



The Republic of Turkey
MINISTRY OF FORESTRY AND WATER AFFAIRS



MURAT RIVER WATERSHED REHABILITATION PROJECT (2013 - 2019)

BİNGÖL / ELAZIĞ / MUŞ



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Murat River Watershed Rehabilitation Project





MURAT RIVER WATERSHED REHABILITATION PROJECT

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THE PROJECT HAS A PARTICIPATORY APPROACH TO ENSURE THE INVOLVEMENT OF CONCERNED GOVERNMENT INSTITUTIONS AND LOCAL COMMUNITIES.

The preparations for the Murat River Watershed Rehabilitation Project were launched in 2010, and the project implementation initiated upon the signing of a contract of loan on 15 February 2013 between the United Nations International Fund for Agricultural Development (IFAD) and the Republic of Turkey. Project implementation spans from 2013-2019.

Murat River Watershed Rehabilitation Project: The project activities include natural resource rehabilitation, rural poverty reduction and monitoring activities with a view to relieve the stress on natural resources by alleviating the poverty of local communities inhabiting the upper catchments of 25 microcatchments around Bingöl, Elazığ and Muş provinces.

The project assumes a participatory approach to ensure the involvement of concerned government institutions and local communities to facilitate sustainable natural resource management.

It is ensured that all sections and concerned groups of society who bear responsibilities regarding natural resource management or who are affected by the mentioned management are involved in every phase of management including decision-making, planning, implementation, monitoring, assessment and inspection.

PROJECT STAKEHOLDERS;

o MAIN STAKEHOLDERS

- General Directorate of Forestry
- General Directorate of Combating Desertification and Erosion
- United Nations International Fund for Agricultural Development (IFAD)

o OTHER STAKEHOLDERS

- Local Communities and Civil Society Organisations
- Municipalities and Provincial Private Administrations
- General Directorate of State Hydraulic Works
- Eastern Anatolia Project (DAP) Regional Development Administration
- Provincial Directorates of Food, Agriculture and Livestock





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PROJECT TARGETS

The project will achieve;

- o Soil erosion, overflow and flood damage reduction;
- o Conservation and improvement of forest, agriculture, rangeland and water resources;
- o Stress relief on conservation (marginal) lands;
- o Improvement of land productivity;
- o Production diversity in agriculture;
- o Adoption and up-scaling of environmentally friendly agricultural practices;
- o Increased organic carbon stocks in soils;
- o Agricultural pollution reduction;
- o Improved living conditions and prosperity for local communities within the project site;
- o Employment opportunities and mitigation of migrations;
- o Enhanced institutional capacity.





2013 2019

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PROJECT ACTIVITIES

o NATURAL RESOURCE IMPROVEMENT INVESTMENTS

- Afforestation;
- Soil conservation and erosion control;
- Rehabilitation of degraded coppice forests;
- Rehabilitation of rangeland and grazing lands.

o INCOME GENERATING INVESTMENTS FOR THE IMPROVEMENT OF LIVING CONDITIONS

- **Improving wheat and barley yield;**
- **Improving livestock production;**
 - Increasing forage crop production under irrigated and rainfed conditions,
 - Improving livestock shelters.
- **Improving horticultural production;**
 - Orchard establishment,
 - Improving vegetable production in fields,
 - Improving vegetable production under plastic tunnels.
- **Developing small scale irrigation;**
 - Water storage ponds,
 - Rehabilitation of earth canals,
 - Drip irrigation systems within fields,
 - Village fountains.

- **Promoting and up-scaling of energy saving technologies;**
 - Solar panels for hot water,
 - House insulations (building insulation),
 - Energy saving stoves,
 - Stone bread ovens for public use.
- **Improvement of apiculture.**

o EDUCATIONAL AND AWARENESS RAISING ACTIVITIES

With a view to protect natural resources and to enhance income levels of local communities, numerous educational and awareness raising activities are carried out regarding protection, use and improvement of natural resources; agricultural productivity improvement; livestock and horticultural production improvement; promotion of environmentally friendly practices; organic farming; contracted sapling production; and product marketing.

o STRENGTHENING INSTITUTIONAL CAPACITY

The project helps to build institutional capacity and to facilitate co-operations between institutions through the experiences gained on project making methods, project approach, logical framework, monitoring and evaluation, and opportunity assessment for non-wood products.



