441**	**10,435**	**-0.74%**	**11**	**11**
000	Aksar (BM)	1,223	934	2,157			1,808	1.78%		●
001	Atyolu	296	288	584			372	4.61%	●	
002	Aydogdu	56	66	122			171	-3.32%		●
003	Bespinarlar	171	164	335			539	-4.64%	●	
004	Camlialan	485	625	1,110			829	2.96%	●	
005	Degirmenlidere	373	353	726			1,099	-4.06%	●	
006	Dokuzelma	12	23	35			137	-12.76%	●	
007	Esence	31	25	56			57	-0.18%		●
008	Gulveren	154	177	331			348	-0.50%	●	
011	Kayalisu	161	190	351			348	0.09%	●	
012	Koroglu	267	301	568			407	3.39%	●	
013	Koskkoy	217	228	445			687	-4.25%	●	
014	Nisantasi	308	332	640			848	-2.77%		●
015	Ormanli	232	278	510			655	-2.47%		●
016	Ozyurt	398	497	895			954	-0.64%		●
018	Sarikayalar	34	26	60			95	-4.49%		●
020	Tahkoy	75	73	148			180	-1.94%		●
021	Yazili	47	46	93			114	-2.02%	●	
022	Yelkiran	23	12	35			63	-5.71%		●
023	Yesildemet	55	62	117			155	-2.77%		●
024	Yunoren	47	55	102			204	-6.70%		●
025	Yurekli	130	141	271			365	-2.93%	●	
2	**Gaziler bucagi**	**1,169**	**1,154**	**2,323**	**14**	**166**	**3,802**	**-4.81%**	**0**	**14**
000	Gaziler (BM)	253	209	462			694	-3.99%		●
001	Aktas	26	19	45			116	-9.03%		●
002	Bereketli	71	73	144			275	-6.26%		●
003	Catalelma	50	49	99			271	-9.58%		●
004	Dortyol	178	189	367			397	-0.78%		●
005	Esenyurt	114	119	233			345	-3.85%		●
006	Goresken	102	104	206			346	-5.05%		●
007	Gozebasi	22	22	44			150	-11.54%		●
008	Icmesu	30	33	63			122	-6.40%		●
009	Kaynak	115	96	211			310	-3.77%		●
010	Kirecli	13	14	27			115	-13.49%		●
011	Oyuktas	88	97	185			233	-2.28%		●
012	Senpinar	78	98	176			211	-1.80%		●
013	Tazekoy	29	32	61			217	-11.92%		●
3	**Komurlu bucagi**	**2,035**	**2,186**	**4,221**	**12**	**352**	**5,772**	**-3.08%**	**0**	**12**
000	Gollet (BM)	169	167	336			596	-5.57%		●
002	Asagibakracli	96	120	216			233	-0.75%		●
003	Balkaya	179	210	389			597	-4.19%		●
004	Beykaynak	104	120	224			434	-6.40%		●
006	Dolunay	326	334	660			772	-1.56%		●
007	Evbakan	129	137	266			419	-4.44%		●
008	Gozalan	173	204	377			486	-2.51%		●
009	Incecay	64	65	129			238	-5.94%		●
011	Sariyar	117	116	233			341	-3.74%		●
015	Yaymese	148	165	313			528	-5.09%		●
016	Yogurtcular	457	476	933			934	-0.01%		●
017	Yukaribakracli	73	72	145			194	-2.87%		●

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (10/11)

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
17	**Tortum ilcesi**	**4,169**	**4,505**	**8,674**	**22**	**394**	**10,497**	**-1.89%**	**0**	**22**
0	**Merkez bucagi**	**1,660**	**1,777**	**3,437**	**13**	**264**	**4,770**	**-3.22%**	**0**	**13**
002	Aksu	171	187	358			769	-7.36%		●
005	Arili	120	112	232			282	-1.93%		●
009	Caylica	110	132	242			391	-4.68%		●
011	Civilikaya	43	54	97			148	-4.14%		●
012	Demirciler	204	215	419			570	-3.03%		●
013	Doruklu	45	42	87			123	-3.40%		●
016	Incedere	192	191	383			424	-1.01%		●
019	Kazandere	201	222	423			541	-2.43%		●
023	Meydanlar	103	104	207			297	-3.55%		●
024	Peynirli	93	98	191			252	-2.73%		●
028	Tipili	100	127	227			277	-1.97%		●
030	Visneli	145	162	307			351	-1.33%		●
036	Ziyaret	133	131	264			345	-2.64%		●
1	**Senyurt bucagi**	**2,509**	**2,728**	**5,237**	**9**	**582**	**5,727**	**-0.89%**	**0**	**9**
001	Asagikatikli	992	1,053	2,045			1,692	1.91%		●
003	Cihanli	274	285	559			764	-3.08%		●
004	Cataldere	24	28	52			96	-5.95%		●
006	Derinpinar	210	244	454			528	-1.50%		●
007	Dikmen	317	361	678			802	-1.67%		●
008	Gokdere	136	115	251			236	0.62%		●
009	Koleboynu	132	158	290			356	-2.03%		●
012	Suyatagi	166	194	360			573	-4.54%		●
013	Uzunkavak	258	290	548			680	-2.14%		●
18	**Uzundere ilcesi**	**3,062**	**3,679**	**6,741**	**10**	**674**	**8,750**	-2.57%	**0**	**10**
0	**Merkez bucagi**	**3,062**	**3,679**	**6,741**	**10**	**674**	**8,750**	-2.57%	**0**	**10**
001	Altincanak	105	135	240			306	-2.40%		●
002	Balikli	208	295	503			668	-2.80%		●
003	Cevizli	483	553	1,036			1,361	-2.69%		●
004	Caglayan	217	256	473			553	-1.55%		●
005	Camliyamac	259	334	593			839	-3.41%		●
006	Dikyar	326	389	715			884	-2.10%		●
007	Golbasi	246	316	562			761	-2.99%		●
008	Kirozli	446	529	975			1,225	-2.26%		●
009	Sapaca	254	274	528			702	-2.81%		●
010	Ulubag	518	598	1,116			1,451	-2.59%		●
Coruh river basin in Erzurum		**32,482**	**36,625**	**69,107**	**228**	**303**	**93,426**	-2.97%	**43**	**185**

Source: JICA Study Team based on Census of Population 2000, Erzurum, SIS and ORKOY, MOF

Appendix 1 Inventory of Forest Villages in the Coruh River Catchment (11/11)

Bayburt

No.	District/village	Year 2000					Total population in 1990	Annual average population growth rate 1990-2000	Forest villages	
		Male	Female	Total	Nos. of villages	Av. pop. per village			inside forest	nearby forest
00	**Bayburt (Center)**	**4,524**	**4,899**	**9,423**	**31**	**304**	**12,356**	**-2.67%**	**0**	**31**
0	**Merkez bucagi**	**1,819**	**2,076**	**3,895**	**20**	**195**	**5,703**	**-3.74%**	**0**	**20**
005	Alapelit	147	182	329			459	-3.28%		●
008	Armutlu	75	91	166			188	-1.24%		●
010	Arslandede	148	147	295			352	-1.75%		●
018	Bayraktar	169	218	387			856	-7.63%		●
030	Dagitarla	122	170	292			577	-6.58%		●
044	Guloba	51	43	94			117	-2.17%		●
049	Harmanozu	92	89	181			227	-2.24%		●
050	Heybetepe	85	106	191						●
055	Kavakyani	80	81	161			251	-4.34%		●
059	Kocbayiri	67	69	136			205	-4.02%		●
061	Kopuz	61	67	128			138	-0.75%		●
062	Kozluk	98	102	200			240	-1.81%		●
071	Pelitli	35	29	64			86	-2.91%		●
072	Polatli	62	84	146			210	-3.57%		●
078	Sarihan	32	25	57			128	-7.77%		●
079	Sarimese	116	128	244			323	-2.77%		●
084	Tahtkoy	182	243	425			631	-3.88%		●
093	Uzengili	77	89	166			355	-7.32%		●
094	Yanikcam	67	74	141			234	-4.94%		●
098	Yenikoy	53	39	92			126	-3.10%		●
1	**Maden bucagi**	**2,705**	**2,823**	**5,528**	**11**	**503**	**6,653**	**-1.84%**	**0**	**11**
000	Maden (BM)	193	159	352			529	-3.99%		●
002	Akduran	55	68	123			171	-3.24%		●
003	Gencosman	166	175	341			425	-2.18%		●
005	Bascimagil	235	249	484			624	-2.51%		●
006	Calidere	168	203	371			475	-2.44%		●
008	Gezkoy	78	70	148			174	-1.61%		●
009	Helvakoy	243	323	566			934	-4.89%		●
012	Kopkoy	343	347	690			683	0.10%		●
013	Masat	941	936	1,877			1,890	-0.07%		●
018	Tascilar	91	86	177			190	-0.71%		●
019	Yaylapinar	192	207	399			558	-3.30%		●
01	**Aydintepe bucagi**	**143**	**141**	**284**	**3**	**95**	**431**	-4.09%	**0**	**3**
0	**Merkez bucagi**	**143**	**141**	**284**	**3**	**95**	**431**	-4.09%	**0**	**3**
008	Dumlu	78	74	152			219	-3.59%		●
011	Gunbuldu	43	35	78			135	-5.34%		●
014	Kilickaya	22	32	54			77	-3.49%		●
02	**Demirozu**	**291**	**454**	**745**	**3**	**248**	**1,226**	**-4.86%**	**2**	**1**
0	**Merkez bucagi**	**291**	**454**	**745**	**3**	**248**	**1,226**	**-4.86%**	**2**	**1**
012	Elmali	82	133	215			397	-5.95%		●
023	Petekli	79	118	197			307	-4.34%	●	
026	Yakupabdal	130	203	333			522	-4.40%	●	
	Coruh river basin in Bayburt	**4,958**	**5,494**	**10,452**	**37**	**282**	**14,013**	-2.89%	**2**	**35**

