Food and Agriculture Organization of the United Nations

Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project

GCP/TUR/061/GFF

ŞANLIURFA STEPPE CONSERVATION STRATEGY AND ACTION PLAN

2021-2030

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Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project

Şanlıurfa Steppe Conservation Strategy and Action Plan

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Abbreviations

AARI	Aegean Agricultural Research Institute
ABPRS	Address-Based Population Registration System
ARDSI	Agriculture and Rural Development Support Institution
BERN	Convention on the Conservation of European Wildlife and Natural Habitats
CAE	Chamber of Agricultural Engineers
CBD	Convention on Biological Diversity
CORINE	Coordination of Information on the Environment
CR	IUCN Red List Category “Critically Endangered”
DD	IUCN Red List Category “Data Deficient”
DG EUFR	General Directorate for European Union and External Relations
DKM	Nature Conservation Centre – Doğa Koruma Merkezi
DL	Decree Law
DTP	Department of Training and Publication
EBA	Ecosystem Based Adaptation
EFALP	Environmentally Friendly Agricultural Land Protection Program
EIA	Environmental Impact Assessment
EN	IUCN Red List Category “Endangered”
EVI	Enhanced Vegetation Index
FAO	Food and Agriculture Organization of the United Nations
GAP ATC	South-Eastern Anatolia Project Agricultural Training Center
GAP RDA	South-Eastern Anatolia Project Regional Development Administration
GDAE	General Directorate of Agricultural Enterprises
GDAR	General Directorate of Agrarian Reform
GDARP	General Directorate of Agricultural Researches and Policies
GDCDE	General Directorate of Combating Desertification and Erosion
GDF	General Directorate of Forestry
GDFC	General Directorate of Food and Control
GDL	General Directorate of Livestock
GDSHW	General Directorate for State Hydraulic Works
GEF	Global Environment Facility
GDM	General Directorate of Meteorology
GDNCNP	General Directorate of Nature Conservation and National Parks
GDPNH	General Directorate for Preservation of Natural Heritage
GDPP	General Directorate of Plant Production
GDWM	General Directorate for Water Management
GSP	Global Soil Partnership
IPA	Important Plant Area
IIPALP	Identification and Improvement of Problem Agricultural Lands Project
IPARD	Instrument for Pre-Accession Assistance for Rural Development

IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IT PGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
LDP	Long Term Development Plans
MoNE	Ministry of National Education
MoAF	Ministry of Agriculture and Forestry
MoEU	Ministry of Environment and Urbanization
NatP	Natural Park
NBSAP	National Biodiversity Strategy and Action Plan
NE	IUCN Red List Category “Not Evaluated”
NDVI	Normalized Difference Vegetation Index
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
NP	National Park
NSAPCD	National Strategy and Action Plan for Combating Desertification
NT	IUCN Red List Category “Near Threatened”
PBA	Prime Butterfly Area
RAMSAR	Convention on Wetlands of International Importance especially as Waterfowl Habitat
RIS	Rangeland Information System
SCP	Systematic Conservation Planning
SDGs	Sustainable Development Goals
SPN	Society for the Conservation of Nature
SWOT	Strengths, Weaknesses, Opportunities and Threats
TCCAP	Turkey Climate Change Action Plan
TCCASAP	Turkey’s Climate Change Adaptation Strategy and Action Plan
TSR	Turkish State Railways
TUBITAK	Scientific and Technological Research Council of Turkey
TÜİK	Turkish Statistical Institute
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
VU	IUCN Red List Category “Vulnerable”
WR	Wildlife Reserve

Preface

Anatolia is one of the regions of global importance in terms of biological diversity and the traditional knowledge it bears. It is a place where various land use activities linked to the oldest agricultural practices in the world are carried out and where various civilizations existed. Steppes are very important and vulnerable areas in this geography in terms of biodiversity and abundance of genetic resources. At present, there are large partially natural but generally semi-natural steppe areas abundant in species in the inlands of Anatolia.

Şanlıurfa province is one of the most important areas in Turkey in terms of steppe ecosystems, and the natural vegetation in this province consists mostly of steppes.

"The Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project" that is ongoing with the aims of mainstreaming the conservation of Turkey's steppe biodiversity in production landscapes and strengthening the conservation of steppe ecosystems in three pilot areas in Şanlıurfa is instrumental in highlighting the importance attached to the steppes.

The project is carried out collaboratively by the Food and Agriculture Organization of the United Nations (FAO) and the Ministry of Agriculture and Forestry General Directorate of Nature Conservation and National Parks (GDNCNP), General Directorate of Plant Production (GDPP), and General Directorate of Forestry (GDF) with the financial support of the Global Environment Facility (GEF).

This project along with the Province-Based Steppe Conservation Strategy shows the importance FAO and the Ministry of Agriculture and Forestry together with Şanlıurfa Governorship and other governmental organizations and institutions attach to the conservation of the steppe ecosystems in Şanlıurfa, their sustainable and co-operative management and awareness-raising.

Steppe areas represent ecosystems that are very rich in biodiversity and serve as a very important insurance for the conservation of environment and food security of humanity. At present, the wild relatives of many cultivated species still exist in the steppes. In other words, steppes are important gene centers that contribute to the achievement of food security for the future. Şanlıurfa steppes, as part of the "Fertile Crescent" region, give a summary of the agricultural history of humanity and host a very important cultural and scientific heritage that enables us to re-evaluate the preparatory stages of transition to agriculture.

In this Strategy, while the general characteristics of the Şanlıurfa steppes are covered, the legal and administrative status of the steppes is also laid down. Within the framework of these data, strategies and mechanisms for co-operative and coordinated management of the steppes in the province are identified and presented.

All relevant units of the Ministry of Agriculture and Forestry, Şanlıurfa Governorship and provincial institutions and organizations, Harran University and the province-based working group exhibited an admirable example of cooperation with FAO and Doğa Koruma Merkezi (DKM) in preparation of this Strategy. In particular, we would like to extend our endless and sincere thanks to all participants who contributed to and supported the process with various alternative tools despite the COVID-19 pandemic that affected countries all over the world. We hope that this Strategy will be mainstreamed in other 33 steppe provinces in the Irano-Turanian Phytogeographical Region and it will serve as an exemplary conservation and sustainable management strategy for all provinces.

The Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project
National Project Coordinator, on behalf of the Project Team

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Executive Summary

Steppes represent one of the most ecologically important and vulnerable ecosystems that are prevalent in the Eastern, Southeastern and Central Anatolia Regions of Turkey. Steppes of Turkey, of all-natural ecosystems, are considered the most threatened ecosystems because of human activities. Some of the threats are destruction and irreversible loss of steppe habitats. With the increase in mechanization in agricultural activities, destruction in all steppes, mainly the lowland steppes, has been intensified. Steppe areas are lost also because of mining activities, energy investments, afforestation practices in unsuitable areas and urbanization pressure. One of the critical factors contributing to the destruction of the natural vegetation of the steppes is overgrazing. Today, steppes remain in stony or rocky areas as islets that contain remains of natural vegetation between agricultural fields and grazing areas. Other factors that threaten the steppe ecosystems and the species that they host include illegal hunting, species trafficking, illegal collection of plants and intensive agricultural activities. The lack of awareness about the importance of steppe species, and effective conservation efforts for these species being limited to protected areas are two other factors that negatively affect the biodiversity of steppes. In recent years, works geared towards mitigation of these threats and conservation and sustainable management of the steppes have become more crucial.

Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project aiming at conserving and strengthening Turkey's steppes is one of leading works on steppes. In addition to surveying, planning, monitoring and awareness-raising efforts of the project, which is implemented in three pilot areas in Şanlıurfa, the project also aims at drafting a provincial conservation strategy and action plan which will contribute to conservation of Şanlıurfa steppes and their management with all relevant stakeholders.

Şanlıurfa is one of the most important areas in terms of steppe ecosystems in Turkey. With its vast plains, semi-arid climate and plain topographic structure, the natural vegetation in Şanlıurfa is largely made up of steppes. In addition to the biodiversity that they host, Şanlıurfa steppes also give diverse sociological, ecological and economic benefits to local people. The **Overview of Şanlıurfa Steppe Ecosystems** section of the Strategy and Action Plan provides general information on Şanlıurfa steppes, plant and animal species richness of these steppes, socio-cultural and socio-economic structure in the region, local people's interactions with the steppes, the use of steppes for agriculture and animal husbandry and pressures various activities put on the steppes.

In Turkey, there exists no steppe definition in the legislation unlike forests and wetlands. On the other hand, many policy documents and pieces of legislation contain supporting elements related to the conservation and sustainable management of steppe ecosystems, including natural steppes, meadows, rangelands and steppe forests. Although there is no single institutional structure responsible for the conservation and management of steppes, there are capacities and various mechanisms available within different institutions. **The Legal Framework and Institutional Structure Related to Steppes** section of the Strategy and Action Plan reveals the current situation with an assessment of existing policies, legislation and mechanisms as well as national and local level institutional structures and capacities related to the conservation and sustainable management of steppes.

Şanlıurfa is one of the provinces in Turkey that primarily hosts steppe areas. Şanlıurfa's natural vegetation, consisting predominantly of steppes that are important for the biodiversity of the province, covers approximately 39% (756,098 ha) of the province's surface area. Some of the steppe areas in Şanlıurfa are situated within the borders of the legally established protected areas. Among these, Tek Tek Mountains National Park, Kızılkuyu Wildlife Reserve and Birecik Wildlife Reserve are prominent areas in terms of steppe habitats and species. Steppe habitats and biodiversity that they host stand out in the protected areas of the province. Overgrazing, population density, increased settlement pressure, drought risk due to climate change,

agricultural land transformation, energy investments, mining, illegal hunting, illegal collection of plants, intensive agricultural activities and pollution are major threats affecting Şanlıurfa steppe ecosystems and their species. **The Spatial Assessments Regarding the Steppes of Şanlıurfa** section of the Strategy and Action Plan gives spatial assessments and maps on the current status of Şanlıurfa steppes in relation to the protected areas and important biodiversity areas as well as threats and pressures acting on them.

A conservation strategy and action plan adopted by all stakeholders for conservation and sustainable management of Şanlıurfa steppes is of great importance. The overall objective of the Şanlıurfa Steppe Conservation Strategy is to ensure the sociological, ecological and economic sustainability of the Şanlıurfa steppes. Accordingly, 4 strategic goals and 10 strategic objectives are defined based on the current status of Şanlıurfa steppes and spatial assessments for the steppes as well as related policies, legislation and mechanisms. The first strategic goal is the development of a local-scale governance and collaboration structure as one of the most important requirements for effective management of the steppes. The second and third strategic goals are aimed at conserving biodiversity of steppes and improving resource use in the steppes within the framework of sustainability principle. The fourth strategic goal is to improve the livelihoods of local people who benefit from the steppes. **Şanlıurfa Steppe Conservation Strategy and Şanlıurfa Steppe Conservation Action Plan** sections elaborate on strategic goals and objectives for the conservation of steppes and an action plan to achieve these goals and objectives. The action plan covers short, medium and long-term activities defined for the period of 2021-2030 to reach the goals and objectives of the Strategy.

A governance mechanism and monitoring system are mostly required for effective implementation, monitoring and evaluation of the Şanlıurfa Steppe Conservation Strategy and Action Plan. Good governance and collaboration is crucially important since the task of steppe conservation and management is performed by different institutions. Establishment of a coordination board to ensure coordination and cooperation between government institutions and stakeholders and a systematic management tool and monitoring system to track changes in line with the goals and objectives of the Strategy is highly recommended. Such governance mechanism is recommended under the Provincial Planning and Coordination Board within the governorships. The aim is to implement and monitor the Strategy and Action Plan through Provincial Directorate of Planning and Coordination which can provide necessary support to the board. The Directorate is the authorized and responsible unit in drafting and presenting reports on the coordination and monitoring issues that should be taken to the Provincial Coordination Board such as preparing inventories and conducting research to determine the economic and social structure of the province, examining investment proposals to be performed by the government institutions, monitoring public investments included in the annual programs, and determining and resolving the problems that require coordination. The **Governance Model and Monitoring System** sections of the Strategy and Action Plan provide a framework of key approaches and required structure and functioning for collaborative and coordinated implementation, supervision and monitoring of the Strategy.

The Şanlıurfa Conservation Strategy and Action Plan is expected to guide conservation and sustainable management of Şanlıurfa steppes through effective governance and cooperation and set a model for preparation of provincial steppe conservation strategies and action plans for other provinces of high importance for steppe ecosystems.

The Strategy also contains a draft protocol to strengthen governance and collaboration and form a basis for joint action with relevant stakeholders. These supporting documents were prepared in order to facilitate the institutional and strategic follow-up of the Strategy implementation process.

About the Project

Steppes represent one of Turkey's most important ecosystems in ecological, economic and social terms. Turkey's steppe ecosystems include pastures, meadows and rangelands, and cover approximately 33.5 million hectares of land in the country. Steppe ecosystems are prevalent in the Eastern, Southeastern and Central Anatolia Regions, as well as in the high mountains of the Aegean and Mediterranean Regions. Turkey's steppe ecosystems are faced with threats of loss and destruction of habitats, excessive use of production areas and climate change.

The Food and Agriculture Organization of the United Nations (FAO) and the Ministry of Agriculture and Forestry (MoAF) General Directorate of Nature Conservation and National Parks (GDNCNP), General Directorate of Plant Production (GDPP) and General Directorate of Forestry (GDF) are implementing the Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project (GCP/TUR/061/GFF) with the financial support of the Global Environment Facility (GEF). The project aims to improve the conservation of Turkey's steppe ecosystems through effective management of protected areas and mainstreaming of steppe biodiversity conservation into production landscapes. The components of the project, which is implemented in three different sites in Şanlıurfa consist of the following:

1) Effectiveness of protected area system increased to conserve steppe biodiversity
2) Steppe biodiversity conservation mainstreamed into production landscapes
3) Enabling environment established for the effective conservation of steppe biodiversity across large landscapes.

Doğa Koruma Merkezi (DKM) is responsible for the 3rd component, namely "enabling environment established for the effective conservation of steppe biodiversity across large landscapes".

Within the component of establishing enabling environment for the effective conservation of steppe biodiversity across large landscapes, one of the tasks is the preparation of a conservation strategy and action plan for Şanlıurfa steppes in a participatory way. In this context, 4 face-to-face workshops and meetings and an online meeting were held. The views were exchanged with experts from all relevant governmental organizations, academia, local schools, private sector and civil society. Members of the Şanlıurfa Steppe Conservation Working Group and Scientific Advisory Group of the project also contributed to this process. Additionally, opinions were collected from different non-governmental organizations. In this context, a total of 172 experts, including those who wrote the strategy, contributed to the process. Of the contributing experts, 112 were from public institutions (65%), 23 were academics (13%), 17 were from NGOs (10%), 10 from international organizations (6%), 6 from local schools (3%) and 4 from the private sector (2%). Considering the ratio of men and women contributors, 72% were male whereas 28% were female. The geographical distribution of the experts contributing to the process was as follows: 49% were from Şanlıurfa, 40% were from Ankara and the remaining 11% were from other provinces. Finally, the framework of the Steppe Terminology was prepared by the experts of Doğa Koruma Merkezi with the aim of creating a terminology specific to the steppes as part of the Strategy. This framework was delivered to the volunteering experts (30) from the Independent Consultants Group, and FAO and MoAF Project teams (20) via online tools, and the contributions and opinions of these experts were duly received. In the process, a Glossary for Steppes consisting of 42 terms was created to form an important part of the Strategy. This document in hand is the Şanlıurfa Steppe Conservation Strategy and Action Plan, prepared in line with the comments and opinions of many different stakeholder groups as a result of nearly a year-long intense efforts.

Şanlıurfa Project Areas

The Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project (GCP/TUR/061/GFF) is implemented in three pilot project sites within the boundaries of Şanlıurfa, namely Kızılkuyu Wildlife Reserve, Tek Tek Mountains National Park and Karacadağ Steppes. These three project sites are also conservation priority areas hosting large steppes in Turkey, which are relatively unfragmented and uniform (FAO-Tarım ve Orman Bakanlığı, 2019).