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EXPECTED PROJECT OUTCOMES, RESULTS AND IMPACTS

- o 30% increase in vegetative cover in treated micro-catchments, three years after project completion;
- o Improvements in living conditions (nutrition, income, work load) of 80% of families participating in the project;
- o 10% reduction in government expenditures on rehabilitation of public works damaged due to floods and landslides;
- o Involvement of women and children in project planning and implementation activities;
- o 20% reduction in erosion levels within microcatchments included in the project site;
- o 30% increase in vegetation cover and 15% increase in capacity of rangelands;
- o Access to drinking water facilities to 75% of animals on pastures as access to clean and sufficient water is ensured;
- o 30% reduction in annual fuelwood consumption per household;
- o 25% increase in number of households using renewable energy technologies;
- o 20% productivity increase per livestock;
- o 10% increase in rainfed crop production and yields;
- o 30% increase in overall value for irrigated crop;
- o 20% increase in the number of households who have access to irrigation water.

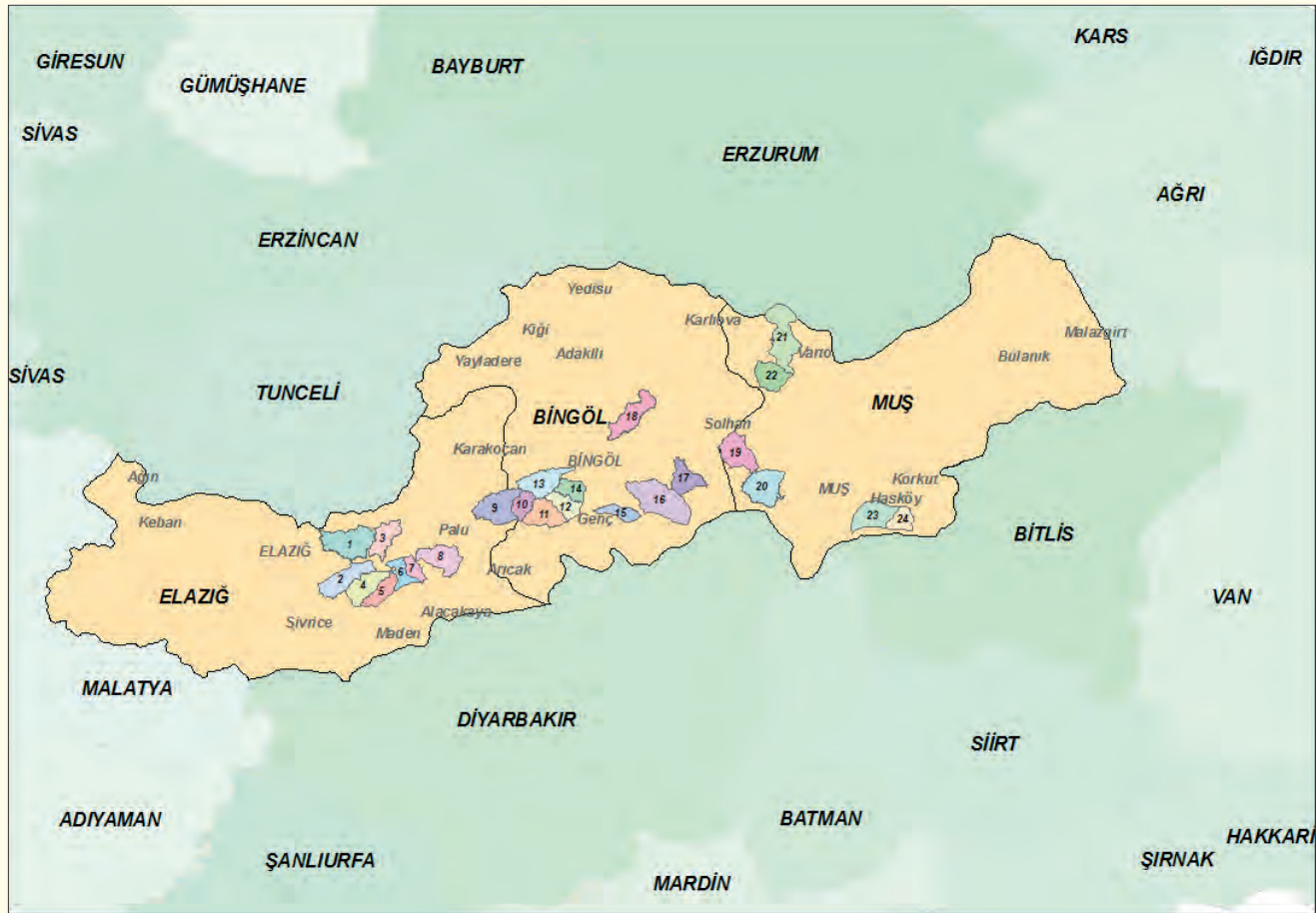




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PLANNING WORKS FOR 24 MICROCATCHMENTS
IN BİNGÖL, ELAZIĞ AND MUŞ WERE COMPLETED.