Source: JICA Study Team based on Census of Population 1990 and 2000, Bayburt; SIS, and ORKOY, MOF

Total of forest villages in Coruh river basin	**74,176**	**81,954**	**156,130**	**515**	**303**	**214,739**	-3.14%	**200**	**315**

Appendix 2 Questionnaire for Key Informant Survey (English) (1/8)

Rural Socio-Economic Survey
for
The Master Plan Study
on
Participatory Watershed Rehabilitation
in Coruh River in the Republic of Turkey

Undertaken by the Japan International Cooperation Agency (JICA)
in cooperation with Ministry of Environment and Forestry

June 2003

Key Informant Survey Questionnaire

Micro-Catchment No.	☐☐ - ☐☐
Village:	
Sub-district:	
Distrcit:	
Province:	

Name of the Interviewer: _____

Name of the Interviewee: _____

Title of Interviewee: _____

Date of Interview: _____

Appendix 2 Questionnaire for Key Informant Survey (English) (2/8)

Key Informant Survey

1.	Location of the village (Filled in by interviewer)	A) Mountain slope ……1 Top of mountain…..….2 Plain lowland..…….….3 Valley …….4 B) Inside village …….1 Nearby village ……2 C) Near lake ……1 Near dam reservoir ....2 Near river ……...3 Near spring …….4 D) Near the highway (less than 5 km) …1 (more than 5 km) …2
2.	How far is it from the village to district center and to provincial center?	Province center _____ km _____ minutes by vehicle District center _____ km _____ minutes by vehicle
3.	What is the village pattern?.	Compact ……...1 Houses are scattered …..…….…..2 More than one settlement ……3 (how many_____)
4.	Material of Houses (%)	1. Stone ( ); 2. Concrete ( ); 3. Bricks ( ); 4. Wood ( )

POPULATION

5.	What is the population and the number of household in last population census (2000) and at present (2003)?		**Population** **Male** **Female**	**Nos. of household**
		Last Census(2000)		
		At present (2003)		
6.	How many people are over the age of 60 at present?	Male _____; Female _____		

OCCUPATION AND MIGRATION

7.	What are the main economic activities? (if plural answer, ask order of importance)	**Activities** **Order of importance** 1. Cereals cultivation _____ 2. Vegetables _____ 3. Fruits _____ 4. Animal husbandry _____ 5 Forestry _____ 6. Others (Specify:_____) _____
8.	Are there anyone who live in the village but work out of the village everday?	Yes …1 → How many (male:_____; female_____) → Where do they go mainly?_____ → Main occupation: _____ No…2
9.	Are there any seasonal workers working outside the village? (Those who are migrated out to work seasonally)	Yes …1 → Number : male _____; female _____

The place where people go to work	**Type of work**	**Season of work go to work**	**Duration (months)**

No…2

Appendix 2 Questionnaire for Key Informant Survey (English) (3/8)

10.	Are there any people/households out-migrated from the village in the last five years?	Yes …1 → Number of people : male _____; female _____ Number of households: _____ → Major destination? _____ → Main reason for migration _____ _____ No…..2
11.	Are there any people/households who returned to the village in last five years? (permanently)	Yes …1 → Number of people : male _____; female _____ Number of households: _____ → From where: _____ → Main reason for return _____ _____ No…..2
12.	Are there any people/households who returned to the village temporarily every year?	Yes ….1 → Male _____; Female _____; Household _____ Main reason for temporal return _____ No …..2
13.	Are there any seasonal in-migrant workers coming in your village?	Yes ….1 How many workers were there last year? _____ How are the working conditions? 1. Rent lands _____TL./decar 2. Share cropping _____% of harvest 3. Wage _____TL./day No ….2
14.	Are there any problems in the village due to the increase in out-migration?	Yes….1 Kind of problem : _____ _____ No…..2
BASIC INFRASTRUCTURE		
15.	Is your village electrified?	Yes ….1 → Number of households not electrified:_____ Reason for not electrified: _____ How often is the electricity out? : _____ No …..2
16.	Is telephone line connected?	Yes ….1 → How many households have telephone:_____ No …..2
17.	Does your village have drinking water supply system (tap water)?	Yes ….1 → How many households are connected with it? _____ No ….2 → What is the main drinking/domestic water source? 1. spring; 2. river; 3. well; 4. others(specify)_____ Is the water supply sufficient all the year? Yes ....1 No ….2 → When is water short? (spring, summer; autumn, winter) Reason for shortage:_____ Is the water quality good? Yes ….1; No …..2 If no, how is it? _____

Appendix 2 Questionnaire for Key Informant Survey (English) (4/8)

18.	Are you satisfied with the condition of road connecting the village with the highway nearby?	Yes ….1 No…...2 → What makes you unsatisfied? 1. Road is closed often in winter due to snow. 2. Road surface is not smooth due to poor maintenance. 3. Road is eroded by flood almost every year. 4. Others (specify:_____)
EDUCATION		
19.	Is there a primary school in your village?	Yes ….. 1 → How many pupils are there? Boy_____; Girls_____ How many teachers are there ? _____(permanent teachers ____) Where do(es) permanent teacher(s) live? _____ No ……2 → How far is it from the village to the nearest primary school? _____km ; _____minutes by vehicle
20.	Are there any students going to high school/college/university?	Yes ….1 High school: male _____; female _____ College/university: male_____; female_____; No ….2
21.	What are the main problem related to education in your village?	_____ _____ _____
PUBLIC HEALTH AND SANITATION		
22.	What are the main diseases in your village?	1. _____; 2. _____ 3. _____;
23.	What are the main diseases for children in your village?	1. _____; 2. _____ 3. _____;
24.	Do villagers usually own medicines in their houses?	Yes ……1 What kind of medicines do they own? _____ Where do they get them? _____ No ……2
25.	Is there a clinic in your village?	Yes…1 →

Specialist Doctor	Doctor	Nurse	Midwife	Officers

No…2→ How far is it from the village to the nearest clinic?
_____km; _____minutes (by car)

26.	How far is it from the village to the nearest hospital?	_____km; _____ minutes (by car)
27.	In case of emergency, what kinds of actions do villagers take?	_____ _____ _____
28.	What are the main problems related to health in your village?	_____ _____ _____

Appendix 2 Questionnaire for Key Informant Survey (English) (5/8)

NATURAL DISASTERS

29. Were there any natural disasters occurred in the last five (5) years?

Yes ...1 →

Disaster	Year	Nos. of death

No ….2

30. Were any countermeasures taken after the disasters?

Yes ….1→

Disaster	Countermeasures taken

No ….2

31. Do you think that any of natural disasters can be protected by human efforts?

Yes ….1 → Disasters to be protected Necessary measures

1. Landslides _____
2. Flood _____
3. Avalanche _____

No…...2

LAND USE AND OWNERSHIP

32. Was any cadastral survey made in your village?

Yes ……1 → When started? _____

Was it finished? Yes ….1; No …..2

If No, why was it not finished? _____

_____

No ..….2

33. How many decars does your village have by land use category?

(Please complete the table)

