

REPUBLIC OF TURKEY
PRIME MINISTRY
GENERAL DIRECTORATE OF RURAL SERVICES

THE LAND RESOURCES OF TURKEY AND ACTIVITIES OF
GENERAL DIRECTORATE OF RURAL SERVICES

FOR : United Nation Convention to Combat Desertification,
International Forum on European Policies to Combat
Desertification in the Mediterranean Basin.
Matera 29 – 31 October 1998

BY : GDRS UNCCD Committee

Dr. D.Murat ÖZDEN
Agricultural Engineer

Hasan DURSUN
Agricultural Engineer

A.Naci SEVİNÇ
Agricultural Engineer

General Directorate of Rural Services
Research, Planning and Coordination Department
Ankara / TURKEY

E-Mail : topraksu@khgm.gov.tr
Tlf : + 90 312 287 81 00 – 287 81 04
Fax : + 90 312 287 80 97 – 287 80 98

CONTENTS

- 1- Introduction
- 2- Land Degradation and Desertification
- 3- Land Resources of Turkey
- 4- Land Degradation in Turkey
- 5- Land Protection Activities of GDRS
- 6- Conclusion

1. INTRODUCTION

Turkey is a mountainous and hilly country, average altitude is 1132 m, surrounded by the seas from the north (Black Sea), south (Mediterranean Sea) and the west (Aegean Sea). It is a peninsula which accounts for the great differences in climate, soil and the other ecological properties.

Although Turkey is in the subtropical belt having a semi-arid climate with extremes in temperatures, the diverse nature of the landscape and particularly the existence of mountains parallel to the coasts result in great differences in climatic conditions from region to region.

Average rainfall is 643 mm annually, but it is not always in the right place and the right time to meet the real need, considerably changing by years and regions.

Believing that desertification is one of the most serious common problem of the world and because of its oversensitive land conditions and urgency of activities, Turkey has signed the UN Convention to Combat Desertification and ratified by the National Assembly at 11th of February 1998.

2. LAND DEGRADATION and DESERTIFICATION

In addition to natural disasters, it is known that land degradation is occurred by the human activities which are agricultural management, overgrazing, deforestation, industry and urbanization etc.

One of the main causes of land degradation is agricultural mismanagement. When the land is not used in accordance with its capability, degradation is unavoidable. Soil erosion (water or wind), salinization, waterlogging, nutrient losses, plow pan forming, structure destruction or compaction as well as farm land fragmentation are the result of agricultural mismanagement.

Overgrazing is another land degradation. Uncontrolled grazing strips the plants of the land. Animal herds compact the top soil which is the vital part of the land for vegetation. Because of the those, soil erosion has been exposed and productivity of land has declined.

Forests which is the lung of the world have been degraded by fires, over harvesting, misuses for fuel wood or clearing for farm and urban uses. Those kinds of deforestation is very prevalent in the world. It can be seen in both developed and developing countries. Degradation of forests is one of the biggest disaster of our planet.

The land which has high plant production potential is degraded for urban growth, road building, mining, industry etc. In addition to those overuse of fertilizer, industrial and urban wastes have caused the soil pollution.

3. LAND RESOURCES of TURKEY

According to the surveys made in 1984 by TOPRAKSU which is the predecessor of General Directorate of Rural Services (GDRS), approximately 36 % of total area is under cultivation in Turkey. 21,255,248 ha of cultivated area is under dry farming, 4,354,660 ha is irrigated, 2,443,599 ha is used for perennial crops like olive, citrus, nut, tea etc. The great variety of climatic zone contribute to the diversity in agricultural production.

Because of the water deficiency and land limitation 20 % of irrigable land can be hardly irrigated. Severe effects of the water deficiency will be seen in the future. At the year 2015, 11 billion m³ water will be used in domestic needs, 12 billion m³ industry and 87 billion m³ in agriculture. However, according to the observation and estimation the total technically and economically usable surface and underground water potential of Turkey is 110 billion cubic meters of which coming 95 billion m³ from internal rivers, 3 billion m³ from external rivers and 12 billion m³ from underground water resources.

As it is seen Turkey does not have plenty of water in comparison with potential irrigable land and population density.