Murat River Watershed Rehabilitation Project





Murat River Watershed Rehabilitation Project Microcatchments

	Planning Works Completed for Microcatchments	Province	District	Amount	Planning Area (Hectare)
1	Erdemli	Bingöl	Central District	8	88,232
2	Yamaç		Central District		
3	Çapakçur		Central District		
4	Yeşilköy		Central District		
5	Lediz Mh.		Genç		
6	Vahkin-Çanakçı		Genç		
7	Solhan Arduşen		Solhan		
8	Göynükçayı		Central District		
9	Yeşildere	Elazığ	Kovancılar	10	85,641
10	Mastar Dağı		Central District		
11	Kovancılar		Kovancılar		
12	Büyükçay		Central-Palu-Maden		
13	Kuşkane		Central-Palu-Maden		
14	Büyükdere		Palu		
15	Sipini		Palu		
16	Hamzabey		Palu		
17	Gökdere		Palu		
18	Akbulut		Palu		
19	Yaygın	Muş	Central District	6	66,337
20	Kızılağaç		Varto		
21	Koşkar		Varto		
22	Alistan		Varto		
23	Değirmendere		Hasköy		
24	Karakütük		Hasköy		
				24	240,210



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PROJECT BUDGET AND EXPENSES AS OF THE END OF 2016

FUNDING SOURCE	LOAN			
	Received	Expense Amount for 2013-2016		
		USD	USD	%
International Fund for Agricultural Development	27,791,100	13,568,662	49	38,546,000
State Budget (Including Taxes)	7,453,100	2,583,735	34	7,366,000
Beneficiary Contribution	2,968,700	1,340,469	45	3,815,000
TOTAL	38,212,900	17,492,866		49,727,000

FUNDING SOURCE	GRANT			
	Received	Expense Amount for 2013-2016		
		USD	USD	%
International Fund for Agricultural Development	430,000	73,230	17	178,776
TOTAL	430,000	73,230		178,776

ANNUAL EXPENSES			
YEAR	BUDGET (TL)	EXPENSE AMOUNT (TL)	PERCENTAGE (%)
2013	6,148,000	1,664,000	% 27
2014	15,264,000	7,313,000	% 48
2015	22,440,000	12,742,000	% 57
2016	29,474,000	28,008,000	% 95
TOTAL	73,326,000	49,727,000	

The 2017 budget is 30,680,000 TL.



2013 2019

EXPENSES ON INVESTMENTS				
YEAR	Natural Resource Improvement Investments (TL)	Living Conditions Improvement Investments (TL)	Other (TL)	Total (TL)
2013	1,184,000	0	480,000	1,664,000
2014	1,768,000	3,098,000	2,447,000	7,713,000
2015	5,016,000	5,219,000	2,507,000	12,742,000
2016	11,167,000	13,617,000	3,224,000	28,008,000
TOTAL	19,135,000	21,934,000	8,658,000	49,727,000
%	39	45	16	

EXPENSES PER PROVINCE					
PROVINCE	Natural Resource Improvement Investments (TL)	Living Conditions Improvement Investments (TL)	Other (TL)	Total (TL)	PERCENTAGE (%)
BİNGÖL	6,846,000	5,527,000	2,552,000	14,925,000	30
ELAZIĞ	6,622,000	11,622,000	2,732,000	20,976,000	43
MUŞ	5,667,000	4,785,000	1,626,000	12,078,000	25
ANKARA	0	0	1,748,000	1,748,000	2
TOTAL	19,135,000	21,934,000	8,658,000	49,727,000	



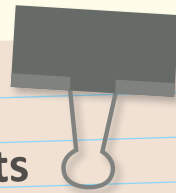


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INVESTMENTS BETWEEN 2013-2016

Natural Resource Improvement Investments

By the end of **2016**,
within the **15** microcatchments
where project implementation was
initiated; afforestation, erosion control,
rehabilitation and rangeland improvement
works were completed on **14,729 hectares**,
and approximately **11 million saplings**
were planted.





NATURAL RESOURCE IMPROVEMENT INVESTMENTS								
Activities	Unit	7-Year Programme (2013-2019)	REALISATIONS (Hectares)					
			2013	2014	2015	2016	Toplam	(%)
Afforestation	Hectares	3,000	200	297	1,020	1,059	2,576	86
Erosion Control	Hectares	9,000	360	1,510	3,024	4,529	9,423	105
Rehabilitation / Rehabilitation of Degraded Forests	Hectares	4,200	145	134	525	804	1,608	38
Rangeland Rehabilitation / Grazing Land Rehabilitation	Hectares	1,200	0	22	300	800	1,122	94
TOTAL	Hectares	17,400	705	1,963	4,869	7,191	14,729	85





Since the end of **2013**, approximately **19 million 135 thousand TL** were spent on investments towards natural resource improvement.