Type of land	Area (decar)
Rainfed farmland	
Irrigated land	
Fallow land	
Poplar/willow	
Pasture/rangeland	
Forest	
State properties (specify:_____)	
Unutilized land due to serious soil erosion	
Unused land due to out-migration (fallow)	
Unused land due to inheritance disputes	
Others (specify:_____)	
Total	

34. How many decars do farmers own the land? (Please complete the table below)

Land size(unit:decar)	Landless	0<2	2-5	5-10	10-20	20-30	30-50	>50
Nos. farmers								

Appendix 2 Questionnaire for Key Informant Survey (English) (6/8)

35.	Is there buy and selling or leasing of farmland in the village?	Yes ....1 Price for buy and selling : TL._____/decar Price for lease in/out: TL._____/decar No 2
36.	What are the major crops cultivated in your village? (please select 5 important crops)	1. Wheat; 2. Barley; 3. Corn; 4. Potatoes; 5. Dry beans; 6. Vegetables; 7. Alfalfa; 8. Fruits 9. Other crop (specify: _____)
37.	Are there any greenhouses in your village?	Yes ….1 How many greenhouses? _____ houses; _____ m2 No ….2

38.	What kind of animals are there in your village?	Animal	Cattle			Sheep	Goat	Chicken
			Local	Pure breed	Crossbred			
		Number						

39.	How many households raise livestock?	Cattle: _____; Sheep: _____; Goat: _____				
40.	Do any animals come into the rangeland/pasture in your village from outside?	Yes ….1 → How many animals come? Cattle _____ heads; Goat _____ heads; Sheep _____ heads No ….2				
41.	Are there bee keeping activities in your village?	Yes ….1 How many beehives are there? _____beehives No ….2				

42.	What kind of public facilities are there in your village?	Facility	1. Mosque	2. Community hall	3. Irrigation	4. Others
		Yes …..1 No …..2				

COMMUNITY ACTIVITIES

43.	How is the decision making process concerned with the village?	Discussed with elders committee……..1 Asked to villagers ……..…2 Asked to elder people in the village…….....3 Asked to intellectual people in the village. ……..4 Others (specify)_____..... 5

44.	Are there any cooperative/communal organizations in the village?	Yes…1 →	Name	Member	Major activities
		No 2			

45.	Do villagers help mutually without compensation?	Yes ….1 What kind of works_____ No…...2
46.	Does the village have any disagreement or conflicts within the village?	Yes ….1 → Disagreement/conflict _____ _____ No 2
47.	Does the village have any conflicts with neighbouring villages?	Yes ….1 → Disagreement/conflict _____ _____ No 2
48.	Are there any administrative/ institutional/organizational problems in your village?	Yes ….1 Kind of problem_____ _____ No…...2

Appendix 2 Questionnaire for Key Informant Survey (English) (7/8)

CHANGE IN SOCIO-ECONOMIC ENVIRONMENTS

49.	Were there any change in the abundance of forest resources within the village area over the last decades?	Yes ….1 increased ( ); decreased ( ); unchanged ( ) Reason for change : _____ _____ No ….2
50.	Has the change in the abundance of forest resources affected your villagers' life?	Yes….1 → How affected _____ _____ Any solution? _____ _____ No ….2

51. Were there any changes in the number of cattle in your village over the last decades?

Yes ….1

Cattle	Change in number			Reason for change
	increase	decrease	unchange	
Local				
Purebreed				
Crossbred				

No ….2

52. Were there any changes in the number of sheep/goat in your village over the last decade?

Yes …..1

Sheep/goat	Change in number			Reason for change
	increase	decrease	unchange	
Sheep				
Goat				

No ….2

53. Were there any changes in pasture/rangeland conditions in your village over the last decade?

Yes ….1 improved ( ); deteriorated ( ); unchanged ( )

If improved or deteriorated, does this change affect the life of your villagers?

Yes…. 1; No …..2

If yes, how affected? _____

Any solution? _____

54. Were there any changes in energy sources for heating and cooking in your village over the last decade?

Yes ….1

Main sources before _____; _____

Main sources at present _____; _____

No ….2

55. Were there any change in the easiness of provision of energy sources for heating and cooking?

Yes …..1

Type of energy	difficult	easier	unchanged	Reason for change
Fuelwood				
Coal				
Grass				
Cowdung				
Others				

No …..2

Appendix 2 Questionnaire for Key Informant Survey (English) (8/8)

56.	Do you think are there any changes in the living environments in your village over the last decade?	Improved….. 1; deteriorated ……2; unchanged …….3 What is the main reason for the changes ? _____ _____ Any idea for improvement? _____ _____

RELATION WITH FORESTS AND RANGELAND

57.	Can you explain the principal rules on forest resources utilization?	
58.	Can you explain the principal rules on rangeland utilization?	

DEVELOPMEN PROJECTS/PROGRAMS

59.	Are there any development project implemented in and around your village in the last ten years?	Yes …1 →	Project component	Implementing agency
		No ….2 (go to 61.)		
60.	What kind of impact did the projects bring to the village?	Positive impact:_____ _____ _____ Negative impact: _____ _____ _____		
61.	What are the most important problems/constraints to develop your village?	1. 2. 3.		
62.	Do you have any ideas how to develop the village as a headman/elder council leader?			
63.	What kind of development projects/ programs are essential for the village urgently?	1. 2. 3.		
64.	Will the villagers participate in the projects/ programs in terms of labor and money?	Yes ….. 1 No …..2		

Thank you very much!

Appendix 3 Questionnaire for Key Informant Survey (Turkish) (1/8)

Çoruh Nehrinde
Katılımcı Su Havzası Islahı Master Planı Çalışması
Kırsal Sosyo- Ekonomi Anketi
Türkiye

Çevre ve Orman Bakanlığı
ve
Japon Uluslararası İşbirliği Ajansı (JICA)

June 2003

Köy Muhtarı Anket Formu

Mikro - Havza No: ☐☐ - ☐☐

Köy: ☐

Nahiye: ☐

İlçe: ☐

Şehir: ☐

Anket Yapanın İsmi: _____

Ankey Yapılanın İsmi: _____

Anket Yapılanın Ünvanı: _____

Anket Tarihi: _____

Appendix 3 Questionnaire for Key Informant Survey (Turkish) (2/8)

Köy Muhtarı Anket Formu

1.	Köyün yerleşim durumu (Anketör tarafından doldurulacaktır)	A) Dağın yamacında ……..…1 Dağın tepesinde.…….....2 Düşük rakımlı ovada ..…...3 Vadide ……...….4 B) Ormanın içinde ……...….1 Ormanın kenarında ……...2 C) Göl kenarında ….....…1 Baraj gölü kenarında .....2 Nehir kenarında … ….....3 Artezyen kenarında ……..4 D) Ana yola yakınlığı (5 km'den az) ..…1 5 km'den fazla 2
2.	Köyünüz en yakın il/ilçe merkezine ne kadar uzaklıktadır?	En yakın il merkezine uzaklık _____ km ..... dakika (arabayla) En yakın ilçe merkezine uzaklık _____ km ..... dakika (arabayla)
3.	Konutların arazideki yerleşim durumuna göre köy kuruluş tipini belirtiniz. (anketör gözlemerini de kullanacaktır)	Toplu ……....1 Dağınık ……..……...2 Birden fazla yerde kümelenmiş …3 (kaç küme_____)
4.	Köydeki binaların durumu (Yüzde olarak)	1. Taş ( ) 2. Betonarme ( ) 3. Kerpiç ( ) 4. Ağaç ( )

NÜFUS

5.	Köyünüzün 2000'deki ve şu anki (2003) nüfusu ve hane sayısı nedir?		Nüfus Erkek Kadın	Hane sayısı
		En son sayım (2000)		
		Şu an (2003)		
6.	Şu an 60 yaşın üzerindeki nüfus sayısı kaçtır?	Erkek _____; Kadın _____		

ÇALIŞMA VE GÖÇ DURUMU

7.	Temel ekonomik üretim faaliyeti nedir? (Eğer birden fazla ise onem sırasına gore numaralandırınız; 1, 2, 3.. şeklinde)	**Faaliyetler** **Önem Sırası** 1. Hububat tarımı _____ 2. Sebze _____ 3. Meyve _____ 4. Hayvacılık _____ 5 Orman _____ 6. Diğer (Belirt:_____) _____
8.	Köyünüzde yerleşik olup çalışma amacıyla hergün köy dışına giden kimse var mıdır?	Evet …1 → Kaç kişi? (erkek:_____; kadın_____) → Genelde nereye giderler? _____ → Ana iş sahası nadir? _____ Hayır…2
9.	Köyünüzden mevsimlik işçi olarak çalışmaya giden var mıdır? (Mevsimlik çalışmak için göç etmiş olanlar)	Evet …1 → Sayı : erkek _____; kadın _____