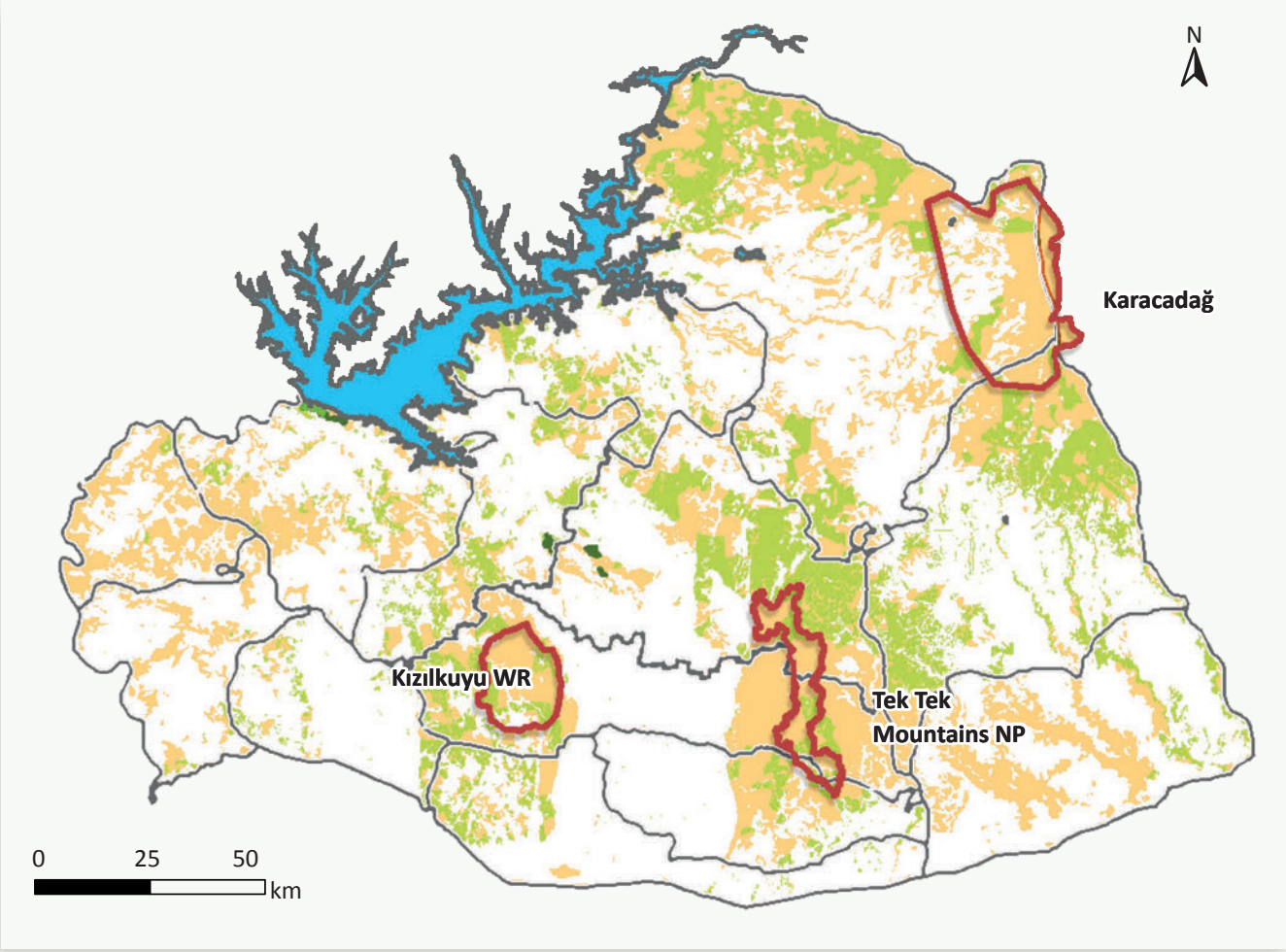

Figure 1. Şanlıurfa Pilot Project Sites of the Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project ©DKM

1. Kızılkuyu Wildlife Reserve

This area, which gained the status of Wildlife Reserve (WR) in 2006, is located to the west of Şanlıurfa city center, on the Şanlıurfa-Gaziantep motorway (Figure 2). Its elevation varies between 440m and 764m. Sheep and goat breeding is common in the area. The number of ovine and bovine animals in the area was over 20,000 by the year 2018 (FAO-Tarım ve Orman Bakanlığı, 2019).

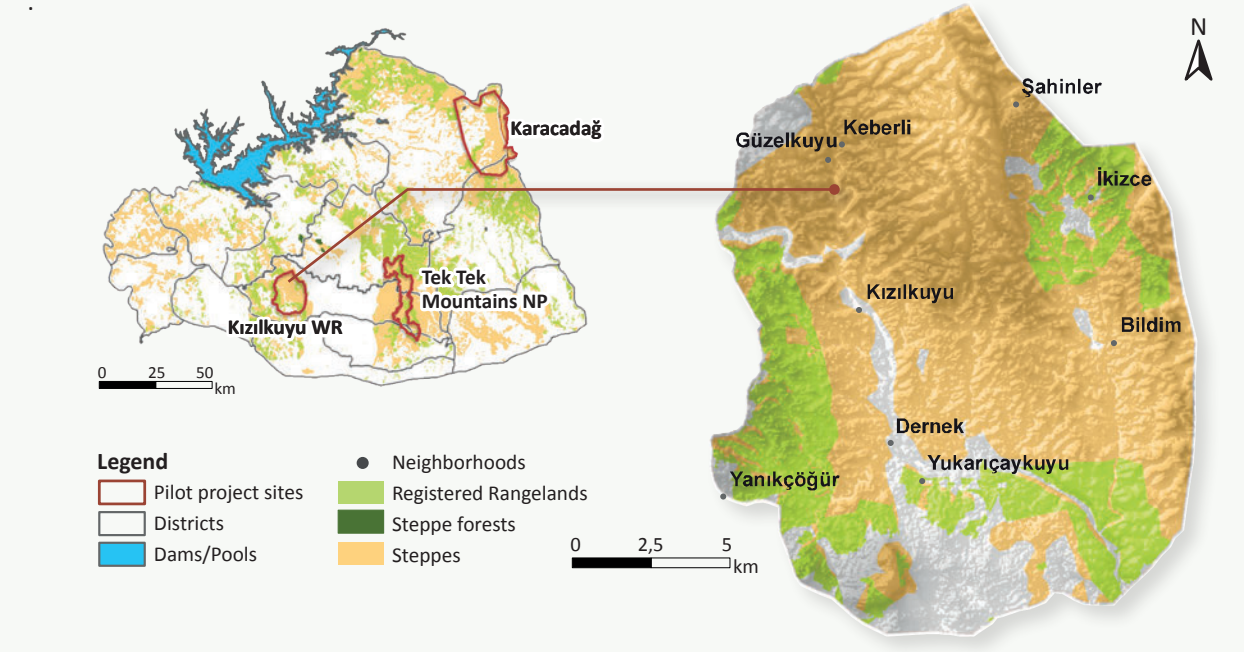

Figure 2. Kızılkuyu Wildlife Reserve Pilot Project Site ©DKM

The borders of Kızılkuyu Wildlife Reserve were revised with the Presidential Decree numbered 2589 dated 01.06.2020, and the new size was published in the Official Gazette numbered 31143 dated 02.06.2020 as 15,337 hectares (Figure 3). According to the revised borders, the elevation of the WR now varies between 440m and 787m. Before the border revision, the protected steppes in the area covered 17,373 ha of land whereas registered rangelands covered 4,613 ha of land. After the revision, the protected steppes now cover 14,236 ha of land and the registered rangelands cover 3,850 ha of land.

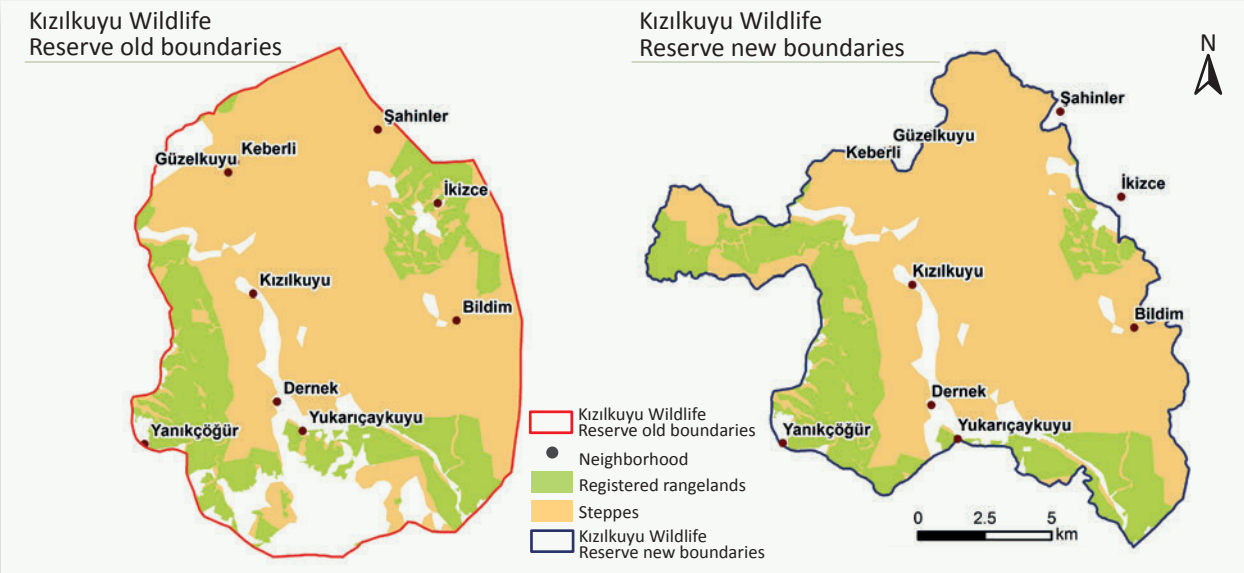

Figure 3. Changes in the borders of Kızılkuyu Wildlife Reserve ©DKM

The predominant habitat in the region is lowland steppes. In this region where the vegetation is considered to be thin especially because of overgrazing, the area between Keberli and Kızılkuyu Villages, to the southeast of Kızılkuyu Village, the rocky areas to the northeast of Bildim village and the stony area around the landfill to the north of İkizce Village assume importance in terms of plant species. As a result of the most recent study carried out in the field, 252 plant taxa, belonging to 44 families and 160 genera, of which two are (*Alkanna trichophila* subsp. *mardinensis, Cicer echinospermum*), endemic to the Southeastern Anatolia Region, and 3 are (*Achillea formosa* subsp. *amanica, Alkanna megacarpa, Campanula strigillosa*) endemic to the country, were identified (FAO-Tarım ve Orman Bakanlığı, 2019).

Arabian sand gazelle (*Gazella marica*) known to exist only in this region in Turkey is one of the most important species in Kızılkuyu WR. Within the boundaries of the region, there is the 75th Year Gazelle Breeding Station where gazelles are bred and released into the nature (FAO-Tarım ve Orman Bakanlığı, 2019). It is estimated that there are approximately 350 gazelles in the area. By 2019, there were 193 gazelles at the Breeding Station. In this region, there are also important species that are endangered on a global scale, including the sociable lapwing (*Vanellus gregarius*), which is critically endangered (CR) at a global scale and uses this area in very large groups during migration. This region also represents an important habitat for other important species such as the great bustard (*Otis tarda*), the pin-tailed sandgrouse (*Pterocles alchata*), the cream-colored courser (*Cursorius cursor*), the Montagu's harrier (*Circus pygargus*) and the European turtle dove (*Streptopelia turtur*). *Isophya sikorai,* an endemic insect species, was observed in this region.

The main factors threatening the nature in the region include overgrazing, irregular grazing, and conversion of steppes into agricultural fields. Monotonous agricultural practices and use of pesticides represent some other agricultural threats. Arabian sand gazelles and ovine animals share rangelands, leading to a competitive environment for food sources, and thus reducing the quality of rangelands. In addition, interaction with local livestock increases the risk of catching infectious diseases. Other threats to gazelles in the region include illegal hunting and poaching of offspring despite devoted efforts by the authorities. Poaching of offspring, depending on its intensity, can lead to the extinction of the already fragile species. Conversion of stony areas, which are considered suitable habitats for reptiles, into agricultural fields causes damage to the habitats of these species. Plant collection is also practiced in the region. Plant collection for domestic or medicinal purposes threatens the populations of plants such as *Ornithogalum narbonense* and *Thymbra spicata* subsp. *spicata*. Manmade developments, including urban encroachment and road construction, also threaten the integrity of habitats in the region. Another threat specific to the region is wastewater discharges from the organized industrial zone located on top of the borders of the Reserve (FAO-Tarım ve Orman Bakanlığı, 2019).

Kızılkuyu Wildlife Reserve

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2. Tek Tek Mountains National Park

Tek Tek Mountains National Park, National Park status of which was declared in 2007, is located 30 km to the east of Harran district center (Figure 4). Its average elevation is 530 m, and its highest point is 801 m. In Tek Tek Mountains National Park, steppe areas cover 18,595 ha of land, and registered rangelands cover 5,877 ha of land.

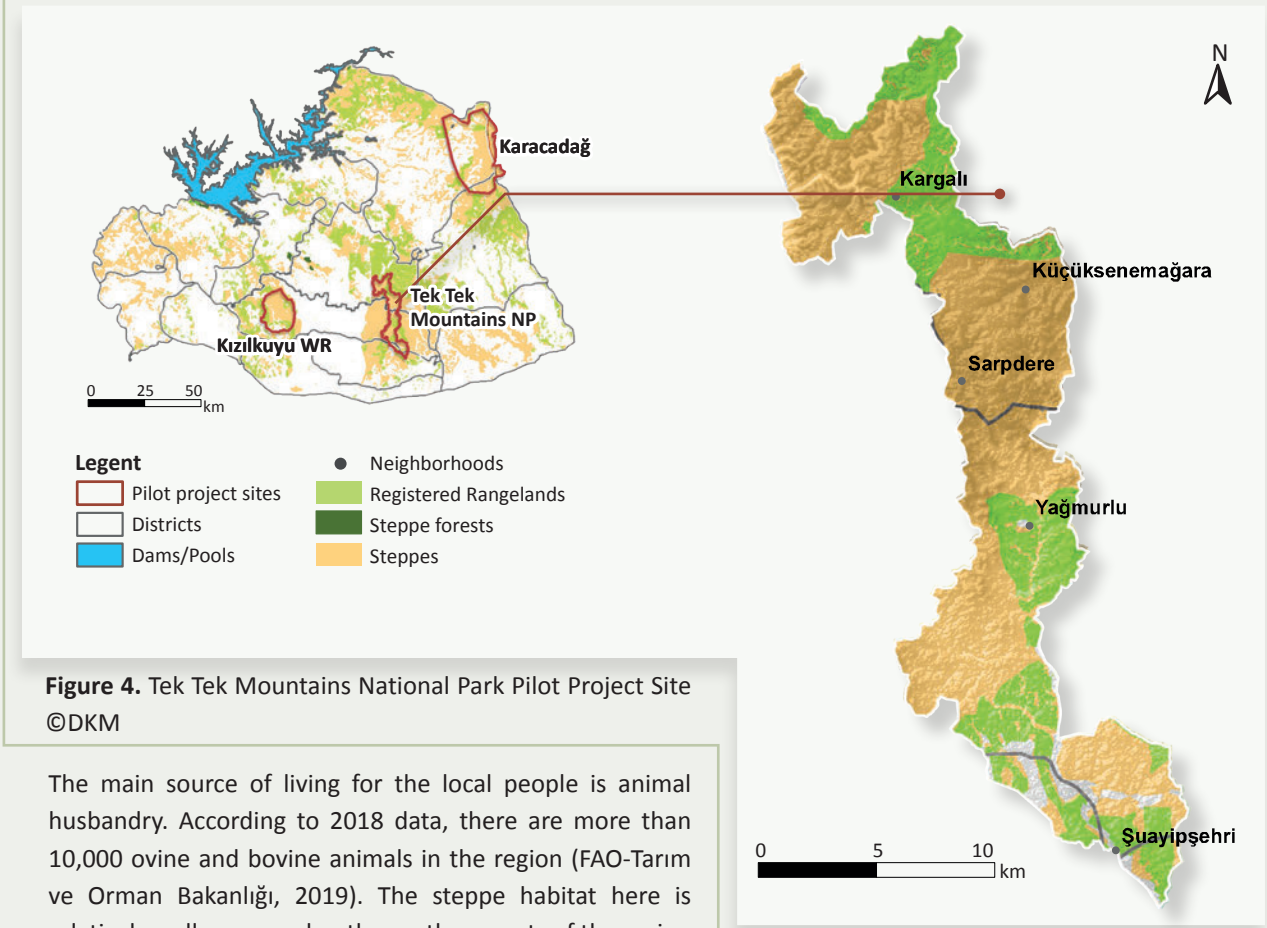

Figure 4. Tek Tek Mountains National Park Pilot Project Site ©DKM

The main source of living for the local people is animal husbandry. According to 2018 data, there are more than 10,000 ovine and bovine animals in the region (FAO-Tarım ve Orman Bakanlığı, 2019). The steppe habitat here is relatively well preserved as the northern parts of the region are closed to grazing.