- ✓ **2,576 hectares** of afforestation works,
- ✓ **9,423 hectares** of erosion control works,
- ✓ **1,608 hectares** of degraded forestland rehabilitation works were completed.

Afforestation

By the end of **2016**, **2,576 hectares** were afforested with approximately **3.2 million** saplings.



Bingöl/Arduşen Microcatchment - Yenibaşak Village





Erosion Control and Soil Conservation

By the end of **2016**, erosion control and soil conservation works were completed on **9,423 hectares** and approximately **7 million** saplings were planted.



Elazığ/Hamzabey Microcatchment – Yolüstü Village

Coppice Rehabilitation

As of the end of **2016**, coppice rehabilitation works on **1,608 decares** were completed.



Muş/Yaygın Microcatchment – Yelalan Village



Muş/Yaygın Microcatchment – Karabey Village





Rangeland Rehabilitation

Rangeland rehabilitation works were carried out on **1,122 hectares** of land. Within this scope, **76** troughs, scratching posts, **75** shades for animals, and **7** animal vaccination cages were established.



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125 households benefited from **livestock vaccination cages**, and **13,750** small livestock were vaccinated in these cages.

In addition, **70 hectares** of land is banned to grazing and fertilised in Azıklı and Elmabulak Villages in Değirmendere Microcatchment within the scope of rangeland rehabilitation. This fertilisation and gazing ban facilitated an improvement in the grass productivity of the rangeland, allowing for a periodical grazing practice.

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Income-Generating and Living Conditions Improvement Activities

Activities	Measure	Programme (2013-2019)
Wheat and barley yield improvement	Decare	13,810
Irrigated/rainfed forage crop production	Decare	12,300
Livestock shelter (barn) improvements	Number	2,500
Orchards' establishment	Decare	1,800
Vegetable production on fields	Decare	495
Vegetable production under plastic tunnels (greenhouses) (240 m ²)	Number/Decare	740/178
Water storage ponds	Number	250
Rehabilitation earth canals	Km	25
Drip irrigation systems within fields	Decare	1,272
Village fountains	Number	(-)
Solar panels for hot water	Number	1,250
House insulations (building insulation)	Number	625
Energy saving stoves	Number	1,250
Stone bread ovens for public use	Number	(-)
Improvement of apiculture	Unit	(-)



Investments on Income-Generating and Living Conditions Improvement Activities

PROJECT TARGET:

12.500 HOUSEHOLDS

80.000 PEOPLE

74,322 people in 14,870 households of 177 villages were reached out to since the end of 2013 within the 24 microcatchments where planning is completed.





Walnut trees were planted on **15 hectares** in the name of village legal entity. An irrigation pond of **96 tonnes** capacity was constructed on the walnut afforestation site, a solar energy panel was placed to facilitate water transportation to the pool and drip irrigation system was established.



Elazığ/Büyükçay Microcatchment - Sarıkamış Village





Improving wheat and barley yield

Efforts to improve wheat and barley yield were carried out on **13,314 decares** as of the end of **2016**. **529 households** benefited from the investments. The use of certified wheat seed at least **doubled** the wheat yield per decare as verified by beneficiaries and technical experts.



Muş/yaygın and Karakütük Microcatchments



Increasing forage crop production

By the end of **2016**, irrigated and rainfed forage crop production on **4,222 decares** were facilitated. **309 households** benefited from the investments. Clover, vetch and corn for silage were planted, thus allowing farmers to produce their own fodders to feed their animals without having to pay any additional fees.

Muş/Karakütük Microcatchment – Aşağıuçdam Village



Seed drills provided approximately 35% seed efficiency per decares.



Improving livestock shelters (barns)

206 livestock shelters (barns) were improved by the end of **2016**. Thus, the livestock were protected from adverse weather conditions, and following an on-site assessment of beneficiaries, veterinarians in the Provincial Project Team concluded a **10%** productivity increase and a **50%** decrease in respiratory diseases.



Muş/Yaygın Microcatchment – Köşk Village



Apiculture

4,500 beehives were distributed.

A total of **4500 beehives** were distributed to **450 households**, namely;

- ✓ **1500** in **Vahkin-Çanakçı** Microcatchment,
- ✓ **700** in **Arduşen** Microcatchment,
- ✓ **600** in **Yamaç** Microcatchment,
- ✓ **800** in **Çapakçur** Microcatchment, and
- ✓ **900** in **Göynükçayı** Microcatchment.



Establishment of Orchards

1,765 decare orchards were established by the end of **2016**, and **967 households** benefited from the investments. Approximately **72 thousand** fruit tree seedlings of apples, cherries, walnuts, pears, apricots, plums etc. were planted.