İnsanların çalışmak için gittiği yer	**İşin çeşidi**	**Çalışmaya gidilen mevsim**	**Süre (ay)**

Hayır…2

Appendix 3 Questionnaire for Key Informant Survey (Turkish) (3/8)

10.	Son beş yılda köy dışına süreli olarak göç eden insane/hane varmıdır?	Evet …1 → İnsan sayısı : erkek _____; kadın _____ Hane sayısı: _____ Ana varış yeri _____ Göç için ana nedeni _____ _____ Hayır…..2
11.	Son beş yılda köye sürekli olarak dönen insan/hane varmıdır ? (sürekli)	Evet …1 → İnsan sayısı : erkek _____; kadın _____ Hane sayısı: _____ nereden: _____ Dönüşün ana nedeni _____ _____ No…..2
12.	Heryıl geçici olarak köye dönen insanlar/haneler varmı??	Evet ….1 → Erkek _____; Kadın _____; Hane _____ Geçici dönüşün ana nedeni nadir _____ Hayır ...2
13.	Köyünüze mevsimlik olarak gelen işçiler var mı?	Evet …..1 Geçen yıl ne kadar işçi var idi? _____ Çalışma şartları nasıldır? 1. Arazi kiralama _____TL / dekar 2. Ortakçılık _____ % (hasatın yüzdesi) 3. Ücret _____TL / gün 4. Çoban _____ TL/mevsim Hayır ….2
14.	Köy dışına olan göçteki artıştan dolayı köyde herhangi bir problem varmıdır?	Evet…..1 Problemin tipi : _____ _____ Hayır…..2
TEMEL ALTYAPI DURUMU		
15.	Köyünüzde elektrik varmıdır?	Evet ….1 → Elektiriği olmayan ev sayısı : _____ Elektiriğin olmama sebebi : _____ Elektirik ne kadar sıklıkla kesilir? : _____ Hayır …..2
16.	Köyünüzde telefon bağlantısı varmıdır?	Evet ….....1 → Kaç evde telefon var?:_____ Hayır …..2
17.	Köyünüzde içme suyu arzeden system var mı? (musluk suyu)?	Evet ….1 → Kaç tane hane bu sisteme bağlıdır ? _____ Hayır ….2 → Ana içme suyu / kullanma suyu kaynağınız nedir? 1. artezyen; 2. nehir; 3. kuyu; 4. diğer (belirtiniz)_____ Su arzı tüm yıl boyunca yeterli mi? Evet .,,,,.1 Hayır …2 → Su kıtlığı ne zaman? (baharın, yazın; güzün, kışın) Su kıtlığının nedeni:_____ Suyun kalitesi iyi mi? Evet ….1; Hayır …..2 Eğer hayır ise, Nasıldır?_____
18.	En yakın anayolu köye bağlayan yolunuzun kalitesinden memnunmusunuz?	Evet ….1 Hayır....2 → Memnuniyetsizliğinizin nedeni nedir? 1. Kar dolayısıyla kışın sık sık kapanıyor. 2. Kötü bakım nedeniyle yol yüzeyi düzgün değil. 3. Yol hemen her yıl sel nedeniyle aşınmaktadır. 4. Diğerleri (belirtiniz:_____)

Appendix 3 Questionnaire for Key Informant Survey (Turkish) (4/8)

EĞİTİM

19.	Köyünüzde bir ilkokul varmıdır?	Evet ….. 1 → Ne kadar öğrenci vardır? Erkek_____; Kız_____ Kaç tane öğretmen vardır ? _____(sürekli öğretmen sayısı ____) Sürekli olan öğretmenler nerede oturuyorlar? _____ Hayır ……2 → Köyden en yakın ilkokula uzaklık ne kadardır? _____km _____dakika (arabayla)
20.	Lise, yüksek okul veya üniversiteye giden öğrenci var mı?	Evet ….1 Lise: erkek _____; kadın _____ Yüksekokul/Üniversite: erkek_____; kadın_____; Hayır ….2
21.	Köyde eğitim ile ilgili temel problemler nelerdir?	_____ _____ _____

HALK SAĞLIĞI VE TEMİZLİK

22.	Köyünüzde en çok görülen hastalıklar nelerdir?	1. _____; 2. _____ 3. _____;
23.	Köyünüzde en çok görülen çocuk hastalıkları nelerdir?	1. _____; 2. _____ 3. _____;
24.	Köylüler evlerinde kendilerinin kullanacağı ilaçlar bulunduruyor mu?	Evet ……1 Ne tip ilaçlar bulunduruyorlar? _____ Nereden satın alıyorlar? _____ Hayır ……2
25.	Köyünüzde sağlık ocağı varmı?	Evet…1 →

Uzman doktor	Doktor	Hemşire	Ebe	Sağlık memuru

Hayır. → En yakın sağlık ocağı köyden ne kadar uzaklıktadır?
_____km; _____dakika (arabayla)

26.	Köyün en yakın hastahaneye uzaklığı ne kadardır?	_____km; _____ dakika (arabayla)
27.	Acil durumlarda köylüler nasıl hareket ediyor?	_____ _____ _____
28.	Köyde sağlıkla ilgili temel problemler nelerdir?	_____ _____ _____

Appendix 3 Questionnaire for Key Informant Survey (Turkish) (5/8)

DOĞAL AFETLER

29.	Son beş (5) yılda köyde doğal afet meydana geldimi?	Evet ...1 →	Afet	Yıl	Ölü sayısı
		Hayır ….2			
30.	Afetten sonra herhangi bir önlem alınmışmıdır?	Evet ….1 →	Afet	Alınan önlem	
		Hayır ….2			
31.	İnsan çabasıyla herhangi bir doğal afetin önlenebileceğini düşünüyormusun?	Evet ….1 →	Önlenebilen doğal afet	Alınması gereken önlem	
			1. Toprak kayması	_____	
			2. Sel	_____	
			3. Çığ	_____	
		Hayır…...2			

ARAZİ KULLANIMI VE SAHİPLİĞİ

32.	Köyünüzde kadastro çalışması yapıldı mı?	Evet ……1 →	Ne zaman başladı? _____ Bitti mi? Evet ….1; Hayır …..2 Hayır ise, Niye bitmedi? _____ _____
		Hayır ..….2	

33.	Arazi kullanma sınıfına gore köyünüzde ne kadar arazi vardır? (Lütfen tabloyu doldurunuz)	Arazinin sınıfı	Alan (dekar)
		Kıraç tarım arazisi	
		Sulanan arazi	
		Nadasa bırakılan arazi	
		Kavaklık/söğütlük	
		Çayır/mer'a	
		Orman	
		Hazine arazisi (belirtiniz:_____)	
		Ciddi toprak erezyonu sonucu faydalanılmayan arazi	
		Köyden göç edenlerden dolayı kullanılmayan arazi	
		Miras ihtilaflarından dolayı kullanılmayan arazi	
		Diğerleri: (belirtiniz _____)	
		Toplam	

34. Aşağıdaki arazi büyüklüklerinde ne kadar çiftçi vardır? (Lütfen aşağıdaki tabloyu doldurunuz)

	Arazi büyüklüğü (birim:dekar)	Arazisiz	0<2	2-5	5-10	10-20	20-30	30-50	>50
	Çiftçi sayısı								

35.	Köyde son bir iki yılda alınan satılan veya kiralanan tarım arazisi varmıdır ?	Evet ....1 Satın alma ve satma fiyatı : TL._____/dönüm Arazi kiralama fiyatı: TL._____/dönüm Hayır 2

Appendix 3 Questionnaire for Key Informant Survey (Turkish) (6/8)

36.	Köyde en çok üretilen bitkisel ürünler nelerdir ? (Lütfen 5 en önemli bitkisel ürünü seçiniz)	1. Buğday; 2. Arpa; 3. Mısır; 4. Patates; 5. Dry beans; 6. Vegetables; 7. Yem bitkisi (yonca, üçgül, korunga); 8. Meyve 9. Diğer bitkisel ürünler (belirtiniz: _____)
37.	Köyünüzde sera var mı?	Evet …..1 Ne kadar? _____ sera; _____ m^2 Hayır ….2