The main habitat in the area is lowland steppes, but there are also scrublands. Rüstem Valley and Silesor Stream are important areas for biodiversity, especially in terms of plants. In the studies carried out in this region, 254 plant taxa, belonging to 45 families, and 172 genera, of which one (*Centaurea obtusifolia*) is local, one (*Asphodeline damascena* subsp. *gigantea*) is endemic to the Southeastern Anatolia Region, and 4 (*Achillea formosa* subsp. *amanica, Centaurea stapfiana, Malabaila lasiocarpa*, *Scutellaria orientalis* subsp. *Haussknechtii*) are endemic to the country, were identified. *Isophya sikorai*, an endemic insect species, is observed in this region. The desert lark (*Ammomanes deserti*) is an important bird species that uses this region. The African migratory (*Catopsilia florella*) is an important butterfly species observed in Rüstem valley in this region. Terebinth trees (*Pistacia palaestina*) spanning 2,800 hectares of land represent the only pure population of this species in Turkey and are among the most important biological elements that add value to the region (FAO-Tarım ve Orman Bakanlığı, 2019).

The most serious threats to the region include uncontrolled animal husbandry, conversion of land into agricultural fields and quarry operations in nearby areas. Collection of *Ornithogalum orthophyllum* is a particular threat to this plant species. Conversion of land into agricultural fields, monotonous agricultural practices and use of pesticides represent some of the agricultural threats in the region, albeit with lower severity compared to other regions. Wild animal deaths due to vehicle collisions are also significant here due to the region's closeness to main roads. Despite devoted efforts by the authorities, poaching stands as a considerable threat in the region (FAO-Tarım ve Orman Bakanlığı, 2019).

3. Karacadağ Steppes

Karacadağ Steppes, one of the 305 Key Biodiversity Areas in Turkey, does not currently hold a protection status (Figure 5). The area, which is 35 km to the east of Siverek district, is located at the Şanlıurfa-Diyarbakır-Mardin border and a small part of it is located within the provincial borders of Diyarbakır and Mardin. Karacadağ, which has the geomorphology of an extinct volcano, is usually covered with snow between December and March. The elevation varies between 1,000 m and 1,981 m. The main source of living for the local people is animal husbandry. According to 2018 data, there are about 280,000 ovine and bovine animals in the region (FAO-Tarım ve Orman Bakanlığı, 2019). In addition to the inhabitants of the region, nomads coming from the surrounding areas use the area intensively for grazing purposes and the number of grazing animals increases even more when nomads arrive.

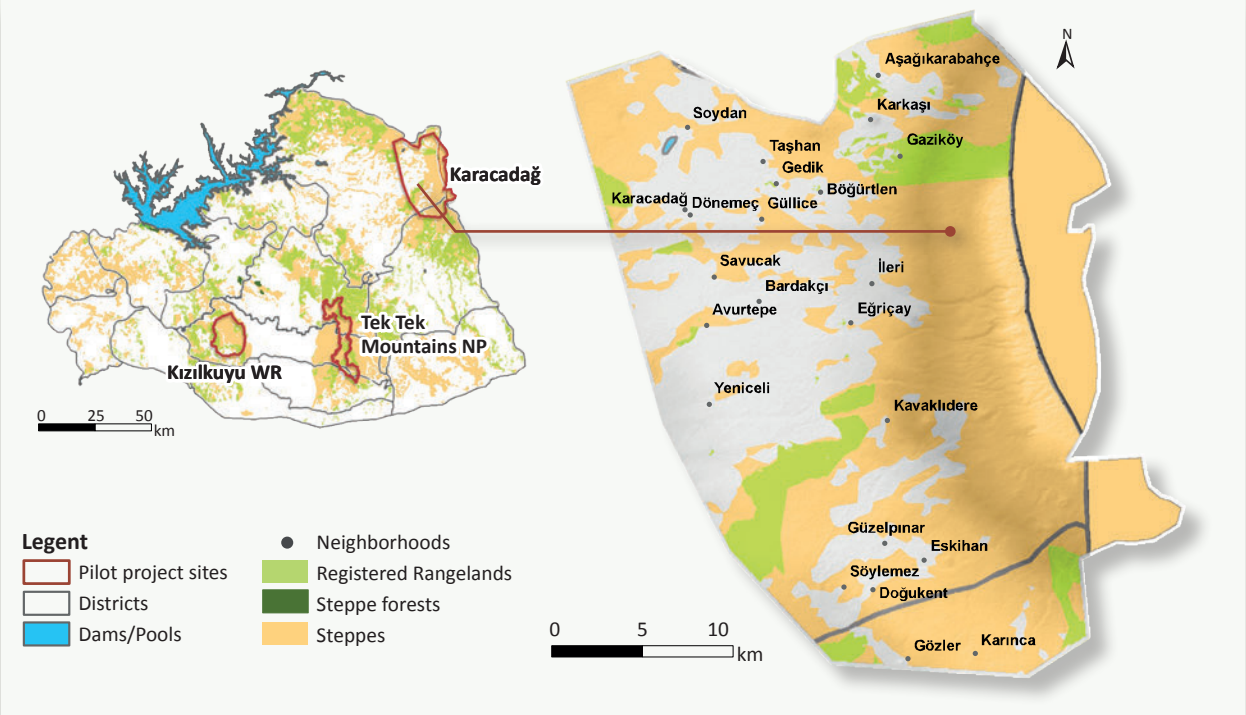

Figure 5. Karacadağ Steppes Pilot Project Site ©DKM

Karacadağ Steppes project pilot site has a size of 64,000 ha, and steppes in this region cover 37,789 ha of land whereas registered rangelands cover an area of 5,482 ha. Basically, there are lowland steppes and high mountain steppes in the region. The prominent areas for plant species are Karabahçe mountain road, Kollubaba Hill and Simo Stream. Biodiversity in Karacadağ is under substantial grazing pressure. In the region, 332 plant taxa, belonging to 44 different families, and 199 different genera were identified. Three of these (*Hesperis hedgei, Lathyrus trachycarpus* and *Paracaryum kurdistanicum*) are endemic to Karacadağ. In addition, in the higher parts of Karacadağ, there are suitable habitats for *Isophya sikorai* and *Bradyporus karabagi*, which are endemic grasshopper species. In the afforestation area, *Paranothrotes opacus rectus* species, a rare grasshopper species, was identified. *Saga ephippigera syriaca,* which can be considered an indicator species for steppes, was also reported here as in the other two pilot sites. Of bird species, the great bustard (*Otis tarda*) and the spectacled warbler (*Sylvia conspicillata*) are important species for the region (FAO-Tarım ve Orman Bakanlığı, 2019).

Triticum dicoccum

Another feature that makes Karacadağ important is that ancestral wheat was identified in this region and it is one of the first places where agriculture started.

The most serious threat to the region is excessive and uncontrolled grazing. Due to overgrazing, vegetation dominated by tragacanth deteriorated, vegetation formed by the companion species weakened or disappeared in patches. Another severe threat is the pollution of underground and surface waters from animal husbandry and pesticide use. Conversion of lands into agricultural fields by removal of stone-rocks, urban encroachment and winter tourism are also important threats. Removal of stones/rocks, which cover a substantial part of the region and provide important habitats for many reptilian species, for conversion into agricultural fields is an important threat to the reptilian species existing in the region. Other threats to the region include local people uprooting tragacanth plants and cutting oaks for fuelwood. Collection of *Eremurus spectabilis*, *Ferula orientalis*, *Fritillaria persica* and *Ornithogalum* spp. for domestic and ornamental purposes is another threat induced by local people. In addition to collection of plants, collection of frogs is also reported in this region. Animal deaths as a result of illegal hunting and vehicle collisions are also considerable.


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1. Steppes of Turkey

Steppes are arid ecosystems dominated by grasses, where trees and shrubs are rare and precipitation is low. Steppes in Turkey represent the dominant vegetation in the Southeastern, Eastern and Central Anatolia Regions. All steppes of Turkey are in the Irano-Turanian phytogeography. There are 35 phytogeographical regions in the world (Takhtajan, 1986). The Irano-Turanian phytogeographical region extends from the Central Asian steppes in the east to the Inner Aegean in the west; the northern part of Syria, the parts of Iran outside the Caspian coast, the South Russian deserts, Karakorum, Mongolia and Tibet Plateau also fall within this phytogeographical region. Takhtajan (1986) divides steppes of turkey into Central Anatolia, Eastern Anatolia-Iran and Mesopotamian steppes.

Steppes of the Holarctic phytogeographical region, which is a colder region, are located in the south of Eastern Europe, Ukraine and Russia. The word “steppe”, which is “bozkır” in Turkish, is originally a Russian word.

Steppes of Turkey are defined as steppes of anthropogenic character commonly, in other words, they are believed to have emerged as a result of human-induced destruction of forest cover (Louis, 1939; Walter, 1956; Ketenoğlu et al., 2014). The steppes in the Salt Lake Basin and the Southeastern Anatolian plain are regarded as steppes of non-anthropogenic character. On the other hand, according to Schiechtl et al. (1965), Mayer and Aksoy (1986) and Çolak and Rotherman (2006), steppes of non-anthropogenic character include the inner parts of Thrace, a larger area around the Salt Lake Basin, the Malatya Plain, the Iğdır Plain and the Bulanık Plain.

The period when the steppes began to undergo a great change because of human influence is thought to be around 3000 BC. In addition to destruction for agriculture, animal husbandry, shelter and settlement, it can be assumed that the great wars in Anatolia played an important role in this change. Strabon suggests that the wars of the Hittites (2000-1200 BC), the wars between the Persians and the Greeks, the invasion of Anatolia by the Romans had an important role in the transformation of vegetation of Central Anatolia into steppes (63/64 BC – 24 AD). According to Strabo, Roman commanders burned a lot of forests when occupying Anatolia. According to Herodotus, the passage of Xerxes II with his army of 1 million people through Anatolia to invade Greece had a great effect. Likewise, the huge army that Alexander the Great formed for the Indian expedition passed through by trampling the Anatolian lands and plants.

During this time, the forest communities dominated by black pine (*Pinus nigra*) in Central Anatolia started to disappear or deteriorate (Çetik and Vural, 1979). According to Akman (1974), destroyed black pine (*Pinus nigra*) forests left their place to a sparse forest cover consisting of shrubs such as downy oak (*Quercus pubescens*), hawthorn (*Crataegus* spp.), wild pear tree (*Pyrus elaeagnifolia*) and juniper (*Juniperus excelsa* ve *J. oxycedrus*.) and eventually to steppes with further degradation (Figure 6). Oak communities in the Central Anatolia Region cover an area over 490,000 hectares.

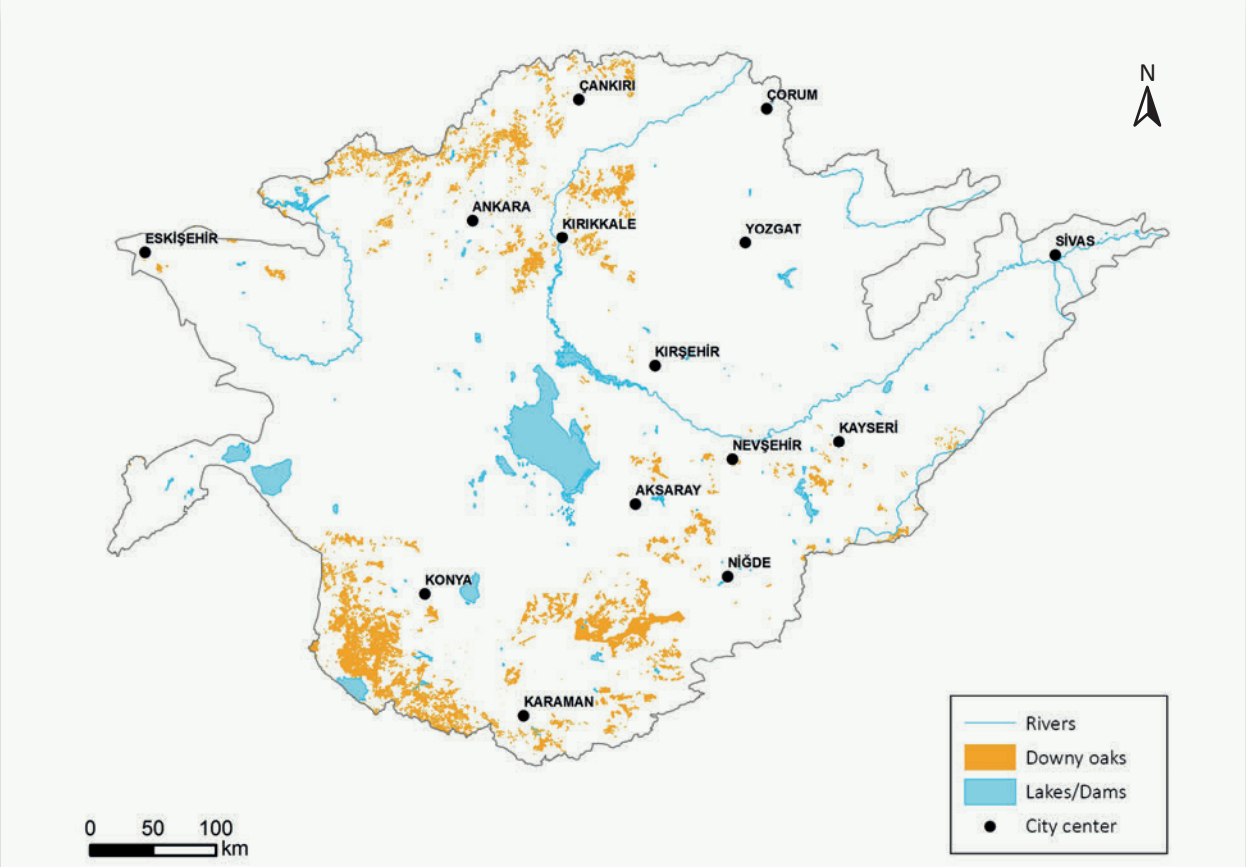

Figure 6. The distribution of downy oaks in the Central Anatolia Region was used as an indicator in the past to determine the distribution of forests and steppes of anthropogenic character. ©DKM

In order to explain the distribution of existing forest and steppe cover, it is necessary to investigate the long-term climate change. It is assumed that the Würmian Ice Age played an important role in the formation of vast forests covering the arid parts of Anatolia, especially the Central Anatolian steppes. During the Würmian Ice Age, which is believed to have happened 115,000 to 11,700 years ago, average temperatures presumably dropped by 10 °C. The cold semi-desert formations in Central Anatolia (Ray and Adams, 2001) started to leave their place to forests during the warm-up period as a result of the end of the ice age approximately 10,000 years ago (Bottema et al., 1993). Approximately 5,000 years ago is indicated as the period when the process of forest destruction and steppe formation accelerated (Louis, 1939).

It should also be remembered that the decrease in the regenerative capacity of the forests due to droughts experienced in Anatolia also played a role in the aforementioned forest destruction. Considering the current climatic conditions, we can assume that it will not be possible to grow forests naturally in many areas classified as steppes of anthropogenic character (Figure 7 and Figure 8).

Current studies and findings show that natural steppes actually spread over a wider area than previous assumptions indicated. In order to distinguish steppes of anthropogenic character from natural steppes, it is necessary to look at the distribution of forest remains, individual oaks (*Quercus* spp.) and black pines (*Pinus nigra*), despecially in Central Anatolia, and uncover the effects of drought experienced in the last 5,000-6,000 years on the regenerative capacity of forests. While there are many scientific studies examining the Anatolian steppes and human interaction, Hikmet Birand's book titled "Alıç Ağacı ile Sohbetler (Conversations with the Hawthorn Tree)" (1968) has a special place as it handles this subject in a very wide framework and explains it in a flowing, chatty style.