Muş/Yaygın Microcatchment – Yelalan Village



Bingöl/Lediz Microcatchment – Ardiçdibi Village





Vineyard Rehabilitation System

Vine training system was introduced on previous ground vineyards, improving thus vine productivity, and reducing the disease and pest cases. **110 households** benefited from this investment. Direct interviews with the beneficiaries regarding their grape production amount, sales amount and their income demonstrated a **50%** increase in productivity and an annual **2,000-3,000 TL** increase in household income.



Elazığ/Büyükçay Microcatchment – Sarıkamış Village

Grape Crushers

18 grape crushers were granted to village legal entities in Elazığ province and a total of **1,832** households benefited. The grape crushers allowed for both fully automated grape juice production overruling the unhygienic crushing practices, and increased efficiency as it facilitated a higher amount of grape juice production within a shorter period.





2013 2019

Vegetable Production Under Plastic Tunnel

By the end of **2016**, **135** greenhouses, of which **130** are 240 m² and **5** are 500 m², were erected for households and vegetable production under plastic tunnels was initiated. Greenhouses allow for year-round production and sale, and they are up for sale in bazaars.

Greenhouse support contributed an annual 7-10 thousand TL additional income per household.



Elazığ/Büyükçay Microcatchment - Sarıkamış Village

Vegetable Production on Field

Vegetable production on **85 decares** of fields were carried out by the end of **2016**.



Bingöl/Yamaç Microcatchment – Yamaç Village



Bingöl/Yamaç Microcatchment – Gürpınar Village





2013 2019



Strawberry Production



Muş/Karakütük Microcatchment - Yukarıüçdam Village & Değirmendere Microcatchment – Azıklı Village



Organic fertilisers were prepared with farmers for strawberry gardens.

Irrigation systems were introduced to **12 decares** of fields in Karakütük and Değirmendere Microcatchments in Muş Province, and strawberry gardens were established on these fields providing benefits to **12** households. Villagers had the opportunity to introduce their strawberry productions on free market whereas they couldn't previously obtain commercially sustainable yields from their fields. The product sales facilitated by the investments contributed an additional annual **6,000-7,000 TL** income per household.



Irrigation Activities

Eastern Anatolia Project (DAP) Regional Development Administration and the General Directorate of State Hydraulic Services maintain irrigation investments within the project scope.

State Hydraulic Services 9th Regional Directorate sustains irrigation projects in order to introduce irrigation to farmlands in 40 villages.

Below works are scheduled:

- ✓ 4 irrigation projects and 2 agricultural irrigation pond projects in Ardiçdibi, Sürekli, Meşedalı, Dereköy, Yiğitbaşı, Keklikdere, Balgöze, and Şehittepe villages in Lediz Microcatchment within Genç district of Bingöl province;
- ✓ Irrigation project in Yelesen, Şabanözü, Ortaköy, Alıncık, Çiriş, Balpınar and Üçyaka villages in Çapakçur Microcatchment in Bingöl central district;
- ✓ Irrigation projects in Balgöze, Bayırlı, Binekli, Çanakçı, Çaytepe, Dilektaş, Doğanevler, Elmagünü, Gözütok, Kepçeli, Koçsırtı, Meşedalı, Pınaraltı, Sarmakaya, Yağızca, Yenisu, Yiğitbaşı, and Ardiçdibi villages in Vahkin-Çanakçı Microcatchment in Genç, Bingöl;
- ✓ Irrigation projects in Hacılar, Alatepe, Çobantaşı, Elmalı, Yenibaşlar, and Ağaçeli villages in Göynükçayı (İllicalar) Microcatchment in Bingöl central district;
- ✓ Irrigation projects in Baltaş and Bozçanak villages in Büyükdere Microcatchment in Palu, Elazığ;
- ✓ Irrigation projects in Karasalkım and Keklikdere villages in Sipini Microcatchment in Palu, Elazığ.

The approximate
cost of State
Hydraulic Services
investments is
16,000,000 TL.

State Hydraulic Services 17th Regional Directorate completed, by the end of 2016, below projects to introduce irrigation in farmlands;

A total of **731.10 hectares** in **Hasköy district of Muş**, namely 133 hectares in Azıklı Village, 205 hectares in Dağdibi Village, 299.6 hectares in Elmabudak, and 93.5 hectares in Yarkaya Village; and

A total of **537.20 hectares** in **Varto district of Muş**, namely 217.7 hectares in Buzlugöze Village, 126 hectares in Dutözü Village, 73 hectares in Haksever Village, 5.7 hectares in Kalecik Village, and 150.8 hectares in Karameşe Village.