38.	Köyde hangi hayvanlar var ?	Hayvan	Sığır			Koyun	Keçi	Tavuk
			Yerli	Kültür ırkı	melez			
		Sayı						

39.	Hayvancılık yapan kaç hane var?	Sığır: _____; Koyun: _____; Keçi: _____
40.	Dışardan köyünüzün çayır/merasına otlatılmak için hayvan geliyor mu?	Evet ….1► Kaç tane hayvan geliyor? Sığır_____ baş; Keçi _____ baş; Koyun _____ baş Hayır ….2
41.	Köyünüzde arıcılık faaliyeti var mı? ?	Evet ..….1 Kaç tane arı kovanı vardır? _____ arıkovanı Hayır ….2

42.	Köyünüzde kamuya ait hangi tip imkanlar vardır ?	İmkan	1. Cami	2. Köyodası	3. sulama yapıları	4. Diğerleri
		Evet…..1 Hayır....2				

TOPLU FAALİYETLER

43.	Köyde kararlar nasıl alınmaktadır?	İhtiyar Heyeti ile tartışılır ……...1 Köy halkına fikirleri sorulur ……..…2 Özellikle Köy yaşlılarına danışılır …….....3 Özellikle Köydeki eğitimli kişilere danışılır …….....5 Diğerleri (belirtiniz)_____ 6			
44.	Köyde ortak organizasyonlar ve işbirlikleri varmıdır ?	Evet …1 ►	İsim	Üye	Önemli faaliyetler
		Hayır …..2			

45.	Çiftçiler parasal karşılık beklemeden başkalarıyla çalışırlar mı?	Evet …..1 Ne tip bir çalışma_____ Hayır…...2
46.	Köyün kendi içinde ihtilaf ve anlaşmazlıkları var mıdır?	Evet ….1► Anlaşmazlık/ihtilaf _____ _____ Hayır 2
47.	Köyün komşu köylerle herhangi bir anlaşmazlığı var mıdır?	Evet ….1► Anlaşmazlık/ihtilaf_____ _____ Hayır 2
48.	Köyünüzde herhangi bir idari ve kurumsal problemi varmıdır ?	Evet ….1 Problemin tipi _____ _____ Hayır…...2

Appendix 3 Questionnaire for Key Informant Survey (Turkish) (7/8)

SOSYAL VE EKONOMİK ÇEVREDEKİ DEĞİŞME

49.	Köyünüzde mevcut olan bol orman kaynakları varlığında son 10 yılda bir azalma olduğunu düşünüyormusunuz?	Evet ….1 arttı ( ); azaldı ( ); değişmedi ( ) Değişimin nedeni : _____ _____ Hayır ….2
50.	Orman kaynaklarının bolluğundaki değişme köyün yaşamını etkiledi mi?	Evet….1→ Nasıl etkiledi _____ _____ Nasıl bir çözüm? _____ Hayır ….2
51.	Son 10 yılda köyünüzdeki sığır sayısında herhangi bir değişme olduğunu düşünüyormusunuz ?	Evet ….1
		Hayır ….2
52.	Son 10 yılda köyünüzdeki koyun ve keçi sayısında herhangi bir değişme olduğunu düşünüyormusunuz ?	Evet …..1
		Hayır ….2
53.	Son 10 yılda köyünüzdeki çayır-mer'a durumunda herhangi bir değişme olduğunu düşünüyormusunuz ?	İyileşti ( ); kötüleşti ( ); değişmedi ( ) İyileşmesi veya kötüleşmesi durumunda, bu değişme köylülerinizin yaşamını etkiledi mi? Evet…. 1; Hayır …..2 Evet ise, nasıl etkiledi? _____ Herhangi bir çözüm var mı? _____
54.	Köyünüzde son 10 yılda ısıtma ve pişirmede kullanılan enerji kaynaklarında herhangi bir değişme oldu mu?	Evet ….1 Önceki önde gelen kaynaklar _____; _____ Şimdiki önde gelen kaynaklar _____; _____ Hayır ….2
55.	Isıtma ve pişirme için kullanılan enerji kaynaklarının temininde kolaylıkda herhangi bir değişme varmıdır?	Evet …..1
		Hayır …..2

Sığır	Sayıdaki değişme			Değişimin nedeni
	artış	azalış	değişmedi	
Yerli				
Kültür ırkı				
Melez				

Koyun/keçi	Sayıdaki değişme			Değişimin nedeni
	artış	azalış	değişmedi	
Koyun				
Keçi				

Enerjinin tipi	zor	kolay	değişmedi	Değişimin nedeni
Yakacak odun				
Kömür				
Tüpgaz				
Tezek				
Diğerleri				

Appendix 3 Questionnaire for Key Informant Survey (Turkish) (8/8)

56.	Son on yılda köyünüzün doğal çevresinde herhangi bir değişme olduğunu düşünüyormusunuz ?	İyileşti….. 1; kötüleşti ……2; değişmedi …….3 Değişmelerin önemli nedenleri nelerdir ? _____ _____ İyileşme için herhangi bir düşünce? _____ _____		
ORMANLAR VE MERALARLA OLAN İLİŞKİLER				
57.	Köyünüzde orman kaynaklarından faydalanmanın kurallarını açıklayabilirmisiniz ?			
58.	Köyünüzde mer'alardan faydalanmanın kurallarını açıklayabilirmisiniz ?			
GELİŞME PROJELERİ VE PROGRAMLARI İÇİN DÜŞÜNCE				
59.	Son 10 yılda köyünüzde veya köyünüzün etrafında uygulanan bir gelişme projesi oldu mu?	Evet …1 ➔ Hayır ….2 (60'a geç.)	Projenin konusu	Uygulayan kurum
60.	Bu proje köyde nasıl bir etki yaptı?	Pozitif etki : _____ _____ _____ Negatif etki : _____ _____ _____		
61.	Köyünüzün gelişmesi için ortada olan en önemli problem ve sınırlamalar nelerdir ?	1. 2. 3.		
62.	İhtiyar heyetinin başı ve muhtar olarak köyün nasıl gelişeceği hususunda bir düşünceniz var mı?			
63.	Köyünüz için ne tip gelişme projeleri ve programları acil olarak kaçınılmaz ve gereklidir?	1. 2. 3.		
64.	Köylüler işgücü ve paralarıyla projelere ve programlara katılırlar mı?	Evet ….. 1 Hayır …..2		

Çok teşekkür ederim!

Appendix 4 Questionnaire for Household Survey (English) (1/8)

Rural Socio-Economic Survey
for
The Master Plan Study
on
Participatory Watershed Rehabilitation
in Coruh River in the Republic of Turkey

Undertaken by the Japan International Cooperation Agency (JICA)
in cooperation with Ministry of Environment and Forestry

June 2003

Household Survey Questionnaire

Micro-Catchment No.	☐☐ - ☐☐
Village:	
Sub-district:	
Distrcit:	
Province:	

Name of the Interviewer: _____

Name of the Interviewee: _____

Date of Interview: _____

Appendix 4 Questionnaire for Household Survey (English) (2/8)

Questions for the Head of Household

1.	Birth place and birth year of the head of household	Birth place: _____ / 19__
2.	Marital status of the head of the household	Never married……1 Married …….2 Widower……..…..3 Divorced……...…..……4
3.	Occupation of the head of the household	Agriculture (self-employed)..…….……1 Agriculture (employed)……..2 Livestock……3 Forestry……..4 Fishery……5 Civil servant……6 Retired (Pensioner)…….7 Others (Specify_____)…….8
4.	Educational attainment of the head of the household and his wife	**Head** / **Wife** Cannot read and write……1 / 1 Can read and write…...……..2 / 2 Primary school……...……3 / 3 Secondary school……...4 / 4 High school..……...5 / 5 University..……..……6 / 6
5.	Do you have children?	Yes ….……1 → nos. of children ☐☐ No ……2 → **(go to 9)**
6.	Occupation and educational attainment of the children	

	Age	Educational attainment	Occupation Student	Occupation	Where?
1					
2					
3					
4					
5					
6					

7.	Is any members of the house out of village? (Working, studying, soldier)	Yes ……1	
		Who / **Where** / **Why**	
		1.	
		2.	
		3.	
		4.	
		No……2	
8.	Including head of the house, how many are there in your household? (incl. children and those who are not present at the moment).	Number of members of household : ☐☐	

Appendix 4 Questionnaire for Household Survey (English) (3/8)

LAND OWNERSHIP

9.	Are there any owned lands	Yes …….1 → Number: _____ Area _____dekar No ……2
10.	Are there any lands cultivated by the family?	Yes …….1 → Cultivated area _____dekar No ……2
11.	Are there any shared lands?	Yes …….1 → Area _____dekar No ……2
12.	Are there any rented lands?	Yes …….1 → Area _____dekar No ……2