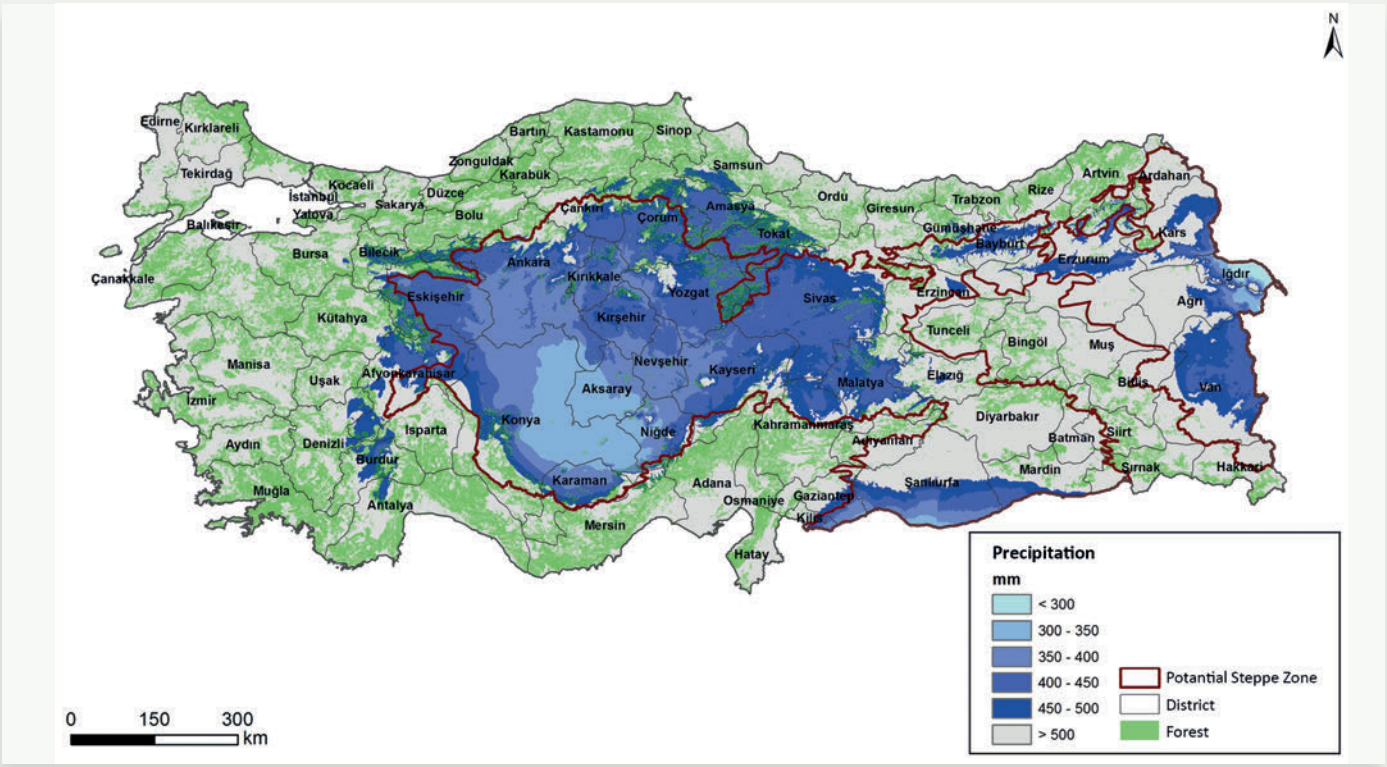

Figure 7. In relation to precipitation, distribution of current forests and the potential steppe zone (approximately 33.5 million ha)[1] ©DKM

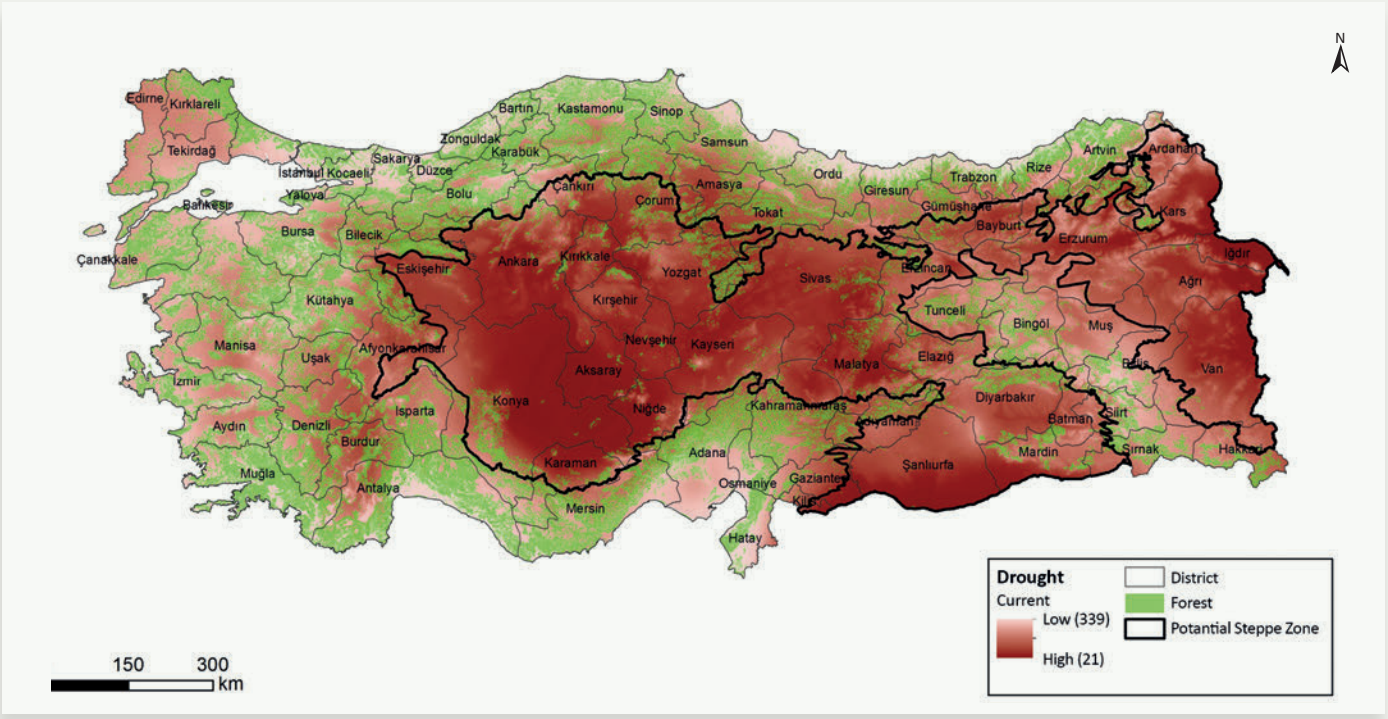

Figure 8. Using the Emberger Aridity Index[2]; today's drought values, distribution of forests and the potential steppe zone (approximately 33.5 million ha)[3] ©DKM

1. See Section 1.2 for details on the potential steppe zone.
2. In the figure, the aridity value is given on scale of the Emberger Aridity Index, and low values of the index indicate high drought, while high values indicate low drought.
3. See Section 1.2 for details on the potential steppe zone.

1.1. Classification of the Steppes of Turkey

Different approaches are used to identify and classify the steppes of Turkey. Commonly used classifications are as follows:

1. By Topographic Characteristics:

The steppe vegetation in Turkey varies depending on the elevation.

- Lowland Steppes: Steppes in flatlands or slightly sloping lands
- Low Mountain Steppes: Steppes on slopes generally at 800 to 1,600 meters of altitude
- High Mountain Steppes: Steppes generally above 1,600 meters of altitude

2. By Physiognomic Characteristics:

- Malacophyll Steppes: Steppes dominated by broad- and soft-leaved herbaceous plants (Walter, 1956).
- Grass (Poaceae-Gramineae) Steppes: Steppes dominated by the Poaceae.
- Tragacanth Steppes: Steppes dominated by cushion-forming shrubs such as milkvetch (*Astragalus*), and prickly thrift (*Acantholimon*).

3. By Geographical Distribution:

- The Central Anatolian Steppes
- The Eastern Anatolian Steppes
- The Southeastern Anatolian Steppes

Box 1. The Steppes of Turkey According to the Geographical Regions

We think that providing information about the floristic features of Turkey's steppes according to geographical regions is the easiest method to follow:

Steppes of Central Anatolia:

Grasses such as *Bromus tomentollus*, *Festuca valeiaca*, *Rostraria cristata*, *Stipa lessingiana* and *Stipa holosericea* and cushion-forming chamaephytes such as *Astragalus angustifolius*, *Astragalus microcephalus* and *Onobrychis cornuta* are dominant species in the Central Anatolian Steppes. In the more arid southern regions, especially in Salt Lake Basin, the plants from the families of Amaranthaceae and Plumbaginaceae are common. Mediterranean and Irano-Turanian endemics are seen abundantly in Central Anatolia. Especially in Çankırı, Sivas and Ankara (between Beypazarı-Sivrihisar), there are many narrow-ranged endemics in gypsum-bearing and marly soils. Moreover, the steppes in the Mediterranean mountains above 1,500 m are also rich in species specific to the Mediterranean phytogeographical region. Species that can be listed for this region are *Festuca cyllenica*, *Helictotrichon pubescens*, *Marrubium astracanicum*, *Marrubium lutescens*, *Tanacetum armenum*, *Helicrysum plicatum*, *Chaaecytisus ericarpus*, *Astragalus angustifolius*, *Astragalus microcephalus*, and *Onobrychis cornuta*.

The first scientist to research the halophylic steppes in the Central Anatolia Region was Birand (1961). His research led to the finding of the following important species in the halophilic steppes: *Champhorosma monspeliaca*, *Pucinellia convulata*, *Petrosimonia brachiata*, *Aeluropus littoralis*, *Halimione verrucifera* and *Frankenia hirsuta*.

The steppe communities of the Central Anatolia belong to the *Astragalo microcephali - Brometea tomentelli* (Quézel, 1973) class, *Onobrychido armenea-Thymetalia leucostomi* (Akman te al., 1985) order in terms of plant sociology.

Steppe Vegetation of Eastern Anatolia:

Average altitude in Eastern Anatolia is over 1,400 m. Steppes in this region, where precipitation is slightly higher than in Central Anatolia, are used extensively for animal husbandry. Animal husbandry, which relies on seasonal migration in large herds, is also an important economic activity for the country.

The main species in the high mountain steppes of the Eastern Anatolia are as follows: *Festuca cyllenica*, *Agrostris stolonifera*, *Alopecurua aequalis*, *Bromus pumilio*, *Dactylis glomerata*, *Gaudiniopsis macra*, *Phleum pratense*, *Poa nemoralis*, *Poa bulbosa, Poa pratensis*, *Acanthus dioscoridis*, *Aster alpinus*, *Helichrysum plicatum*, *Myosotis lithospermifolia*, *Sibbaldia parviflora*, *Alchemilla caucasica*, *Anthemis cretica*, *Draba brunifolia*, *Gentiana verna*, *Minuartia anatolica*.

In the slightly sloping and bottom lands where groundwater is higher and alluvial-hydromorph soil is dominant are mountain meadows dominated by mesophilous species, with a coverage approaching 100%. The main species of these habitats can be listed as follows: *Anthemis cretica*, *Bromus japonicus*, *Centaurea depressa*, *Dianthus calocephalus*, *Eromopoa persica*, *Erigeron acris*, *Filago arvensis*, *Filipendula vulgaris*, *Gladiolus atroviolaceus*, *Lotus corniculatus*, *Medicago x varia*, *Onobrychis stenostachya*, *Papaver orientale*, *Papaver rhoeas*, *Phleum montanum*, *Rumex acetosa*, *Rumex alpinus*, *Sanguisorba minor*, *Salvia verticillata*, *Trifolium repens*, *Trifolium pratense* and *Vicia cracca*.

The steppe communities of the Eastern Anatolia belong to the *Astragalo microcephali - Brometea tomentelli* (Quézel, 1973) class, *Festoca oreophilae-Veronicetella orientalis* (Hamzaoğlu, 2006) order in terms of plant sociology.

Steppes of Southeastern Anatolia:

The steppes of Southeastern Anatolia Region, also called the lowland steppes, are located in the north-end of the Syrian-Middle East Desert. This region has hosted many civilizations since the Sumerians and is the place where agriculture was first practiced, which in a way facilitated destruction of vegetation to a great extent. Artemisia steppes, which are normally expected to cover large areas, are largely damaged in this region. A significant part of the steppes of the region was converted into agricultural fields, and the species composition of the remaining parts was altered by overgrazing. The main species of these steppes can be listed as follows: *Gundelia tournefortii*, *Eryngium campestre*, *Centaurea virgata*, *Scutellaria orientalis*, *Phlomis kurdica*, *Aegilops triuncialis*, *Avena sterilis*, *Xeranthemum annuum* and *Phlomis bruguieri*.

The steppe communities of the Southeastern Anatolia belong to the *Astragalo microcephali - Brometea tomentelli* (Quézel, 1973) class in terms of plant sociology.

Box 2. Classifying and Mapping Steppes

According to the basic physiognomic classification systems used in mapping studies (di Gregorio, 2005; UNESCO, 1973; Grossman, 1998), the dominant cover should consist of herbaceous plants and the ratio of trees or shrubs should be less than 20-25% in the steppes that fall within the "Herbaceous Vegetation" class. Many steppe areas of Turkey, except ones in the Southeastern Anatolia and Salt Lake Basin, are intertwined with trees and shrubs. This type of area is called steppes with trees. In addition, areas with sparse or closed forests in ecological regions dominated by steppes are called steppe forest. Tree cover in these areas is more than 20-25%.

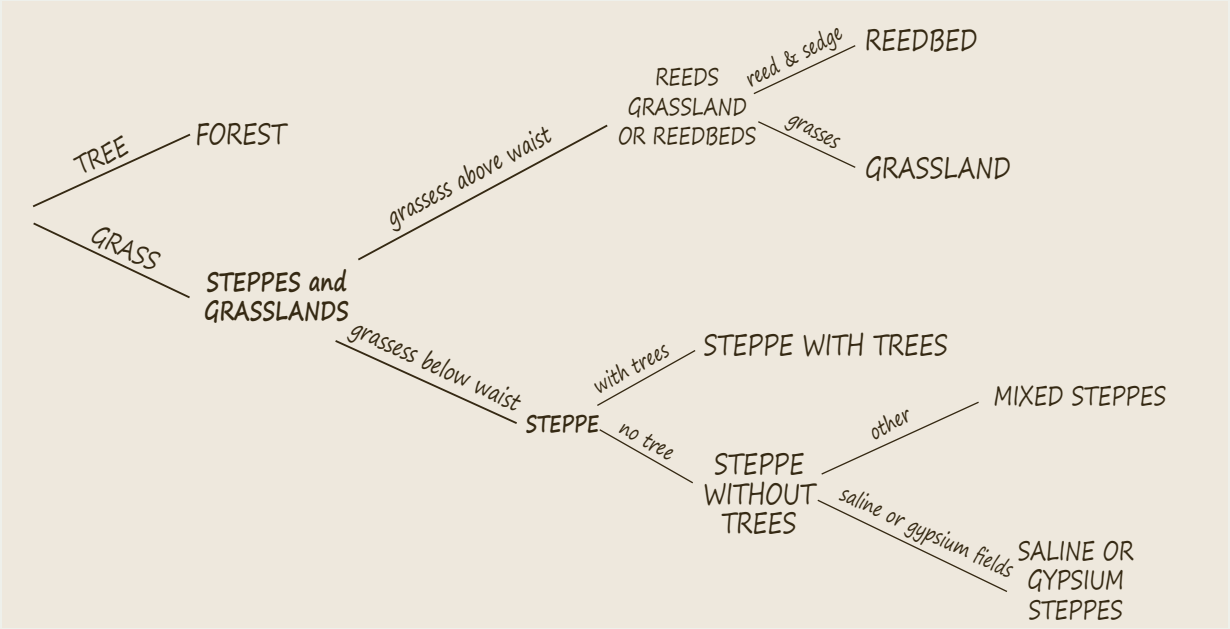

Figure 9. A simple diagram showing the classification of steppes according to their physiognomic and other characteristics ©DKM

Box 3. What is the difference between steppe, meadow and rangeland?

Steppe	Meadow	Rangeland
- A type of land cover - Dominated by xerophytic, short herbaceous plants - Distributed in the temperate zone - 300-500 mm of annual average precipitation - Low levels of groundwater - Few woody plants	- A type of land cover - Dominated by moist, tall herbaceous plants - Distributed in the temperate zone - Higher precipitation than in steppes - High levels of groundwater - Few woody plants	- A type of land use - Allocated for grazing animals and benefiting from its grasses and used for these purposes since ancient times

1.2. Determining the Borders of Turkey's Steppe Zone

Two separate studies were carried out recently with a view to determining the steppe borders of Turkey (the region covering areas which can house steppe ecosystems):

1. The study coordinated by Doğa Koruma Merkezi (Figure 10; Ambarlı et al., 2016),
2. The study carried out within the scope of 'Ecosystem-Based Adaptation (EBA) to Climate Change in Steppe Ecosystems Project' conducted cooperatively by the Ministry of Agriculture and Forestry and the Food and Agriculture Organization of the United Nations between the years of 2017 and 2019 (Figure 11).

The potential steppe zones (the region covering areas which can house steppe ecosystems) on which these two studies were based differed from each other. In the first study, the Anatolian Biogeography boundaries, one of the biogeographic regions produced by the European Environment Agency (2015), were taken as a basis in determining the region. In addition, drought classes (Dufour-Dror and Ertaş, 2004) were included. As for the indicators, tree species such as Turkish pine (*Pinus brutia*), Scots pine (*Pinus sylvestris*), beech (*Fagus orientalis*), spruce (*Picea orientalis*), cedar (*Cedrus libani*) and fir (*Abies* spp.), with a distribution that did not overlap with the steppes, were used. Areas where these species were distributed were not included in the region. In this stage, the stand data of the General Directorate of Forestry were used. Finally, considering the distribution of herbaceous plant species, which are the indicators of the steppe ecosystems, the region with steppes and steppe forests was determined. According to this study, the potential steppe zone covers approximately 33.5 million ha of land (Figure 10).