Grassland and pasture can be seen all over the Turkey. However they are great importance for very hilly part of the eastern regions which animal husbandry is prevalent. Nearly 27,6 of total area is grass and pasture land in Turkey. 646,694 ha of this is grassland, 20.858.477 ha is pasture.

Forest and bush land is totally 23,227,975 ha. It is rife with forest along the coast. In side of the county is poor with forest. Nearly 30 % of total area is forest and bush 15,184,879 ha is forest, 8,043,096 ha is bush.

5,113,051 ha of the total area of country is nonagricultural use including water surface, rocky, housing, park ... etc.

Land resources can be seen in the table which is distribution of land use based on capability classes.

4. LAND DEGRADATION in TURKEY

Land degradation in Turkey is similar to developing world. Agricultural mismanagement, overgrazing, deforestation and using valuable agricultural land for nonagricultural usage are the main human activities of land degradation in Turkey.

As it is seen in the table that some agricultural land uses are not suited to their capability classes.

Under the land use capability classification (LUCC), land is classified into one of eight namely class I to class VIII. There are three categories according to the LUCC first category is class I to IV which are suitable for cultivation and animal husbandry. This category has few limitation, it requires special conservations practices except class IV which requires very carefully management because of its severe limitations.

Second category class V to VII which are unsuitable for cultivation but only perennial plants with intensive conservation and development practices. It is suitable for under controlled grazing and forestry. This category has very severe limitations that make the land unsuitable for economic and sustainable agricultural usage.

Third category is class VIII which is suitable only for wild life, sports and turistics activities. This land is not covered with soil for commercial crop productions.

It is important for sustainable land management to use land according to the capability classes. Land use in agriculture, animal husbandry, forestry and non agricultural use should be concerned of LUCC. Otherwise land degradation is speeded up.

Because of the mismanagement of the land, some of the main degradation type in Turkey are erosion by water or wind, soil salinization and alkalization, soil structure destruction and compaction, biological degradation and soil pollution.

Some of the land problems are as follows in Turkey.

<u>Types of Problems</u>	<u>Area (ha)</u>
Water erosion	66.576.042
Wind erosion	330.000
Alkalinization / Salinization	1.518.749
Hydromorphic soil	2.775.115
Stony or rocky problem	28.484.331
Non agriculture use	894.153

Due to climatic and topographic condition soil erosion is the biggest problem in Turkey. Approximately 86 % of land is suffering from some degree of erosion.

Categories of Soil Erosion Distribution is as follows.

<u>Degree of erosion</u>	<u>Area (ha)</u>	<u>Ratio (%)</u>	<u>Criterion of degree</u>
Slightly	5.611.892	7.22	25 % of top soil eroded
Moderate	15.592.750	20.04	25-75 % of top soil eroded
Severe	28.334.938	36.42	Top soil and 25 % of sub soil eroded
Very severe *	17.366.462	85.98	Top soil and 25-75 % of sub soil eroded

* Wind erosion is effective on 330.000 ha of very severe erosion.

In addition to soil erosion 28.484.331 ha land has stony or rocky problems. There are 2.775.115 ha drainage, 1.518.749 ha alkaline or salinity problems which may be increased in some plains which are under construction of new irrigation projects. Unless it is implemented with precautionary measure without seeking alternatives industrial and urbanisation land use requirements have met with valuable farm areas. Because of using for industrial needs as well as population expansion valuable farmland in the plains has been rapidly declining.

5. LAND PROTECTION ACTIVITIES of GDRS

In Turkey, several official organizations are directly or indirectly involved in protection of land degradation. Due to various land conditions including climate, topography, soil types, in addition social, cultural and economic structure of country, the approaches of the solution are also various.

The Ministry of Forestry deals with erosion control on upper catchment which is under forestry regime.

General Directorate of State Hydraulic Works deals with flood control and flood stabilization measures by constructing check dams and silt trap dams on main river courses and flood areas.

General Directorate of Rural Services is an organization which gives services in villages and settlement sites of 75.850 units. It helps villages and farmers on their developments in respect of social, economic and cultural issues.