AGRICULTURE

13. Does the family cultivate the land? (owned land, share cropping land and rented land)

Yes.. …1 → **(Last year)**

Name of crops	Area (dekar)	Harvest amount (ton)	Home Consumption (ton)	Sold amount (ton)	Market place

No……2 → **(go to 17)**

14. Do you use agricultural inputs such as certified seeds, fertilizer, agro-chemicals?

→ **Which inputs?** **Crops** **Volume (kg)** **Cost (TL.)**

Yes……1

Certified seeds……1 _____ _____ _____

Manure……2 _____ _____ _____

Chemical fertilizer…..3 _____ _____ _____

Agro-chemicals……...4 _____ _____ _____

No…….2

15. Did you borrow money for procuring the inputs last year?

→ **From whom?**

Yes ……..1

	Interest rate (%)	Amount (1,000TL.)	Repayment period (yr)
1. Merchant	_____	_____	_____
2. Bank	_____	_____	_____
3. Cooperative	_____	_____	_____
4. Friends/relatives	_____	_____	_____
5. Others _____	_____	_____	_____

No……2

16. From which sources do you get information for improving agricultural technique?

TV/radio program…… ……..…..1
Pamphlet and books…….. ……..……2
Agricultural extension officers…….. …….3
Others (specify) _____4
Do not use anything …….5

Appendix 4 Questionnaire for Household Survey (English) (4/8)

AGRICULTURAL TOOLS

17. Do you own any agricultural machineries/tools?
Yes. …….1 ⟶
No……2

Agricultural tools	Nos.	Purchased price (TL.) (year)

18. Do you rent any agricultural machineries/tools?
Yes.. …….1 ⟶
No…..……2 ↓

Agricultural tools	Nos.	Rented amount (TL./decar)

LIVESTOCK

19. Do you raise animals?

Yes ...1 ▶

Animals	Number (heads)	Nos. sold last year?	Sales revenue (TL.)
1. Cattle (local breed)	..…….	……..……	……..
2. Cattle (pure breed)	……	……..	……...
3. Cattle (cross breed)	…….....	……..	……..
4. Sheep	……	……..	……..
5. Goat	……	……	……..
5. Chicken	……	……..	……

No... ...2 ⟶ ▶ **(go to 24.)**

20. Do you produce other products?

Yes ...1 ▶

Last year Products	Production (kg)	Marketed (kg)	Price of prod. (TL/kg)
1. Cow milk	……..	……	……..
2. Sheep/goat milk	…….	……..	…….
3. Cheese	…….	……	……..
4. Eggs	…….	……	……..

No….2

21. How do you feed animals in winter season?

	Hay	Concentrated feed	Cut grass	Is Supply Sufficient?
Cattle	…….	……	……...	
Sheep/goats	……	……..	……	Yes ..1 No...2

22. How do you raise animals?

1. ask shepherd to graze
2. graze in the pasture land
3. zero grazing

23. Is there change in number of animals in last ten years?

Yes …..1

No …..2

Animal	Increase	Decrease	Constant	Reason for change
Cattle				
Sheep				
Goat				
Chicken				

OTHER AGRICULTURAL ACTIVITIES

24. Do you have other agricultural activities?

Activities	Amount	Marketed	(TL.)
Beekeeping	Beehives **nos.**_____	**Honey** _____**kg**	
Greenhouse farming	Area ……m^2		
Fruit growing	nos. trees ….……..		
Fish culture	Area ……m^2	**kg**	

Appendix 4 Questionnaire for Household Survey (English) (5/8)

FOREST RELATED ACTIVITIES

25.	What kind of forest resources do you rely on?	Wood for sale ……1 Wood for housing…….....2 Fuel woods ……3 Non-wood forest products (specify _____)……4 Others (specify) _____.....5
26.	What is the most important forest resource for your family?	Woods ……1 Fuel woods ……2 Non-wood forest products (specify _____)……3 Others (specify) _____.....4
27.	Are any of your family members employed in forestry activity by Ministry of Forestry?	Yes…1 **Employment type** **Who** **Duration (months)** . 1. Employed permanently ..…… ……. 2. Employed temporaly ……. ……. 3. Piece-work employment ……. ……. No…..2

OTHER INCOME GENERATING ACTIVITIES

28.	Is there any other income generating activities done by your family members? (Please indicate)	Yes ...1 ▶ **Type of activities**	**Family member engaged**	**Duration (months)** .
		Agricultural employment		.
		Non-agric. Employment		.
		Weaving		.
		Handicraft		.
		Taxi driver		.
		Private work (specify)		.
		Others (specify)		.
		No 2		

DIVISION OF WORKS IN THE HOUSE

29.	Who in the family mainly conduct the following works?		**Main player**			
		Works	**Male**	**Female**	**Common**	**Children**
		Cultivation..……1		2	3	4
		Fertilizer… ……....1		2	3	4
		Sowing…..…….....1		2	3	4
		Watering...……..……1		2	3	4
		Hoeing.…..……..1		2	3	4
		Weeding ……..……..1		2	3	4
		Harvest crops…. ……1		2	3	4
		Livestock				
		Barn cleaning. ……...1		2	3	4
		Collecting cowdung.……..1		2	3	4
		Cowdung making ..……1		2	3	4
		Feeding.. ……1		2	3	4
		Milking...……1		2	3	4
		Clipping ……1		2	3	4
		Processing… ……1		2	3	4
		Marketing.. ……1		2	3	4
		Daily work				
		Shopping ……1		2	3	4
		Water collection (if any)….1		2	3	4
		House cleaning…..……...1		2	3	4
		Bread making... ……..1		2	3	4
		Cooking…….……..1		2	3	4
		Child care…… ……...1		2	3	4

Appendix 4 Questionnaire for Household Survey (English) (6/8)

INCOME AND EXPENDITURE

30.	List the related sources, from most important to least, in which it relates with your income.	**Source of Income**	**Order of importance**	**Income (TL/year)**
		Agricultural products		
		Aqua products		
		Forest products		
		Alive animal and animal products		
		Salary from permanent jobs		
		Salary from temporary jobs		
		Pension		
		Support from member		
		Revenue from rent		
		Private job		
		Others (specify)		
31.	What are the average monthly expenses of the family on average?	Average: _____TL.		

ASSETS AND DEBT

32.	Which assets do you own?		**Own**	**No**
		Refrigerator…….……1		2
		Oven ……..……1		2
		Washing machine ……..……1		2
		Dish washer……. ……...1		2
		Vacuum cleaner…. ……1		2
		Television ...……1		2
		Satellite antenna …….1		2
		Video ……..……1		2
		Radio…….. ……..…….1		2
		CD player.. ……..…1		2
		Telephone…….…..…1		2
		Mobile telephone……...….1		2
		Private car…… ……...…1		2
		Computer.. ……...1		2
33.	Do you own any property in the city?	Yes …1 ⟶		**Nos.**
		House...…….1		_____
		Vacant lot……...2		_____
		Shop….……3		_____
		Others (specify)_____4		_____
		No 2		
34.	Do you have any debt now?	Yes……1 ⟶		
		From whom?		Debt amount (TL.)
		Aquaintances……...1		_____
		Bank..……...2		_____
		Cooperative ……3		_____
		Any individuals with interests…….4		_____
		Merchant..……5		_____
		Others (specify) _____ ……6		_____
		No…....2		

Appendix 4 Questionnaire for Household Survey (English) (7/8)

MIGRATION

35.	Do you live in the village all the year round?	Yes …1 No .....2 → Where will you go? _____ Reason for the stay _____ How many months in a year will you stay there?_____
36.	Are there any relatives who live temporarily outside the village?	Yes ……1 →

Who migrated	Where to (province/city)	Reason for migration	age	Year left	Educational attainment

No ….....2 → **(go to 52)**

			Evet	**Hayır**
37.	Do you help with the migrated relatives?	1. Do you contribute one economically? ……1		2
		2. Can they send money to you? ……...……..1		2
		3. Do you send goods to them? ……..1		2
		4. Do they come back to help harvest ? ……..……..1		2
		5. Do they come back on vacation? ……1		2
38.	Do you want to migrate to any town or city?	Yes …1 → Reason _____ _____ → Specific place if any _____ No ..…2		
39.	What are the difficulties on living in your village?			
40.	What are your suggestions to overcome the difficulties?			