DAP Regional Development Administration provided a total of 1,460,000.00 TL in investments for the constructions of;

- ✓ 3 irrigation pools of 400 tonnes capacity in Karakütük, Böğürdelen and Otaç Villages in Muş Province;
- ✓ Open channel and piped agricultural irrigation systems in Büyükçay, Kuşhane, Büyükdere and Sipini Microcatchments in Central, Palu and Maden districts in Elazığ Province.



Irrigation Pond and Water Fountain

56 irrigation ponds of different tonnages (30-400 tonnes) were constructed as of the end of **2016**, introducing irrigated farming on approximately **2,300 decares** of land, and **270 households** benefited from the investments. Moreover, **15,000 metres** of closed circuit irrigation system was established in Kuşhane and Kumla villages within Kuşhane Microcatchment in Elazığ. In addition, 75 public water fountains were constructed within the scope of project.



Elazığ/Kuşhane Microcatchment – Kuşhane Village



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Drip Irrigation in Fields

Drip irrigation systems in **1,354 decares** of fields were constructed by the end of **2016**, and **540 households** benefited from investments. Drip irrigation system allowed for water efficiency, productivity increase, and work power efficiency as it facilitated irrigation of a wider area with less water.

Elazığ/Büyükçay Microcatchment - Kumyazı Village



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Elazığ/Büyükçay Microcatchment - Sarıkamış Village



Solar Panels for Hot Water

1,494 solar panels for hot water were set by the end of **2016**.

The system allows the beneficiaries to satisfy the hot water demand in a shorter time and without the use of firewood.



Muş/Yaygın Microcatchment - Yelalan Village



Bingöl/Lediz Microcatchment - Balgöze Village

Stone Bread Ovens

While this action initially was not included within the project, in **2016**, 2 stone bread ovens in Elazığ, and another 8 in Muş, adding up to a total of **10** ovens were constructed for public use upon demand from local communities. **622 households** and **1,946 women** benefited from this investment. Wood consumption was thus reduced significantly.



Elazığ/Büyükçay Microcatchment – Yaygın-Karakütük Microcatchment





House Insulations

1,280 individual houses were insulated by the end of **2016**. While the insulated households previously consumed **3-4 tonnes** of firewood and **2 tonnes** of coal during winter season, the investments enabled to reduce consumption to **1 tonne** of firewood and **1 tonne** of coal. In other words, a **50%** better fuel efficiency was obtained.



Elazığ/Büyükdere Microcatchment - Baltası Village



Elazığ/Kovancılar Microcatchment – Hacısam Village

Energy Saving Stoves

2,847 energy saving stoves were distributed as of the end of **2016**.



The stoves facilitated a 30-35% better efficiency in wood consumption for heating and cooking.



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EDUCATIONAL AND AWARENESS RAISING ACTIVITIES

Activities towards Women

15 woman farmers in Karakütük Microcatchment within the project site received applied training on greenhouse vegetable production.



Muş/Karakütük Microcatchment – Otaç Village

A fabric purchase was made for the sewing class offered in Umurca Village within Karakütük Microcatchment. Approximately **20** students benefited from this purchase. The resulting crafts made with materials purchased are sold at local bazaars, contributing economically to class students.





Within the scope of the project, OR-KÖY Department offered **apiculture training** to **96 participants** in Bingöl.



Moreover, **farmer training meetings and trips** were organised in order to brief villagers in the following microcatchments within project site regarding previous investments. **115 participants** benefited from these trainings.





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MONITORING AND EVALUATION

The progress in project targets, as well as physical and monetary activities are maintained through databases.

Project activities are managed based on periodic reports.

Project monitoring and evaluation, in addition to the analysis of implementation results, ensure better responsiveness to beneficiary expectations, thus serving to attain a higher impact with project activities.



Monitoring and evaluation activities are maintained jointly by ÇEM and OGM.





The microcatchment rehabilitation activities planned within the scope of Murat River Watershed Rehabilitation Project will ensure erosion control and reduced sediment flow in the catchment, thus facilitating increased soil productivity and consequently increased income levels for villagers and farmers.

Project Monitoring and Evaluation Items



Socio-Economic Monitoring



Erosion Monitoring



Vegetation Cover Monitoring; Forest, rangeland, Agriculture



Physical Monitoring



SOCIO-ECONOMIC MONITORING:

With a view to identify the current situation prior to project implementation, a questionnaire was carried out with 1800 households in 113 villages within 14 microcatchments. Thus, data to assess the current status of project beneficiaries was collected. In order to obtain clear results regarding the impacts of project on beneficiaries, additional interviews were carried out with locals who do not benefit from project as a control group. The goal of these interviews was to define economic, social, and cultural differences of project beneficiaries and non-beneficiaries within microcatchments with a view to identify their current status and to carry out comparisons in the future phases to detect any possible changes.