The second study was carried out within the scope of the "Ecosystem-Based Adaptation (EBA) to Climate Change in Steppe Ecosystems Project" conducted jointly by the Ministry of Agriculture and Forestry and the Food and Agriculture Organization of the United Nations between the years of 2017 and 2019 (Avcıoğlu-Çokçalışkan et al., 2018). In this project, stand data, surface temperature, drought index, soil structure, elevation, geological formations, vegetation indices such as NDVI (Normalized Difference Vegetation Index) and EVI (Enhanced Vegetation Index) were used to determine the potential steppe zone. Using the potential vegetation approach in Turkey (with the help of variables such as climate, soil, and topography), the region covering areas that could house steppe ecosystems was determined. According to this study, the potential steppe zone covers approximately 33.5 million ha of land (Figure 11).

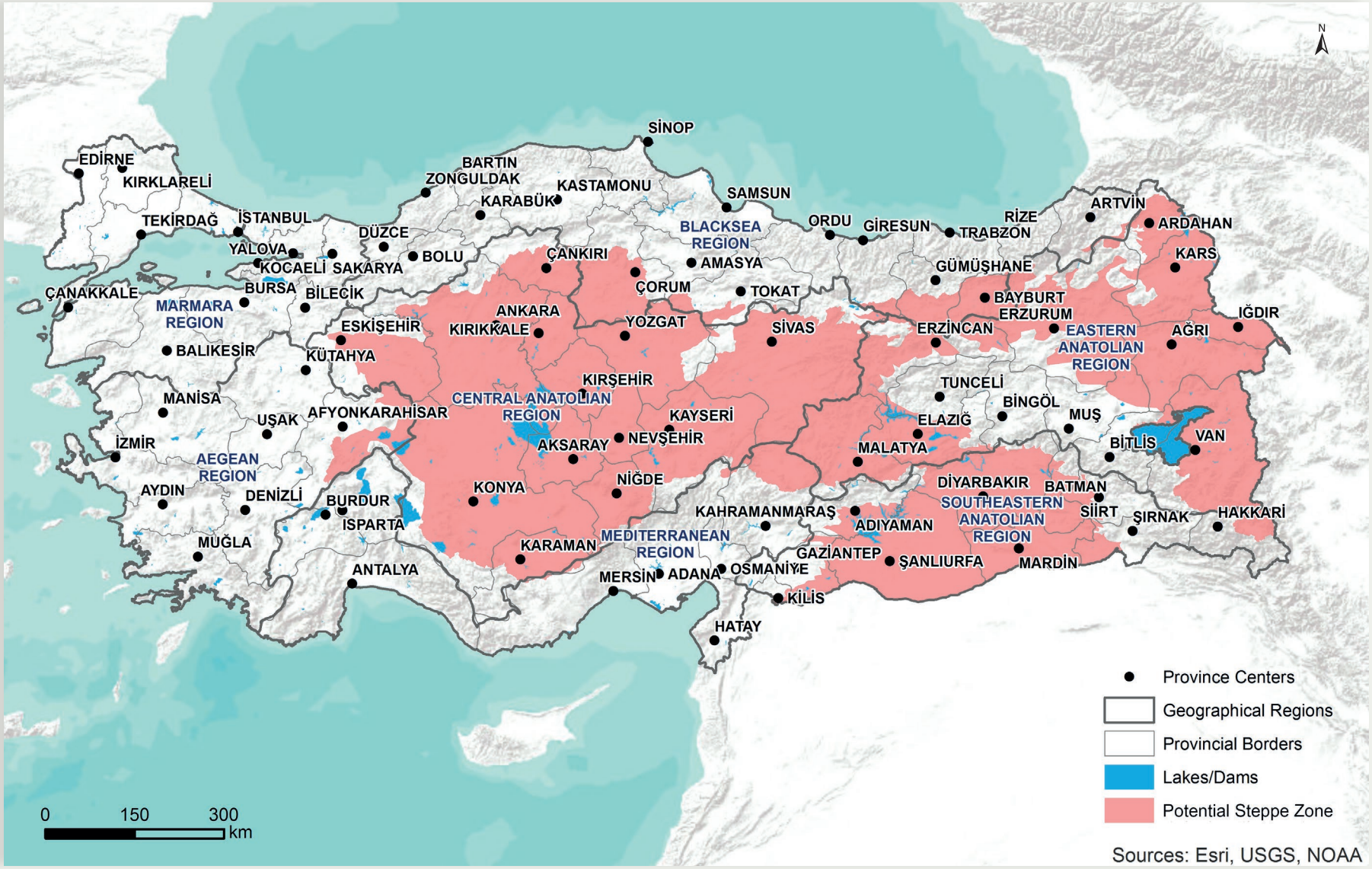

Figure 10. Turkey's potential steppe zone according to the study under the coordination of Doğa Koruma Merkezi (Ambarlı et al., 2016) ©DKM

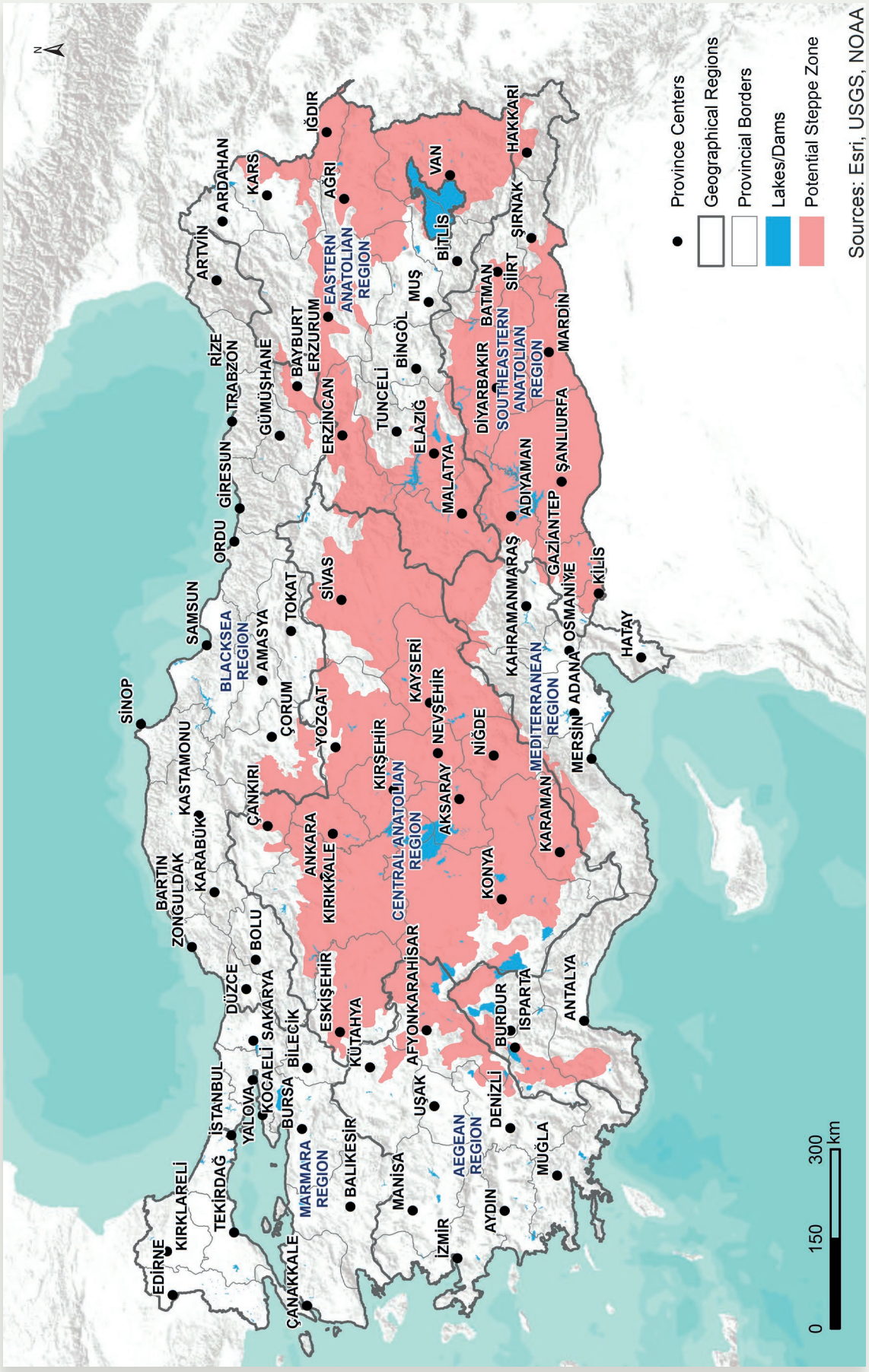

Figure 11. Turkey's potential steppe zone according to EBA Project ©DKM

1.3. Mapping of Turkey's Steppes

Distribution of steppe areas and steppe forests of Turkey was reconsidered by Doğa Koruma Merkezi as part of Strategy development efforts in 2020. Accordingly, necessary information was produced based on the steppe map produced under the coordination of Doğa Koruma Merkezi (Ambarlı et al., 2016). The zone potentially containing steppes and steppe forests (areas that form sparse or closed forests in ecological regions dominated by steppes) ecosystems spanned an area of approximately 33.5 million hectares in Turkey. This zone is also the region covering areas which can host steppe ecosystems according to the potential vegetation approach (with the help of variables such as climate, soil, and topography). In this region, there are many different land use types (e.g., agricultural fields, settlements, mines, etc.) in addition to natural steppe areas and steppe forests. In the study by Doğa Koruma Merkezi conducted to determine the distribution of the existing steppe areas and steppe forests in this region, steppe areas were considered to be areas where herbaceous vegetation was dominant and tree and shrub cover was low; additionally, steppe forests were considered to be transitional zones representing transition from areas dominated by forests to steppes.

For determining the current distribution of steppe and steppe forest ecosystems, forest management plans, stand data, registered rangeland data (May 2020 data) and CORINE Land Use and Land Cover data (2018) were used as a basis. The definition of a rangeland refers to a land use type, but rangelands are also steppe areas when it comes to vegetation classification. Therefore, rangeland data were also used when evaluating the steppe vegetation within the potential steppe zone.

Sentinel-2 satellite images (images between the years of 2016-2019) were used in cases where forest management plan data were not up-to-date for some Forest Management Directorates or it was not possible to directly determine the steppe areas from some composite land classes in CORINE 2018 data. From satellite images, NDVI[4] (Normalized Difference Vegetation Index, Rouse et al., 1974), an indicator of healthy vegetation and efficient photosynthesis function, was calculated. Table 1 gives details about the base data used to determine steppe and steppe forest ecosystems. According to these analyses, there are approximately 17 million ha of steppe area and 552,334 ha of steppe forest within the potential steppe zone. Spatial representation of steppe areas and steppe forests is given in Figure 12.

Table 1. Data used to determine the steppe and steppe forest ecosystems and their details

Steppes	Proprietary Rangelands
	Rangelands (231), Natural Meadows (321), Bare Rocks (332), Sparse Vegetation Areas (333) in CORINE (2018) Land Use and Land Cover data
	Areas with NDVI value <0.3 among Agricultural Fields Mixed with Natural Vegetation (243) in CORINE (2018) Land Use and Land Cover data
	Areas with NDVI value <0.5 among Plant Change Areas (324) in CORINE (2018) Land Use and Land Cover data
	Areas with NDVI value <0.5 among forests with cover less than 40% according to forest management plans
Steppe forests	Forest polygons with cover higher than 40% (2 and 3 closed) according to forest management plans
	Areas with NDVI value >0.5 among forests with cover less than 40% according to forest management plans
	Areas with NDVI value >0.5 among Plant Change Areas (324) and Sclerophile Vegetation areas (323) in CORINE (2018) Land Use and Land Cover data

4. The images between May 1 and June 15, 2016-2017-2018 and 2019 of Sentinel-2 satellite images were filtered and passed through a cloud filter. For each image, the NDVI Index and the index mean were calculated:
B4: Red band B8: Near-infrared band
NDVI=((B8-B4))/((B8+B4))

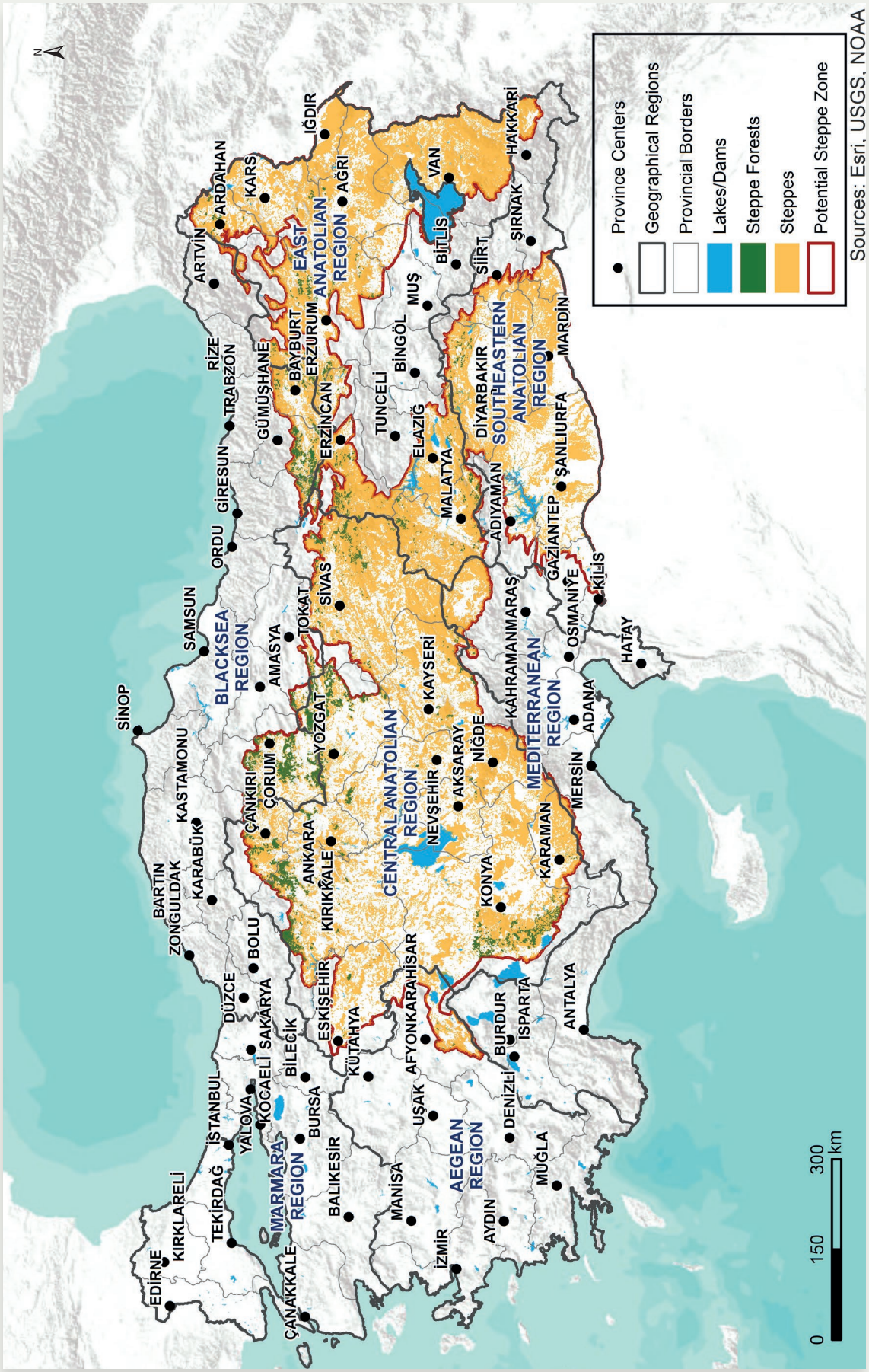

Figure 12. Distribution of steppe areas and steppe forests in the potential steppe zone (Source: Doğa Koruma Merkezi)


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2. Overview of Şanlıurfa Steppe Ecosystems

Şanlıurfa province is the first place to come to mind when steppes are considered. Şanlıurfa's natural vegetation with its vast plains, semi-arid climate and flat topographic structure consists largely of steppes. In Şanlıurfa, which is a province located in the most arid and hottest region of Turkey, the steppe vegetation becomes predominant due to low precipitation.