Appendix 4 Questionnaire for Household Survey (English) (8/8)

POWER STRUCTURE

41.	Who is the most and second most influential (powerful) person in your village?	Most important / Second most important Village head ……1 — 1 Teacher ……2 — 2 Imam ……...3 — 3 The rich in the village ……4 — 4 Others (specify)_____5 — 5
42.	Who is the most influential person for youth in your village	Village head ……1 Teacher ……2 Imam ……..……..3 Parents ……..……4 Leaders of the youth ……..…….5 TV……..……..……..6 Others (specify)_____7

ORGANIZATION/COMMUNITY ACTIVITIES

43.	Do you belong to any village organizations/community groups	Yes …..1 → Name of organizations _____ Activities _____ Name of organizations_____ Activities _____ No ……2

ENERGY USE

44.	What kind of energy sources do you use for cooking and heating?	For cooking: summer / winter; For heating: summer / winter 1. Fuel wood …… …… ……. …… 2. Coal/cokes …… …… ……. …… 3. Grass …… …….. ……. …… 4. LPG …… …… ……. …… 5. Cowdung …… …… ……. ……
45.	How much volume of fuel wood do you consume in the winter season?	Volume:_____sters Where do you procure? 1. from Forestry officer 2. from Forest nearby 3. from orchard/poplar in your field 4. other place (specify:_____)
46.	Do you think that provision of fuelwoods became difficult over the years?	Yes…1 Reason:_____ _____ Possible solution: _____ _____ No….2

Appendix 5 Questionnaire for Household Survey (Turkish) (1/8)

Çoruh Nehrinde
Katılımcı Su Havzası Islahı Master Planı Çalışması
Kırsal Sosyo- Ekonomi Anketi
Türkiye

Çevre ve Orman Bakanlığı
ve
Japon Uluslararası İşbirliği Ajansı (JICA)

June 2003

Hane Halkı Anket Formu

Mikro - Havza No: - ☐☐ ☐☐

Köy: ☐

Nahiye: ☐

İlçe: ☐

Şehir: ☐

Anket Yapanın İsmi: _____

Ankey Yapılanın İsmi: _____

Anket Tarihi: _____

Appendix 5 Questionnaire for Household Survey (Turkish) (2/8)

Aile Reisi Anket Formu

1.	Aile reisinin doğum yeri ve tarihi	Doğum yeri: _____ / 19__
2.	Aile reisinin medeni durumu	Hiç evlenmemiş ……1 Evli ……..…….2 Dul ……..……..3 Başanmış ...……..…..……4
3.	Aile reisinin mesleği	Tarım (kendi işi)……...…….……1 Tarım (başkasına çalışıyor)…..……..2 Hayvancılık..…….……3 Ormancılık……..4 Balıkçılık…….……5 Memur / İşçi ……6 Emekli (emekli maaşı alan)……7 Diğerleri (Belirtiniz_____)…..…8
4.	Aile reisi ve eşinin eğitim durumu	**Aile reisi** **Eşi** Okuma yazma bilmiyor……..……1 1 Okuma yazma biliyor...……..2 2 İlkokul ……...…….……3 3 Orta okul …….……...4 4 Lise ……...……..5 5 Universite..……..……6 6
5.	Çocuğunuz var mı?	Evet ….……1 → Çocuk sayısı ☐☐ Hayır ……2 → **(9. soruya geç)**
6.	Çocukların işi ve eğitim durumu	**Yaş** / **Eğitim Durumu** / **Mesleği: Öğrenci, Çalışıyor** / **Nerede?** 1 2 3 4 5 6
7.	Köyün dışında ailenin herhangi bir ferdi var mı? (Çalışan, öğrenci, asker)	Evet ……..1 **Kim** / **Nerede** / **Niye** 1. 2. 3. 4. Hayır……2
8.	Aile reisi dahil evde toplam kaç kişi var? (Çocuklar ve şu anda evde olmayanlar dahil).	Hane fertlerinin sayısı : ☐☐

Appendix 5 Questionnaire for Household Survey (Turkish) (3/8)

TOPRAK SAHİPLİĞİ

9.	Hanenin sahip olduğu arazi var mı?	Parça sayısı: _____ Evet …….1 → Alan _____dekar Hayır……2
10.	Hanenin işlediği arazi var mı?	İşlenen Evet …….1 → Alan _____dekar Hayır……2
11.	Ortağa/yarıya arazi alıyor mu?	Evet …….1 → Alan _____dekar Hayır……2
12.	Kiraladığı arazi var mı ?	Evet …….1 → Alan _____dekar Hayır……2

TARIM

13.	Aile arazi üzerinde tarımsal faaliyet yapıyor mu? (kendi arazisi, ortakçılık, kiralık arazi) (Geçen bir yılın rakamları kullanılacak)	Evet …1 → **(Geçen yılki rakamlar)** **Ürün Adı** | **Alan miktarı (dekar)** | **(kg) Üretim miktarı** | **Hanede tüketilen (kg)** | **(kg) Satılan miktar** | **Satıldığı yer** Hayır…2 → **(Soru 17'ye git)**
14.	Sertifikalı tohum, gübre, tarımsal ilaçlar gibi girdileri kullanıyormusunuz?	Evet ……1 **Ürün Adı** — **Miktar (kg)** — **Maliyet (TL) .** Sertifikalı tohum 1 ……..….. …….. …… Hayvansal gübre 2 ……..... …….. ……..…… Kimyasal gübre 3 …… …….. ……...…. Kimyasal ilaç 4 …… …… …… Hayır……2
15.	Tarımsal girdileri temin etmek için geçen yıl borç aldınız mı?	**Kimden alıyorsunuz?** Evet …….1 — Faiz oranı (%) — Miktar (1000 TL) — Geri Ödeme Dönemi (Yıl) 1. Tüccar .... 2. Banka .... 3. Kooperatif .... 4. Arkadaş/akraba .... 5. Diğer _____ .... Hayır……2
16.	Tarımsal uygulamalarla ilgili bilginizi geliştirmek için hangi kaynakları kullanırsınız?	Televizyon-Radyo programları ……..……..1 Kitap-broşür gibi yayınlar……...…2 Tarımsal yayım uzmanları……...…….3 Diğer (belirtiniz _____)…….……...4 Hiç kullanmam ……..……..5

Appendix 5 Questionnaire for Household Survey (Turkish) (4/8)

TARIMSAL MAKİNALAR

		Tarımsal makinalar	Adedi	Satınalma fiyatı (TL) (yıl)
17.	Herhangi bir tarım makinesine sahip misiniz? Evet …….1 → Hayır……2 ↓			

		Tarımsal makinalar	Adedi	Kira bedeli (TL/dekar)
18.	Herhangi bir tarım makinesini kiralıyor musunuz? Evet …….1 → Hayır……2 ↓			

HAYVANCILIK

19.	Hayvan yetiştiriciliği yapıyormusunuz?	Evet ...1 ▶

Hayvanın cinsi	Sayısı (baş)	Geçen yıl satılan (adet)	Satış geliri (TL)
1. Sığır (yerli ırk)	……	……..	..……
2. Sığır (saf ırk)	……...	……...	…..……
3. Sığır (melez)	……	……...	…….
2. Koyun	……	……	…..……
3. Keçi	……	……...…	……..……
4. Kümes hayvanı	….....…	……	…..……...

Hayır ...2 → **(Soru 24'e geç)**

20.	Hangi hayvansal ürünleri üretiyorsunuz?	Evet ...1 ▶

Geçen yıl üretilen	Üretim miktarı (kg)	Satılan miktar (kg)	Satış fiatı (TL/kg)
1. İnek sütü	……	……	…….
2. Koyun/keçi sütü	……	……	…….
3. Peynir	……...	……	…….
4. Yumurta	……	……	…….

Hayır ...2

		Hayvan cinsi	Saman	Suni yem	Biçilen ot	Yem yeterli mi?
21.	Kışın hayvanlarınızı neyle besliyorsunuz?	Sığır				Evet …... 1 Hayır ….. 2
		Koyun/keçi				

22.	Sığırları nasıl besliyorsunuz?	1. Otlatılması için çobana bırakarak 2. Çayır arazisinde otlatarak 3. Hiç otlatmaya çıkarmayarak

			Hayvan	Artış	Azalış	Sabit	Değişme nedeni
23.	Son 10 yılda sahip olduğunuz hayvan sayısında bir değişme oldu mu?	Evet ...1	Sığır				
			Koyun				
			Keçi				
		Hayır..2	Kümes Hay.				