The changes within these households are being monitored. In addition; activity based monitoring is maintained through “Investment Identification Cards” regarding project beneficiaries.

Topics included in socio-economic status identification:

- Demographic structures, assets, and living conditions of households
- Agricultural production
- Animal husbandry and animal production
- Food expenses (weekly, monthly, yearly)
- Income sources

LAND COVER CLASSIFICATIONS AND IDENTIFICATION OF VEGETATION COVER

By the end of 2016, land use classification maps were created as “forestlands”, “rangelands”, “sparsely vegetated or clear areas”, “inland waters / water bodies”, and “city settlements” through “controlled classification” technique based on Landsat 8 satellite images for each one of the 24 microcatchments within the project site, and surface area of each land use classification was determined.

Normalized Difference Vegetation Index (NDVI) maps were created for each microcatchment; vegetation covers were classified as “dense”, “moderate”, “weak”, and “non-vegetated”, and their surface areas were calculated.

All baseline maps required for vegetation cover monitoring were prepared for each of the 24 microcatchments within the project site.

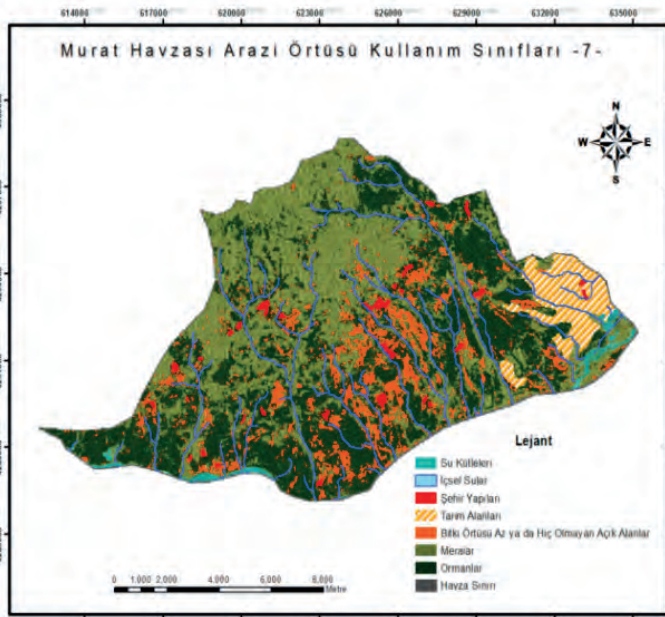


Image: Erdemli microcatchment land cover/land use classifications map

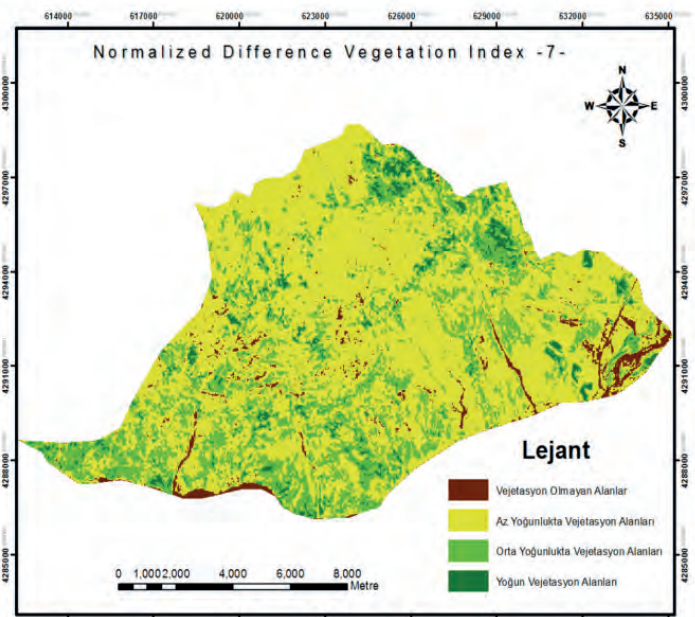


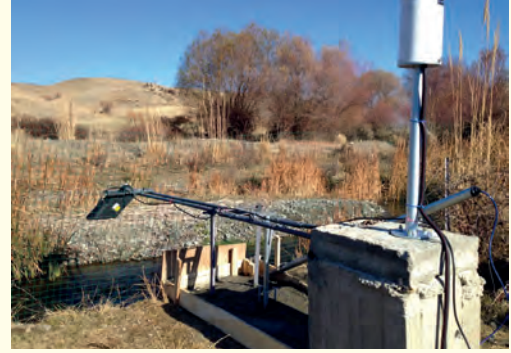
Image: Erdemli microcatchment NDVI map

EROSION MONITORING:

Within the scope of the Murat River Watershed Rehabilitation Project, Erosion Monitoring systems were established in Çapakçur Microcatchment in Bingöl province, and in Büyükçay-Hamzabey Microcatchment in Elazığ.