2.1. Şanlıurfa Steppes

Communities formed by plants that are physiognomically similar to each other are called formation. One of the formations with clear distinctness in their floristic composition and climate and land conditions is the grass formation (İnandık, 1969). This formation is defined in various ways depending on its floristic composition, including steppe, steppes with trees, desert, and tundra.

Grass formation that relies on seasonal precipitation in the temperature zone where the precipitation is not sufficient for tree growth, and which generally dries up in summer, is called steppe formation. No trees are found in the steppe areas where precipitation is less than 250-300 mm. The steppe areas of Anatolia span large lands in Central Anatolia, Eastern Anatolia and Southeastern Anatolia.

In Southeastern Anatolia, there is a degraded type of Mediterranean climate. This climate type is a continental form of the Mediterranean climate and gradually transitions to a desert climate towards the south and southeast in the region. While the northern and northeastern borders are mountainous in terms of topography, the remaining parts consist of medium-height mountains and hills similar to a plateau. Since Southeastern Anatolia receives low precipitation except for its mountainous eastern and northeastern parts and is composed of permeable rocks (limestone and basalt), its surface waters almost disappear in the dry season (Ardel, 1961).

The Fertile Crescent Region is an important region where hunter-gatherer human communities moved into a settled life and started to practice agriculture (Figure 13). The Southeastern Anatolian steppe areas, including Şanlıurfa, form the northern tip of the Fertile Crescent, starting from the Persian Gulf, extending to the Taurus foothills and reaching Israel via the Amanos and Lebanon road by drawing the Taurus arc. The wild ancestors of many grains, especially wheat and barley, represent natural plant species of the Southeastern Anatolia Region located in the Fertile Crescent (Özkan et al., 2002; Lev-Yadun et al., 2000; Nesbit and Samuel, 1998, Karagöz et al., 1998; 2009). The Mardin-Viranşehir-Urfa line, which is located to the south of this plateau where wide plains, low and flat steppes follow each other, is the most arid part of these steppes (Sözer, 1984; Figure 14). In the province of Şanlıurfa, the steppe areas cover 756,098 ha of land and the steppe forests cover 421 ha of land.

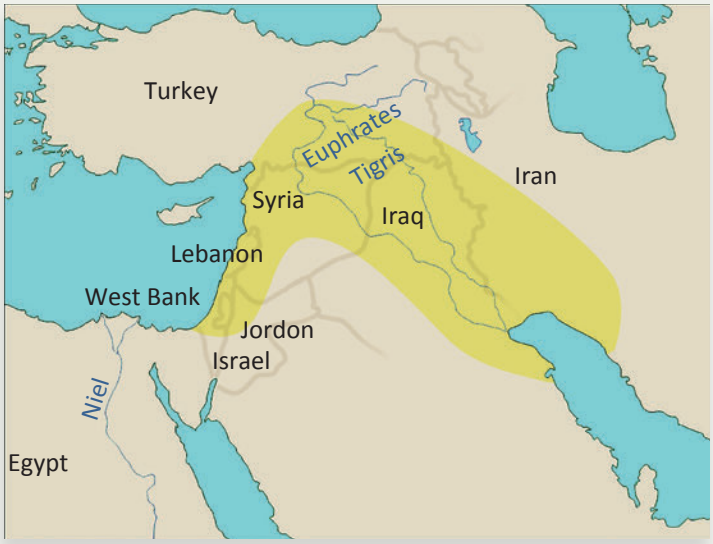

Figure 13. Map of the Fertile Crescent Region ©DKM

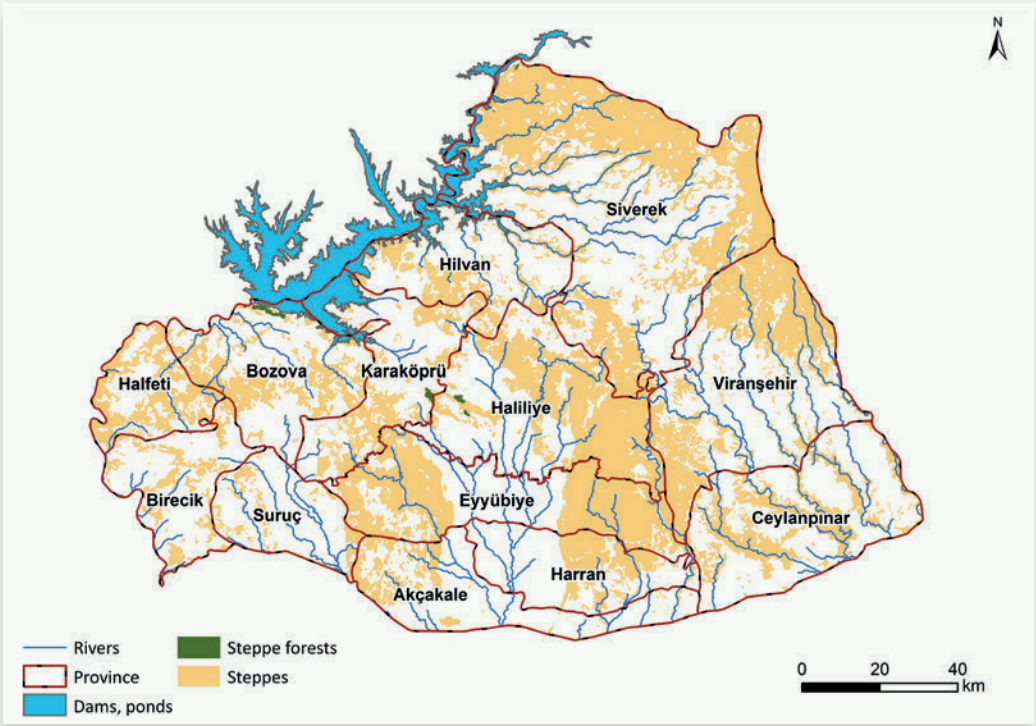

Figure 14. Steppe areas within the borders Şanlıurfa province ©DKM

The most important factor that causes formation of the steppes in Southeastern Anatolia, including Şanlıurfa, is severe drought in the summer and autumn. The steppes of the Southeastern Anatolia Region do not have a rich floristic structure in comparison to the steppes of the Central and Eastern Anatolia Regions. This is attributed to the 6-7-month-long droughts. As in other steppes of Anatolia, in Şanlıurfa steppes, secondary vegetation replaces primary vegetation as a result of degradation by anthropogenic (human-induced) factors such as overgrazing, creating new agricultural fields, and fuelwood supply.

Astragalus plumosus
(Milkvetch)

Phlomis bruguieri
(Jerusalem sage)

Onobrychis megataphros
(Sainfoin)

In Şanlıurfa, which has semi-arid Mediterranean climate, the vegetation is generally dominated by steppes. In this steppe ecosystem, there are also streams that were once active and have only a temporary water flow during the rainy seasons today. The topographic structure of Şanlıurfa province is quite flat (no geographical isolation and elevation differences) and accordingly, some other ecological factors had been more influential in the formation of Şanlıurfa steppe vegetation. In this regard, unique plant species and plant communities formed by these species, which evolved under the ecological conditions created by climatic and edaphic factors, are noteworthy in the steppes of Şanlıurfa.

The floristic composition (biodiversity) of the steppe vegetation here is not as rich as in other steppe areas of Anatolia. This can be attributed to the effects of climatic conditions caused by severe droughts, and degradation of the natural structure due to the fact that most of these steppe areas are very suitable for agricultural practices.

In Şanlıurfa, which is located in the most arid and the hottest region of Turkey, the steppe vegetation is generally observed on the calcareous soil structure due to low precipitation (save for the volcanic Karacadağ).

Plant species composition of Şanlıurfa steppes, as in many other steppes, generally consists of xerophyte plants. These plants blossom for a short time due to high temperatures and then dry out quickly creating the traditional appearance of steppes.

Due to the climatic conditions and especially temperatures in Şanlıurfa, steppes in this province exhibit the predominance of *Astragalus*, *Verbascum*, *Phlomis*, *Centaurea*, *Onobrychis*, *Onosma*, *Echinops* and *Cirsium* species as perennial xerophytic plants.

Steppes in Şanlıurfa are degraded for making space for agricultural fields and settlements and obtaining fuelwood. Whereas the steppe species are rarely found in these destroyed areas today, the species belonging to the families of Brassicaceae, Apiaceae, Fabaceae, Convolvulaceae and Boraginaceae, which are referred to as weed and free field plants, have started to be more prominent. The plant species forming the Şanlıurfa steppe vegetation are generally of the Irano-Turanian origin. The steppe vegetation in the province can be classified into two groups depending on the elevation, namely lowland steppes and mountain steppes. A detailed assessment of Şanlıurfa province and its steppe areas is given in the section 3.1. of this Strategy and Action Plan.

Triticum dicoccoides
(Wild emmer)

Cicer pinnatifidum
(Cicer)

2.2. Plant Richness of Şanlıurfa Steppes

Turkey, one of the richest countries in Europe and the Middle East in terms of biodiversity, is home to approximately 12,000 taxa of seed plants and hosts endemic plant species and a rich ecosystem diversity in different ecological/phytogeographical regions. Steppe-type pastures are one of the habitats specific to the Southeastern Anatolia Region.

Steppe vegetation in Turkey usually grows in arid and semi-arid Mediterranean bioclimatic levels in the Irano-Turanian phytogeographical region. The Irano-Turanian phytogeographical region is well characterized in terms of climate, flora and vegetation.

According to Zohary (1973), the Southeastern Anatolia Region is completely within the Mesopotamian province of the Western Irano-Turanian geographical sub-region in the Irano-Turanian phytogeographical region (Figure 15). A large part of the region consists of steppe vegetation of Irano-Turanian origin. Additionally, 30-35% of plants in Turkey appear in this region. Of the flora (species) of the Southeastern Anatolia Region, 36% carry Irano-Turanian characteristics, 32% Mediterranean, 2-3% Euro-Siberian and the rest carry characteristics of unknown origin. In addition to the widespread plants in the region, there are also species endemic to this region.

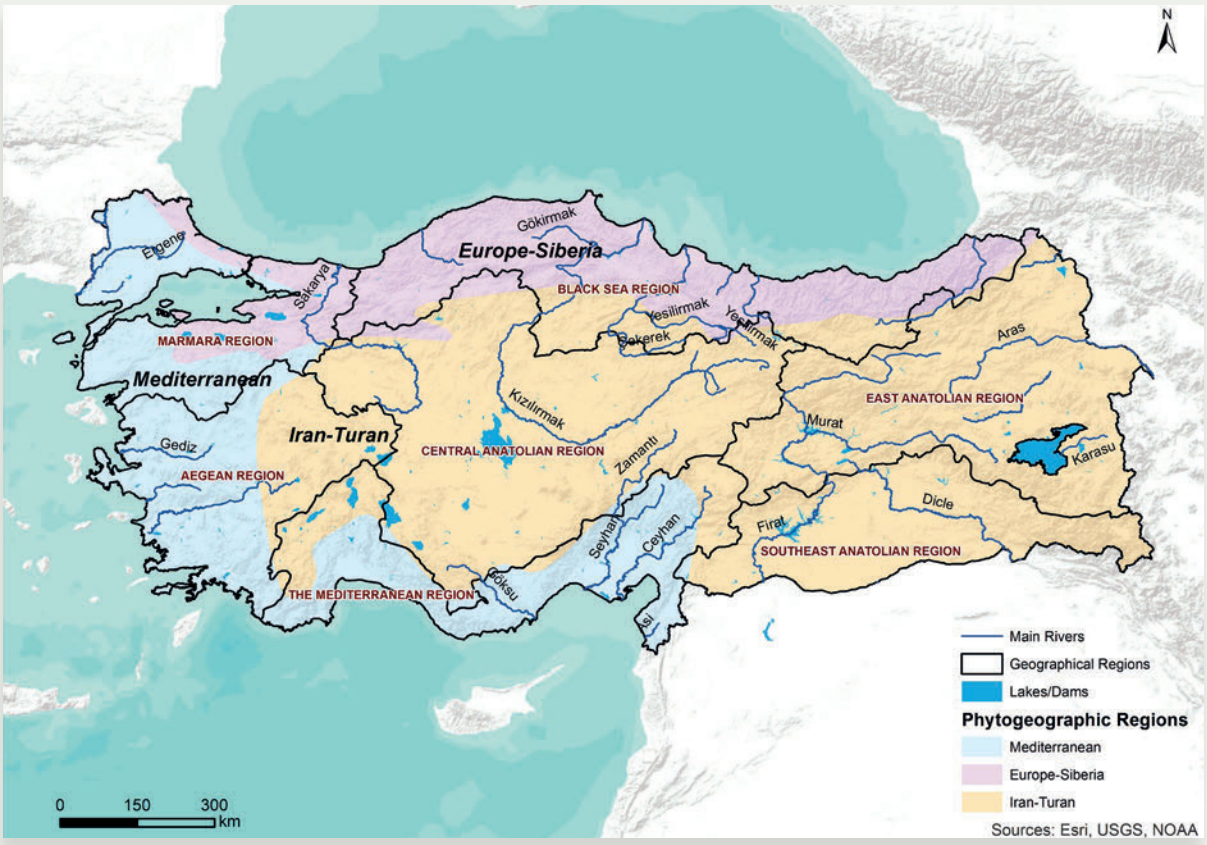

Figure 15. Turkey's phytogeographical regions ©DKM

According to the results of Flora of Turkey (Davis, 1965-1985; Davis et al., 1988; Day et al., 2000) and other scientific studies, there are 1,668 plant taxa in Şanlıurfa, of which 107 are endemic (Kaya and Karataş, 2019). According to the taxon numbers, Asteraceae, Fabaceae, Poaceae, Brassicaceae and Lamiaceae respectively are the families that command attention in floristic terms.

When these taxa are evaluated in terms of their chorology (geographic distribution), the order is found to be as follows: the Irano-Turanian, Mediterranean, Eastern Mediterranean and Euro-Siberian elements. This is a natural consequence of Şanlıurfa province being situated in the Irano-Turanian phytogeographical region. In the Irano-Turanian phytogeographical region, life forms that dominate the physiognomy are hemicryptophytes[5] and chamaephytes[6]. It is observed that taxa in Şanlıurfa flora that stand out in terms of numbers are hemicryptophytes, cryptophytes[7] and chamaephytes, except for the terophytes[8]. This situation draws attention as another piece of proof that Şanlıurfa is within the Irano-Turanian phytogeographical region in terms of life forms of taxa.

Among the tuberous and bulbous plant species called geophytes that herald the end of winter and the arrival of spring in Şanlıurfa steppe vegetation, *Allium scorodoprasum* subsp. *rotundum, Colchicum crocifolium, Gagea reticulata, Hyacinthella nervosa, Muscari neglectum, Ornithagalum narbonense, Ixiolirion tataricum* subsp*. tataricum, Anemone coronaria*, *Crocus cancellatus* subsp. *damascenus* and *Bellevalia sarmatica* come into prominence. In the region, the spring lasts a short time, the temperatures start to rise rapidly, and these heralds of spring disappear until the next spring.

Since the transition from spring to summer is very quick, the composition of the steppe plant species changes rapidly. Following the tuber and bulbous plants, xerophytic plants, which are well-adapted to the scorching heat of the summer, begin to appear in Şanlıurfa steppes. Perennial xerophytic plants such as *Eryngium*, *Phlomis*, *Onosma, Onopordum*, *Astragalus, Gundelia*, *Onobrychis, Centaurea, Verbascum*, *Scrophularia* and *Echinops* stand out in the early summer, while *Prosopis farcta* and deve *Alhagi mannifera* are other remarkable steppe plants which blossom in the middle of summer and begin to bear fruit at the end.

In steppe and rocky slopes, trees and shrubs in the form of residues are observed sometimes as very small groups and sometimes as individuals. Among them, Brant's oak (*Quercus brantii*), wild almond (*Amygdalus orientalis*), hawthorn (*Crataegus monogyna* subsp. *monogyna*), wild pear (*Pyrus syriaca* var. *syriaca*), wild cherry (*Cerasus microcarpa* subsp. *tortusa*), wild fig (*Ficus carica* subsp. *rupestris*), hackberry (*Celtis tournefortii*) and sumac (*Rhus coriaria*) are remarkable woody plants.

5. Hemicryptophytes are plants whose above-ground parts lose their vitality during unfavorable periods but at the ground level they maintain their vitality with their buds, stems and leaves (Erozyon Kontrolü Daire Başkanlığı, 2013; Avcı, 2018; Ülgen, 2019).
6. Chamaephytes are short shrubs and grasses that are adapted to harsh winter conditions and arid areas and grow their shoots 25-30 cm above the ground level during unfavorable periods (Erozyon Kontrolü Daire Başkanlığı, 2013; Avcı, 2018; Ülgen, 2019).
7. Cryptophytes are plants that grow underground or underwater as bulb, rhizome or tuber during unfavorable periods (Erozyon Kontrolü Daire Başkanlığı, 2013; Avcı, 2018; Ülgen, 2019).
8. Terophytes are plants that are adapted to arid and semi-arid climates, which survive as seeds during unfavorable periods and whose growth is limited to the growing season (Erozyon Kontrolü Daire Başkanlığı, 2013; Avcı, 2018; Ülgen, 2019).