DİĞER TARIMSAL FAALİYETLER

		Faaliyetler	Miktar	Pazarlanan miktar (kg)	Satış geliri (TL)
24.	Diğer tarımsal faaliyetlerde bulunuyormusunuz?	Arıcılık	Kovan adedi:	Bal: kg	
		Seracılık	Alan: …… m2		
		Meyvecilik	Ağaç sayısı:		
		Balıkçılık	Alan: …… m2	kg	

Appendix 5 Questionnaire for Household Survey (Turkish) (5/8)

ORMANCILIKLA İLGİLİ FAALİYETLER

25.	Hangi orman kaynaklarına bağımlısınız?	Odun satışı ile gelir elde etme ……. 1 Kereste ihtiyacı .....…… 2 Yakacak odun (kendi ihtiyacı için) .....…….....3 Odun dışı orman ürünleri (belirtiniz _____)..... 4 Diğer (belirtiniz _____)…… 5
26.	Aileniz için en önemli olan orman kaynakları hangileridir?	Kereste ……...……...… 1 Yakacak odun ……...… 2 Odun dışı orman ürüneri (belirtiniz) ……..…… 3 Diğer (belirtiniz _____)…… 4
27.	Orman Bakanlığının orman işlerinde ailenizden işçi olarak çalışan var mı?	Evet : ….. 1 **İstihdam şekli** — **Kim** — **Çalışma süresi (ay)** 1. Devamlı işçi ……..…. …… 2. Geçici işçi ……..... …… 3. Götürü İççilik ..…….. …… Hayır: ….. 2

DİĞER GELİR GETİRİCİ FAALİYETLER

28.	Aile üyeleri tarafından yürütülen diğer gelir getirici faaliyetler var mı? (lütfen belirtiniz)	Var…1 ► **Faaliyet Türü**	**Faaliyeti yapan hane üyesi**	**Yılda kaç ay?**
		Tarımda ücretli işçilik		.
		Tarım dışında ücretli işçilik		.
		Halıcılık / dokumacılık		.
		Diğer el sanatları		.
		Şöförlük		.
		Özel iş (belirtiniz)		.
		Diğer (belirtiniz)		.
		Yok ...2		

HANE İÇİ İŞ BÖLÜMÜ

29.	Şimdi sayacağım işleri ailede kim(ler) yapıyor?	**Tarla İşleri**	**İşi yapanlar**		
			Erkek	**Kadın**	**Her ikisi de**
		Sürüm	1	2	3
		Gübreleme	1	2	3
		Ekim	1	2	3
		Sulama	1	2	3
		Çapa	1	2	3
		Ot alma	1	2	3
		Hasat	1	2	3
		Hayvancılık			
		Ahır temizliği	1	2	3
		Hayvan gübresi toplama	1	2	3
		Tezek yapımı	1	2	3
		Yem verme			
		Süt sağımı	1	2	3
		Yün kırkma	1	2	3
		Ürün işleme	1	2	3
		Ürün satışı	1	2	3
		Günlük işler			
		Alışveriş	1	2	3
		Su getirme	1	2	3
		Ev temizliği	1	2	3
		Ekmek yapımı	1	2	3
		Yemek pişirme	1	2	3
		Çocuk bakımı	1	2	3

Appendix 5 Questionnaire for Household Survey (Turkish) (6/8)

GELİRLER VE HARCAMALAR

30. Gelir sağladığınız kaynakları en önemliden en az önemliye doğru sıralayınız.

(1 den itibaren numara vermek suretiyle)

Gelir kaynağı	Önem sırası	Gelir (TL/yıl)
Tarım ürünleri		
Su ürünleri		
Orman ürünleri		
Canlı hayvan ve hayvan ürünleri		
Devamlı işten maaş		
Geçici işten ücret		
Emekli maaşı		
Aile üyelerinden destek (katkı)		
Kira geliri		
Özel iş		
Diğer (belirtiniz)		

31. Ailenizin toplam aylık ortalama harcaması kaç liradır?

Aylık ortalama harcama: _____TL.

VARLIKLAR VE BORÇLAR

32. Aileniz yanda sıralananlardan hangilerine sahiptir?

Malın cinsi	Kendi malı	Değil
Buzdolabı	1	2
Fırın	1	2
Çamaşır makinesi	1	2
Bulaşık makinesi	1	2
Elektrik süpürgesi	1	2
Televizyon	1	2
Çanak anten	1	2
Video	1	2
Radyo	1	2
CD çalar	1	2
Telefon	1	2
Mobil telefon	1	2
Özel araba	1	2
Bilgisayar	1	2

33. Kentte sahip olduğunuz mülk var mı?

Evet …1 ⟶

	Sayısı
Ev……..1	_____
Arsa……...2	_____
Dükkan……..3	_____
Diğer (belirtiniz) _____4	_____

Hayır ...2

34. Şu anda borcunuz var mı?

Evet……1 ⟶

Kime?	Borç miktarı (TL)
Tanıdıklarıma / akrabama ……...1	.....
Bankaya ……..2	.....
Kooperatife …….3	.....
Faizle şahsa ……4	.....
Tüccara ……5	.....
Diğer (belirtiniz) _____…..…6	.....

Hayır…..2

Appendix 5 Questionnaire for Household Survey (Turkish) (7/8)

GÖÇ DURUMU

35. Tüm yıl boyunca sürekli köyde mi yaşıyorsunuz?

Evet ……1

Hayır……2 → **N**erede gidiyorsunuz? ….....……

Niçin kalıyorsunuz? …….....……..

Bir yılda orada kaç ay kalıyorsunuz? …….

36. Köy dışında yaşayan akrabanız var mı?

Evet ……1 →

Hane reisine Yakınlığı	Nerede (il/ilçe adı)	Göç nedeni	Yaşı	Köyden ayrıldığı tarih	Eğitim durumu

Hayır …...2 **(Soru 38'e geçiniz)**

37. Göç eden yakınlarınızla yardımlaşmalarda bulunuyor musunuz?

	Evet	Hayır
1. Onlara para yardımında bulunuyor musunuz? ……1		2
2. Onlar size para gönderiyor mu? ……..1		2
3. Köyden onlara erzak gönderiyormusunuz? ……..…… 1		2
4. Hasat için yardıma gelir mi? ……..……..1		2
5. Tatil için geri gelen var mı? ….....……..1		2

38. Siz şehre / kasabaya temelli göç etmek ister misiniz?

Evet …1 → Neden? ……

……...

Nereye? ……..

Hayır ….2

39. Köyünüzde yaşamanın güçlükleri nelerdir?

40. Bu güçlükleri çözmek için önerileriniz nelerdir?

Appendix 5 Questionnaire for Household Survey (Turkish) (8/8)

KÖYDE SÖZ SAHİBİ OLMA DURUMU		
41.	Köyünüzde en çok sözü geçen birinci ve ikinci kişi kimdir?	Birinci sözü geçen / İkinci sözü geçen Muhtar ……1 / 1 Öğretmen ……2 / 2 İmam ……3 / 3 Köyün zenginleri ……4 / 4 Diğer (belirtiniz _____) ….5 / 5
42.	Köyde gençler en çok birinci ve ikinci derecede kimin sözünden etkilenir?	Birinci derecede / ikinci derecede Muhtar ……1 / 1 Öğretmen ……2 / 2 İmam ……3 / 3 Aile büyükleri ……4 / 4 Gençlik lideri (kendi aralarından) ……5 / 5 Televizyon……6 / 6 Diğer (belirtin_____)…….7 / 7
KÖY KURUMLARI/TOPLULUK FAALİYETLERİ		
43.	Herhangibir köy kurumuna veya birliğine üye misiniz?	Evet …...1 Kurumun adı: …… Faaliyetleri : ……... Kurumun adı: …… Faaliyetleri : ……... Hayır ….2
ENERJİ KULLANIMI		
44.	Isınma ve pişirme için ne kullanıyorsunuz?	Isıtma için: yazın / kışın; Pişirme için: yazın / kışın 1. Yakacak odun …….. …… …….. ……..… 2. Taş kömürü/kok kömürü ……... ……. …….. ……..… 3. Çalı, ot …… ……. …….. ……..… 4. Tüp gaz …… ……. …….. …… 5. Tezek …… ……. …….. ……
45.	Bir kış boyunca ne kadar yakacak odun tüketiyorsunuz?	Miktarı : …….. (ster) (ton) (iki birimden birini seçiniz) Nereden temin ediyorsunuz? 1. Orman işletmesinden 2. Yakındaki ormandan 3. Meyve, kavak, söğüt ağaçlarından 4. Diğer yerlerden (belirtin)
46.	Odun temini yıllar içinde gittikçe daha güçleşiyor mu?	Evet ……1 Nedeni: …….. Muhtemel çözüm: …….. …….. Hayır …..2

Çok teşekkür ederim !