In accordance with its responsibilities, Rural Services constructs roads in order to make all rural settlement site in Turkey linked with towns, cities and each others. Keeping the roads open in all seasons, making their maintenance and reconstruction of them are among the services of the organization. Organization executes services such as building bridges and art structures during the road-making activities.

Another fundamental provision is clean and healthy water for using and drinking.

GDRS performs rural and urban housing activities for the families missing their houses. In-village swere systems, mosques, laundry houses and village group technicians offices can be accepted in this framework.

Increasing the development level of country and its rural part is only possible with getting more and more yield from production areas and improving the crop quality. GDRS realizes this target by attempts spesific to improving the crop quality with the healthy and sustainable usage of soil and water resources. With ventures done, the agency transfers services to an arable land of 26.5 million hectares. In this scope, in-field improvement applications are made; importance are given in land consolidation.

Erosion, barrenness and stoniness in agricultural lands of Turkey are the problems which must be solved by GDRS. Another important factor for enlarging the agricultural production is irrigation. Rural Services is responsible for irrigating the land in its own activity area. For this purpose, GDRS constructs small reservoirs.

GDRS accepts a base being scientific in its basic infrastructural and agricultural services. 11 research Institues and one international research and training center, established on the basis of regions, carry out research at four area namely catchment manegement, water manegement, soil manegement and investment manegement.

The agency has accomplished heavy services through its organisation structure reaching to the furthest sides of the country.

In relation to land degradation, The General Directorate of Rural Services deals with erosion control, on-farm development works and the other farm problems on agricultural land by constructing small silt trap dams, terrace, flood control and drop structure constructions and stone clearing works, by carrying out irrigation services such as land leveling, land consolidation, sub drainage and the other on-farm development services.

In addition to physical construction GDRS has made soil surveys and mapping studies, statistics inventory and soil analysis for irrigation, soil conservation and fertilizer purposes.

There are 11 Research Institutes and one International Research and Training Center, established on the basis of regions, which carry out researches concerning with soil and water to increase effectiveness of GDRS investments.

Now GDRS is serving under the responsibility of Ministry of State. The first studies to obtain information about soil property was initiated in 1960's by making reconnaissance soil surveys. The field works were completed in 1971 by TOPRAKSU which is the predecessor of GDRS. During the surveying genetic soil groups, soil depths, land slopes, rockiness and stoniness, wetness, soil salinity and alkalinity, land cover types and land use, degree and variety of erosion alluvial and colluvial origins, land capability classes and the other properties of land were determined to prepare a general soil management plan, land use and especially to combat soil erosion.

For this purpose 1/25000 scale topographic maps were used. After reconnaissance surveying soil maps were prepared based on provincial and for basins. The maps for provincial and basins were printed in 1/100000 and 1/200000 scale respectively.

After completion of Turkey soil maps, erosion maps were prepared the information of erosion map was compiled from provincial soil maps. Simply erosion degrees have been shown on the map.

The main purpose of soil map were to prove the danger of erosion, to show and to start the general erosion control measures.

The soil map of Turkey was revised in 1980's by GDRS but today it needs to be developed and adapted according to new changes by considering scientific principles and new classification systems.

By using new technical instruments like computer, remote sensing ... etc GDRS has been working on preparing new soil map including all requirements of country and newness regarding determination of soil properties in the world.

Besides in relation to land development works GDRS gives some other social and cultural infrastructure services to the rural areas by constructing roads, bridges, for using and drinking water facilities, urban housing activities, in-village sewer systemsetc. Because of its huge works capacity it is planning to be reorganized according to the sectoral structure of GDRS.

6. CONCLUSION

To combat land degradation and desertification and for effective land management and policies, the properties of different types of soil must be known.

At first each country should start with the inventory of land resources, as well as scientific research and international exchange of information and coordination for combatting desertification and effective land use.

Investments of conservation and development must be balanced for generation needs and sustainable life by the legal arrangement.

In Turkey, a draft new law, concerning the usage of soil and land resources including land consolidation, allocation, conservation classification sectoral and intersectoral utilization, planning for production and covering all gaps have already been dealt with by the GDRS suited to "Seventh Five Year Development Plan" of Turkey.

We wish that humanity is going to fulfill all the responsibilities in combatting desertification and to reach the final aims.