Endemism among the plants of Şanlıurfa province is very low. One of the main reasons for this is the simplicity of the Şanlıurfa's topography and the fact that the plains to its south share border with Syria. In the province of Şanlıurfa, endemic plants are generally located in the mountainous steppes of Karacadağ and Tek Tek Mountains, the remarkable heights. Among endemic plant species, *Hesperis hedgei* (local endemic), *Cerastium haussknechtii* (regional endemic), *Paracaryum kurdistanicum* (local endemic), *Hypericum salsolifolium* (regional endemic), *Arenaria sabulinea*, *Ajuga chamaepitys* subsp. *euphratica*, *Lathyrus trachycarpus* (local endemic), *Centaurea obtusifolia* (local endemic), *Verbascum stepporum* (regional endemic) and *Scilla mesopotamica* (regional endemic) stand out.

Endemic plants are easily affected by changes in the environment due to their limited populations. Agricultural practices are one of the leading factors that threaten these populations. In particular, conversion of steppes into agricultural fields and use of pesticides are some of these practices. Today, endemic plants such as *Allium variegatum*, *Asphodeline damascena* subsp. *gigantea*, *Cicer echinospermum*, *Hesperis hedgei*, *Lathyrus trachycarpus*, *Medicago shepardii*, *Paracaryum kurdistanicum*, *Scrophularia mesopotamica*, and *Symphytum aintabicum* as well as rare plants such as *Astragalus erythrotaenius*, *Lathyrus chrysanthus*, and *Hypericum capitatum* have been significantly affected by threats from agricultural practices, and some of the taxa have almost reached their extinction stage.

The number of scientific studies on the traditional use of steppe plants in the province of Şanlıurfa by the public is quite limited. It is known that tubers and bulbs of *Orchis* and *Ophrys*, *Fritillaria*, *Tulipa*, *Iris*, *Anemone*, *Allium* plants are collected and marketed in the region. Some natural plant species such as *Lepidium* and *Ornithogalum* are used as food, or some such as *Astragalus*), *Teucrium*, and *Hypericum* are used for medicinal purposes. Licorice, sumac and acanth are some other grasses used by the people for different purposes. Today, traditional knowledge involving the use of these plants is in danger of disappearing due to urbanization or increased migration from rural to urban areas.

Astragalus gummifer
(Gum tragacanth milkvetch)

Lathyrus sativus

©Ömer Faruk Kaya

©Nihan Yenilmez Arpa

2.3. Animal Richness of Şanlıurfa Steppes

Steppe animals adapted to the climatic conditions that can be regarded as semi-desert, which are not observed in any other regions in Turkey, exist in the Southeastern Anatolia Region and Şanlıurfa steppes. This makes Şanlıurfa steppes one of Turkey's most diverse places in terms of fauna, in the other words, species of animals.

The rich biodiversity of Şanlıurfa is also demonstrated by the studies that determine priority areas for different animal groups in the region. In this respect, 11 out of 30 Conservation Priority Areas determined in the GAP Biodiversity Research Project, which was carried out in 9 provinces included in the Southeastern Anatolia Region Project (GAP) area between the years of 2001-2003, are completely or partially within the borders of Şanlıurfa (Welch, 2004). Similarly, 8 of the priority areas identified in the study of Turkey's Key Biodiversity Areas (KBA) completed in 2006 are also within the boundaries of Şanlıurfa (Eken et al. 2006). One of Turkey's Prime Butterfly Areas (PBAs) is within the boundaries of Halfeti (Karaçetin et al. 2011; Figure 16). Detailed information on Key Biodiversity Areas is included in Section 3.1.2. and ANNEX 3.

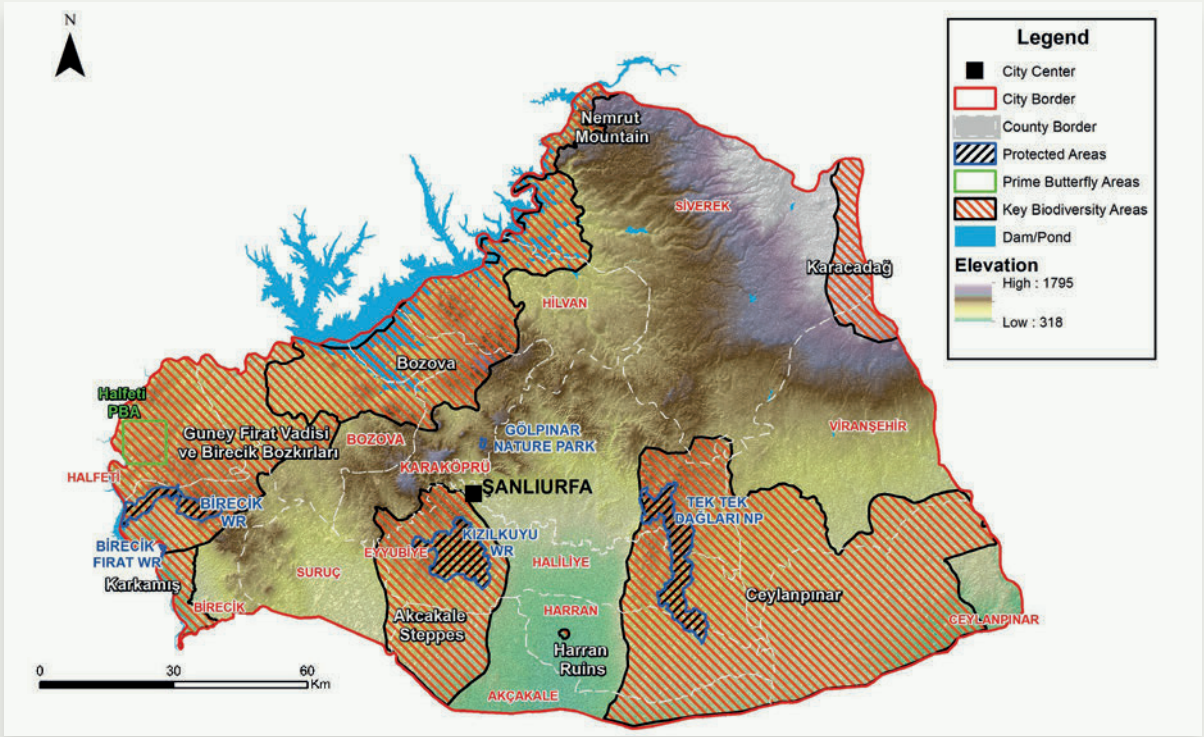

Figure 16. Protected Areas, Key Biodiversity Areas, and Prime Butterfly Areas in Şanlıurfa ©DKM

According to the data collected in the "Terrestrial and Inland Water Ecosystems Biodiversity Monitoring and Inventory" project, which is the most up-to-date and comprehensive study supported by the Ministry of Agriculture and Forestry between 2016-2018 in Şanlıurfa, and then transferred to Noah's Ark National Biodiversity Database, a total of 376 animal species exist in Şanlıurfa, of which 245 are birds, 47 are reptiles, 46 are mammals, 32 are inland fish and 6 are amphibians (www.nuhungemisi.gov.tr). As a result of the inventory study, two of the mammalian species, namely Arabian sand gazelle (*Gazella marica*) and striped hyaena (*Hyaena hyaena*), six of the bird species, namely bald ibis (*Geronticus eremita*), Egyptian vulture (*Neophron percnopterus*), white-headed duck (*Oxyura leucocephala*), sociable lapwing (*Vanellus gregarius*), great bustard (*Otis tarda*) and pallid scops owl (*Otus brucei*), two of the reptilian species, namely Bosc's fringe-fingered lizard (*Acanthodactylus boskianus*) and Harran lizard (*Acanthodactylus harranensis*) and the amphibian species Eastern fire salamander (*Salamandra infraimmaculata*) were put on the monitoring program by the 3rd Regional Directorate of Nature Conservation and National Parks in 2019 and the monitoring studies will continue in the coming years.


© Mahir Karataş

Vanellus indicus
(Red-wattled lapwing)


© Serdar Gözütok

Allactaga euphratica
(Euphrates jerboa)


© İdris Ölmez

Ammoperdix griseogularis
(See-see partridge)

Important Species for Şanlıurfa Steppes

Şanlıurfa hosts many animal species under threat of extinction on a global and national scale. Rare and endangered bird species such as great bustard (*Otis tarda*), sociable lapwing (*Vanellus gregarius*), cream-colored courser (*Cursorius cursor*), pin-tailed sandgrouse (*Pterocles alchata*), black-winged kite (*Elanus caeruleus*), desert lark (*Ammomanes deserti*), spectacled warbler (*Sylvia conspicillata*), white-eared bulbul (*Pycnonotus leucotis*), see-see partridge (*Ammoperdix griseogularis*), red-wattled lapwing (*Vanellus indicus*), blue-cheeked bee-eater (*Merops persicus*) and desert finch (*Rhodospiza obsoleta*) range over Şanlıurfa steppes, and some of them reproduce here (Boyla et al., 2019). Arabian sand gazelle (*Gazella marica*), striped hyaena (*Hyaena hyaena*), marbled polecat (*Vormela peregusna*), Palestine mole rat (*Nannospalax ehrenbergi*), Euphrates jerboa (*Allactaga euphratica*), Libyan jird (*Meriones libycus*), Tristram's jird (*Meriones tristrami*), Sundevall's jird (*Meriones crassus*), Vinogradov's jird (Meriones vinogradovi), Wagner's gerbil (*Gerbillus dasyurus*), Asian garden dormouse (*Eliomys melanurus*) and golden hamster (*Mesocricetus auratus*) are also important mammalian species that are distributed in Şanlıurfa. Desert monitor (*Varanus griseus*), Harran lizard (*Acanthodactylus harranensis*) and long-nosed worm snake (*Letheobia episcopus*), leaf-toed gecko (*Asaccus elisae*), rough bent-toed gecko (*Cyrtopodion scabrum*), Bosc's fringe-fingered lizard (*Acanthodactylus boskianus*), Angel's short-nosed desert lizard (*Mesalina microlepis*), western leopard gecko (*Eublepharis angramainyu*) and spotted whip snake (*Platyceps ventromaculatus*) are important reptilian species. Globally speaking, Harran lizard (*Acanthodactylus harranensis*) and long-nosed worm snake (*Letheobia episcopus*) are observed only in Şanlıurfa. Among the protected butterfly species in Şanlıurfa, there are Osthelder's skipper (*Spialia osthelderi*), false apollo (*Archon apollinus*) and levantine silver-line *(Apharitis cilissa*) (Karaçetin et al., 2011). Examples of rare and conservation priority species of Şanlıurfa steppes are given below.

Eublepharis angramainyu
(Western leopard gecko)


© Mehmet Zülfü Yıldız

Cursorious cursor
(Cream-colored courser)


© İdris Ölmez

Vormela peregusna
(Marbled polecat)


©Kubilay Toyran

Arabian sand gazelle (*Gazella marica*)

Arabian sand gazelle, one of the first creatures to come to mind when steppes of Şanlıurfa are considered, has the status of "Vulnerable" (VU) on a global scale (IUCN SSC Antelope Specialist Group, 2017). The scientific name of the gazelle that exists in Şanlıurfa is *Gazella marica*, and it is a different species from the mountain gazelle (*Gazella gazella*). Its population in Şanlıurfa represents the northernmost tip of the distribution of the gazelle in the Arabian Peninsula and the Middle East (IUCN SSC Antelope Specialist Group, 2017). In Turkey, they naturally exist only in Şanlıurfa Kızılkuyu Wildlife Reserve (WR). Their distribution extending from Cizre to Gaziantep in the early 1900s has been limited to Şanlıurfa today due to reasons such as illegal hunting, poaching of offspring for domestication, conversion of steppes into agricultural fields and intensive use of pesticides in agriculture. The first important step taken to protect gazelles was to take gazelles under protection and to ensure their reproduction in Ceylanpınar Directorate of Agricultural Enterprises (GDAE) in the 1970s. Some of the gazelles that reproduced here were transported to the 75th Year Gazelle Breeding Station located in Kızılkuyu WR. Today, gazelles whose numbers are increasing are released to nature within the same area. The size of the gazelle population in nature outside of the breeding station was recorded as 352 individuals by the year of 2019 (Unpublished Data).

Gazelles in Turkey exist in steppes, stony hills and flat lands (Durmuş, 2010). The time period between sunrise and sunset is when they are most active and feed. They take in nutrients from grasses, steppe plants and roots (Kingswood and Blank, 1996; Baskin and Danell, 2003). The mating season is from mid-November to mid-January. In May-June, the fawning takes place. The offspring hide in stones and grass for about a week. When they get strong enough and gain the ability to move, they start to move with their mothers and rest of the group (Baskin and Danell, 2003).

Striped hyaena (*Hyaena hyaena*)

Striped hyaena, an inhabitant of Şanlıurfa steppes, is the only hyaena species that has distribution outside of Africa. It has the status of "Near Threatened" (NT) on a global scale (AbiSaid and Dloniak, 2015). The greatest threat to striped hyaenas is hunting with firearms and traps and poisoning because of the misconception that they hunt livestock. Destruction of habitats of this species is among the main threats to this species (Yıldırım, 2010; Abi Said and Dloniak, 2015). A type of action plan involving the population in Şanlıurfa was prepared in 2014 for the conservation of the striped hyaenas, one of the conservation priority species for the Ministry of Agriculture and Forestry (Ekolojik Çözümler, 2014). Striped hyaenas, which range in Africa, Arabian Peninsula and Asia, today also range in the Southeastern Anatolia Region and Hatay in Turkey (Yıldırım, 2010), but it is also known that they had existed in the Mediterranean and Aegean regions until mid-1900s (Huş, 1974; Turan, 1984). According to the recent studies, striped hyaenas exist within the boundaries of Halfeti, Birecik, Siverek and the central districts of Şanlıurfa (Ekolojik Çözümler, 2014).

Striped hyaenas, which can be rarely seen, prefer rocky and shrub areas with low elevation as well as sparse trees, caves and hollows rather than fully open fields such as deserts or habitats with high cover such as dense forests (Rieger, 1981). The diet of striped hyaenas, which are usually active at night, is necrophagic. Nevertheless, fruits, vegetables, vertebrate and invertebrate animals and domestic organic waste can also make their way into their diet (Wagner, 2006). The gestational period of striped hyaenas, which can mate all year round, lasts 3 months (Rieger, 1981). In Turkey, they usually mate in summer and give birth in winter around January and February (Turan, 1984).

Sociable lapwing (*Vanellus gregarius*)

The sociable lapwing is one of the bird species in Turkey holding a "Critical" (CR) status on a global scale (BirdLife International, 2015). In Turkey, in addition to reports from Erzurum and Muş, the most individuals have so far been reported from Şanlıurfa, especially from Ceylanpınar and Akçakale. Kızılkuyu Wildlife Reserve in Şanlıurfa is another important habitat for this species after Ceylanpınar and Akçakale. The observation of 3,200 individuals, which was the highest number of individuals in the world in 100 years of this most endangered species of Eurasia, was reported from Ceylanpınar Key Biodiversity Area (KBA) in Şanlıurfa as of October 2007 (Biricik et al., 2008). In addition to these findings, researchers determined that sociable lapwings extensively used certain areas in Turkey on their migration route between breeding and wintering areas (www.ebird.org). These areas are important not only for the population of sociable lapwings in Turkey, but also for their population in the world. However, this species is currently endangered because of habitat loss and illegal hunting. In Turkey, basic threats to this species include steppe habitat loss and conversion of dry agricultural fields used during migration into irrigated agricultural lands.

Sociable lapwings are observed in the steppes, bare lands, fallow lands and plowed fields. Their diet consists mostly of insects, especially grasshoppers. They prefer farther northern latitudes for breeding. Their reproduction takes place in April-May. They lay 3-5 eggs and the incubation period is up to 3 weeks.

Great bustard (*Otis tarda*)

The great bustard is one of the species closely associated with steppes that holds a “Vulnerable” (VU) status on a global scale (BirdLife International, 2017). Illegal hunting, use of pesticides, direct intervention in nests and offspring, collision with energy transmission lines, loss of habitats and degradation of habitats are the main threats to the great bustard population in Turkey.