- 1 Monitoring System comprises;
- 1 sediment and flow measurement station,
- 9 runoff measurement plot system, and
- 3 sediment catchments.

Image : Elazığ Büyükçay Flow – Sediment Station



ÇAPAKÇUR MICROCATCHMENT MONITORING SYSTEM





2013 2019



Sediment Measurement Stations are made up of 9 units, namely:

- i. Sediment and Flow Measurement Station,
- ii. Laser Flow Meter,
- iii. Sediment, Turbidity, Suspended Solid Materials (SSM) Device,
- iv. Lightning Conductor,
- v. Sahara Type Cabinet,
- vi. Data Entry/Monitoring System,
- vii. Solar Panel,
- viii. Gel Cell Battery and Charger,
- ix. Precipitation Sensors.

These sediment measurement stations are automated, and data is transferred to central system through GSM Data lines. Moreover, manual on-field data collection and laboratory analysis area also carried out to determine sediment amounts.

Runoff Plots aim to measure runoff and soil loss amounts. Runoff plot measurements to calculate soil loss include the use of runoff measurement devices and data logger compatible measurement systems. Sediment collection section is secured to prevent outside runoff or sediment flow into the measurement site. The runoff plots are enclosed with barbed wire fences. The Runoff Measurement Plots comprise three units; namely i) Pluviograph device, ii) Datalogger, and iii) runoff measurement plots. The selected microcatchments were divided into plots based on 3 main land use classifications. 2 testing plots and 1 control plot for each land use classification, forests, rangelands and terraces, adding up to 19 plots in total, were set.

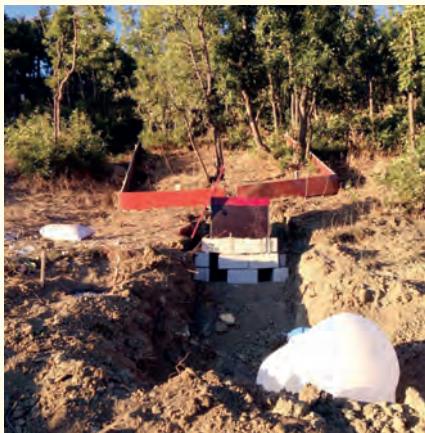


Image: Runoff Plots



Sediment catchments are constructed to measure the amount of siltation due to runoffs. The sediment catchment is designed to collect downstream and to measure the amount of soil and other such materials within the running surface water following an intense precipitation.

- After every precipitation, the water level at the dam and the sediment amount is measured with a scale. For this purpose, 3 scales divided by millimetres are placed at the lowest points of each sediment pool.
- A total of 6 sediment pools are established in the work sites within microcatchments. An additional sediment pool is established as a control group in the neighbouring microcatchment that is not included within the project. 4 of the previous ones are placed in the work site, while 2 are for control purposes. Thus, the changes in levels within sediment pools are determined at each field trip, and sediment samples are collected to be analysed in laboratories to identify the sediment productivity.





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MURAT NEHRİ HAVZASI REHABİLİTASYON PROJESİ
MURAT RIVER WATERSHED REHABILITATION PROJECT

2013 2019
MURAT NEHRİ HAVZASI
REHABİLİTASYON PROJESİ

ANA SAYFA | PROJE HAKKINDA | PROJE UYGULAMA ALANLARI | PROJE YÖNETİMİ | MİKROHAVZA PLANLARI | RAPORLAR | İLETİŞİM

Projenin Duyurular

- Temmuz 2016 Aylık Çalışma Raporu
- Haziran 2016 Aylık Çalışma Raporu
- Mayıs 2016 Aylık Çalışma Raporu
- Nisan 2016 Aylık Çalışma Raporu

**MURAT NEHRİ HAVZASI
REHABİLİTASYON PROJESİ
2013 - 2019
TANITIM KATALOĞU**

MNHRP Değerlendirme Toplantısı Şanlıurfa'da Yapıldı
Murat Nehri Havzası Rehabilitasyon Projesi (MNHRP) 2016 Yılı Uygulamalarının ve 2017 Yılı Bütçe ve Programlarının Değerlendirilmesi Toplantısı Şanlıurfa'da yapıldı.

You can visit the official project website for further details.



**MURAT RIVER WATERSHED
REHABILITATION PROJECT**



The Republic of Turkey MINISTRY OF FORESTRY AND WATER AFFAIRS



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Forest and Water is Life.

August - 2017