In Turkey, this species is distributed in the steppes of Central Anatolia, Central Aegean, and Eastern and Southeastern Anatolia. According to the estimates in Species Action Plan implemented by the Ministry of Agriculture and Forestry in 2016, there are 504 individuals in Turkey. Birecik steppes, Kızılkuyu Wildlife Reserve, and Ceylanpınar GDAE lands in Şanlıurfa are important areas used by this species during winter and migration periods (Doğa Koruma ve Milli Parklar Genel Müdürlüğü, 2016). Rangelands, steppes containing agricultural fields, and meadows are suitable habitats for this species. This species prefers open areas and flat lands. It is known that they prefer grain-cultivated agricultural fields, fallow lands, newly harvested stubble lands, agricultural fields with old stubble and plowed fields during the breeding period (Rocha et al., 2013; BirdLife International, 2017). Presence of this species is an indicator of the naturalness of agricultural practices. An action plan was jointly drafted in 2004 by the Nature Association (Doğa Derneği) and the Ministry of Environment and Forestry (abolished) on the great bustard, one of the species accepted as a conservation priority species by the Ministry of Agriculture and Forestry, and this plan was renewed in 2016 by the Ministry of Forestry and Water Affairs (abolished) (Özbağdatlı and Karauz Er, 2004; Doğa Koruma ve Milli Parklar Genel Müdürlüğü, 2016). In this context, their regular census is carried out every year in Turkey.

Great bustards feed on small vertebrates, insects, plants, and seeds. Breeding period, which starts with courtship and mate selection in early spring, ends with ovulation at the end of June. The offspring fledge until the end of July and become able to fly.

Harran lizard (*Acanthodactylus harranensis*)

The Harran lizard, one of the reptilian species endemic to Şanlıurfa, is rated as “Critical” (CR) on a global scale by the International Union for Conservation of Nature (IUCN) (Kaska et al., 2009). Population of this species, which has a very limited distribution in the Harran ruins, tends to decrease. The threats to this species include tourism, archaeological excavations and overgrazing (Lise, 2006).

Long-nosed worm snake (*Letheobia episcopus*)

Long-nosed worm snake, another reptilian species endemic to Şanlıurfa, is rated as “Data Deficient” (DD) by the International Union for Conservation of Nature (IUCN) (Tok et al., 2009). This species, known to have a very limited distribution around Halfeti, has also been reported in Kızılkuyu Wildlife Reserve in recent years (Bozkurt et al., 2016). Literature data on this species is very limited, and the population size is considered to be low. The greatest threat to this species is dam construction activities carried out near the distribution areas in Halfeti (Tok et al., 2009).

Desert monitor (*Varanus griseus*)

Desert monitor, with a length of up to 130 cm, is the largest reptilian species in Turkey. The greatest threats to the desert monitor, which is thought to be poisonous and aggressive due to its size and appearance although it is not, include poaching and habitat loss. Desert monitor, which is rated as "Not Evaluated" (NE) by the International Union for Conservation of Nature (IUCN), is considered 'endangered' on a national scale (www.turkherptil.org). Its distribution in Turkey is limited to the Southeastern Anatolia Region. It lives in desert and semi-desert areas. Its diet mainly consists of rodents, reptiles, birds and their eggs. It is active from April to October. It is a daytime animal, especially active during sunrise and sunset. It can run fast, and climb trees and shrubs. The females lay 10-25 eggs (Baran, 2005). The recent studies have revealed that the desert monitor lives in the districts of Birecik, Akçakale, Viranşehir, Ceylanpınar, and Suruç as well as the central districts of Şanlıurfa (Doğa Koruma ve Milli Parklar Genel Müdürlüğü, 2019). Ilgaz et al. (2008) reported this species from Harran and Ceylanpınar.

Osthelder's skipper (*Spialia osthelderi*)

Osthelder's skipper, which is a steppe butterfly existing in dry stream beds, and stony and arid hillsides (Baytaş, 2019), is a species with an "Endangered" (EN) status on the scale of Mediterranean and Turkey (van Swaay et al., 2014; Karaçetin and Welch, 2011). The reports of this species came from our southeastern provinces in 1980 and later from Gaziantep, Şanlıurfa and Hakkari (Karaçetin and Welch, 2011). The main threat to the species is the danger of extinction of steppe areas due to construction of dams, transition into irrigated farming, and concentration of agriculture (van Swaay and Warren 1999). It is predicted that the population of this species will gradually decrease due to loss of steppes, and their already fragmented distribution will become further fragmented (Karaçetin and Welch, 2011).

2.4. Human-Steppe Interaction in Şanlıurfa

Şanlıurfa is a city with a history of 3,000 years that has come to host many civilizations due to its geopolitical location, historical and, cultural background and religious importance. Today, the population of the region consists of Kurds, Arabs and Turks. Even though Turkish is the common language used, Kurdish, Zaza and Arabic are also spoken among the people.

2.4.1. Socio-Cultural Structure

In the Southeastern Anatolia Region, traditional, social and cultural structure still maintains its uniqueness. Semi-feudalism in agriculture, traditionalism in animal husbandry, semi-nomadism and even nomadism form the socio-economic pattern of the region. As a natural consequence of this pattern, which dates centuries back, traditional institutions such as squirearchy, sheikhdom and tribe chiefdom still wield an influence in the region, albeit at a decreasing rate (Gökçe, 2007). The roles, statuses and authorities of such people can significantly affect adoption of innovations and social change processes in the society (Türkdoğan, 2009).

The pressure of tribal and feudal structures on social relations in Şanlıurfa province is felt at every level of life. Steps taken towards a positive change of social structure, especially in rural areas, are faced with this pressure. On the other hand, tribal and feudal structures have the ability to create strong relationships that connect individuals. This is why individuals rely on tribal and feudal structures that emerge from their own dynamics rather than the law-making and protective governmental organizations in maintaining the social order.

2.4.2. Family Structure and Gender Roles

The socio-cultural structure in the southeastern society brings about a need for crowded populations in order to survive and grow stronger. This need has a serious impact on early marriages and fertility rates in the region.

Factors such as early marriages and high fertility rates seriously affect the family structure in Şanlıurfa. According to the results of the Address-Based Civil Registration System (ADNKS), the average size of a household, which was 3.6 people in 2014, showed a decreasing trend and came down to 3.4 in 2018. Of all provinces, Şanlıurfa province is ranked second in terms of average household size. The average number of households in Şanlıurfa province was 5.6 in 2018 (TÜİK, 2019a). In addition, arranged marriages and kin marriages are common in the region (FAO- Tarım ve Orman Bakanlığı, 2019).

The province with the highest fertility rate in Turkey was Şanlıurfa with an average of 4.33 children in 2016 (TÜİK, 2017). Similarly in 2017, Şanlıurfa was the province with the highest fertility rate with an average of 4.13 children whereas the average fertility rate was 2.07 in Turkey (TÜİK, 2019b). The number of children has different meanings for women and men in rural areas. The number of children (especially the number of boys) is an indicator of social status and a source of dignity for women. In addition, it is believed that dignity of women with high fertility is solidified in a crowded family. The number of children is an indicator of power for men both economically and socially. A boy who reaches the working age is considered an individual who provides for the household and ensures the safety of the family (Sevinç and Davran, 2017). On the other hand, circumstances are not favorable for girls due to the prevalent social and economic relations (FAO-Tarım ve Orman Bakanlığı, 2019).

Inheritance and property rights are enjoyed by men in the region, and women are denied the right of inheritance. The division of labor within the family is intertwined in terms of gender roles. In addition to house chores, women are also responsible for caring for livestock and farming and are employed as seasonal workers as needed. Nevertheless, women participating in workforce do not have sufficient access to social systems or on-the-job vocational training opportunities. Income earned by women by joining the workforce is not shared fairly within the family (FAO-Tarım ve Orman Bakanlığı, 2019).


Karacadağ Steppes

2.4.3. Nomadic Livestock and Nomads

Nomadic livestock still has an important place especially in Karacadağ Steppes. Karacadağ plateaus are one of the few stops used by nomadic tribes as rangelands in spring and summer. Majority of nomads in Karacadağ are members of Kejan tribe and Karacadağ Turkmens, Karakeçililer, and Beritan tribes also use Karacadağ plateaus. In recent years, most of the tribes have settled in villages and the number of nomads has decreased. The main livelihoods of nomads are livestock production and milk, cheese, oil and wool production from livestock. One of the most important problems among nomads is the inaccessibility of education for their children (FAO-Tarım ve Orman Bakanlığı, 2019).

2.4.4. Socio-Economic Structure

In rural areas with steppes, the village economy is generally based on agriculture and animal husbandry. Even though plant production is low, wheat (*Triticum*), lentil (*Lens*), barley (*Hordeum*) and chickpea (*Cicer*) are grown. In Karacadağ region, Karacadağ rice, which is named after the region itself, stands out prominently.

In rural areas, ovine and bovine breeding is common. Ovine breeding, the majority of which consists of sheep breeding, is carried out by traditional methods relying on rangelands. Nevertheless, traditional products such as milk, cheese and butter produced from animal husbandry are generally consumed within the famer's household, and market-oriented production is very little. Processing these products, introducing them to the market by transforming into high value-added products, and setting up cooperatives may effectively contribute to the farmer's increased income. In recent years, because of unproductivity of rangelands and inability to meet the need for roughage, the related costs have increased and animal husbandry has been less favored (FAO-Tarım ve Orman Bakanlığı, 2019).

Wild plants are generally used for medicinal and economic purposes. Especially in Karacadağ, there are many indigenous plant species with potential to be marketed and exported as ornamental and medicinal-aromatic plants when reproduced. In the Southeastern Anatolia Region, the medicinal plants with many diverse uses are used in alkaloids, spices, dyes, and volatile oil industry. Families with the most plant species are Lamiaceae and Asteraceae, respectively. Among these species, the species belonging to the genera of *Thymbra*, *Thymus*, *Satureja*, *Datura*, *Hyoscamus*, *Hypericum*, *Tanacetum*, *Caparis*, *Plantago*, *Glycyrrhiza*, *Reseda*, *Isatis*, *Rubi*a, *Trigonella*, *Urtica*, *Gundelia* and *Fritillari* are of economic importance and can be included in cultivation (Kızıl and Ertekin, 2003). The reverse tulip (also called the weeping bride in Turkish), which is grown in the region and endemic to the region, is an example of plants with the potential to be used in the pharmaceutical and cosmetic industries.

Most of the lands in the region have joint property deeds. This situation causes problems in matters such as subsidies and cooperativism. Especially the cooperative culture is not prevalent in the region. In recent years, due to insufficient income generated from agriculture and animal husbandry and limited livelihood opportunities in non-agricultural lands, villagers have turned to subcontracted-labor/day-labor abandoning animal husbandry.

2.4.5. Migration

After 1950s, when the socio-economic and technological development accelerated in Turkey, the rural areas started to lose their basic production function, especially as a result of migration from rural to urban areas. This situation, an inevitable result of socio-economic development, affected not only the agricultural production, but also the family structure and relations.

In Turkey, 7.11% of the disposable income of rural households consisted of agricultural enterprise income in 2006. In 2010 6.34% and in 2018 only 4.3% of the disposable income of the rural households consisted of agricultural enterprise income (TÜİK, 2020a). The increase in migration from rural to urban areas due to reasons, including increased costs in agricultural production, inability to turn agricultural products to account, marketing problems, lack of organized work in agricultural production, unattractive sides of the countryside and attractive power of the cities, was behind these figures. Individuals in rural areas are still moving away from agriculture (FAO-Tarım ve Orman Bakanlığı, 2019).

The main reasons of migration from rural to urban areas include rural poverty and low welfare. In the rural areas of Şanlıurfa, agricultural income in areas within the reach of water tends to increase, but especially steppes and unproductive rural lands outside the reach of water require alternative income sources to be generated to prevent income loss. Migration negatively affects both the dynamics of the city and the family members who migrate. Negative effects present themselves in rural and urban areas not only economically but also socially and culturally.

In a field research on child laborers working in the city center of Şanlıurfa, it was shown that families of 51% of these children had migrated Şanlıurfa. As to the direction of migration, 79.2% of the migration took place from Şanlıurfa rural areas to Şanlıurfa city center. Additionally, 44.2% of the immigrant families owned lands in rural areas. However, these lands cannot be cultivated because they are infertile and outside the reach of water. Children in the study reported poverty (50.9%) and blood feuds (30.2%) as the most influential factors on the migration of their families (Sevinç et al., 2015).

2.4.6. Şanlıurfa Steppe Ecosystem and Agricultural Transformation Relationship

Şanlıurfa is the most important region of GAP investments, with a total surface area of 1,927,380 hectares. Approximately, 60% of this area consists of cultivated lands, whereas 40% is described as rangelands and non-agricultural lands, that is to say steppes. The geomorphological location and topographic structures of the province cause unique climatic features. While the average precipitation at the southern border is 300 mm, it can reach up to 600 mm towards the northern border. This climate difference in Şanlıurfa is an indicator of steppe diversity and steppe productivity along the South-North line. Şanlıurfa is classified as having a semi-arid climate because of its location in the country. This affects the steppe ecosystem in terms of natural topography, soil structure, land use and animal grazing.

Topographic Structure and the Impact of Climate on the Steppe Ecosystem

On the southern border of Şanlıurfa, there is almost no precipitation especially between June and November, and the average temperature is above 30°C. Towards the Syrian border, a weaker steppe ecosystem is observed with weak soil structure on existing topographies, lack of organic matter and very dry soil during the summer months due to lack of precipitation, low forest vegetation and low soil depth. Despite low soil depth, in some topographic structures that are not inclined and are almost flat, the soil is ploughed every year to make room for agriculture, which damages the existing steppe diversity. Steppes in Fatik and Tek Tek Mountains are also converted into agricultural fields.

Land Use and Impact of Irrigation

The fact that there is a total of 1,154,320 hectares of arable lands in Şanlıurfa province (Şanlıurfa İl Tarım ve Orman Müdürlüğü, 2019) and a significant portion of these lands can be irrigated topographically has implications for land uses. In 1995, within the scope of the GAP project, lands in Şanlıurfa province were opened up for irrigation gradually. The irrigation efforts, initiated in the Harran Plain, continued in Bozova and Suruç Plains, reaching a total of 403,000 hectares in 2019. The coverage of the irrigated areas, which is currently 34% of the cultivated lands, will increase further in the coming years. Before irrigation, predominantly wheat, barley and lentil were cultivated in Şanlıurfa, and now cotton and corn seem to be among the most commonly cultivated crops in the province. In addition to croplands, vineyards, pistachio, almond, and other orchards have become widespread in the region. According to the studies of Şanlıurfa Provincial Directorate of Agriculture and Forestry;

- In Şanlıurfa province, the production pattern was as follows in 2018: cotton on an area of 231,430 ha, wheat on 278,087 ha, barley on 182,743 ha, lentil on 92,990 ha and corn on 25,207 ha (Şanlıurfa İl Tarım ve Orman Müdürlüğü, 2018a). Many orchards went out of business because of marketing problems.
- While there is a significant decrease in coverage of vineyards and pomegranate orchards, there is an increase in coverage of pistachio fields. In this regard, 42% of the country's pistachio production comes from Şanlıurfa, with a yield of approximately 100,000 tons. The coverage of pistachio orchards has increased in recent years, and they have commonly been established in steppe areas.

In addition, plowing of steppe areas for conversion into agricultural fields and collection of stones for reclamation purposes and its promotion threatens the steppes. Especially in the volcanic lands of Siverek, Hilvan and Viranşehir, which are districts of Şanlıurfa, stone-rock collection and transition into mechanized agriculture causes loss of steppes. Unless necessary precautions are taken, destruction of steppes will continue rapidly. Potential agricultural lands that may be used in the future are also being lost due to intensive land clearing in these areas. This causes infertility in soils and deterioration in productive soil structures in the short term. Generally, rangelands regarded as agricultural fields are considered idle lands.

Rangeland Use and Overgrazing

Within the provincial borders of Şanlıurfa, a total area of 756,098 ha, including non-agricultural lands and rangelands of 279,694 hectares (Şanlıurfa İl Tarım ve Orman Müdürlüğü, 2019), can be classified as steppe ecosystems. There are various plant species in the rangelands, which are mostly steppe rangelands. Common ones are as follows: *Decreaser* (*Phleum montanum, Koeleria cristata, Agropyron intermedium, Sanguisorba minor, Medicago falcata*), *Increaser* (*Festuca ovina, Poa bulbosa, Stipa pennata*), and *Invasive* (*Bromus danthoniae, Hordeum murinum, Trifolium stellatum, Medicago minima, Astragalus hamosus, Avena fatua, Astragalus eriocephalus, Genista sessilifolia, Trifolium cherleri, Trifolium tomentosum*) (Şanlıurfa İl Tarım ve Orman Müdürlüğü, 2018b). The lands described as rangelands and non-agricultural lands make up about 40% of the surface area of the province and form an indivisible whole. All of these lands, which are described as rangelands and non-agricultural lands according to soil characteristics and topographic structures, represent steppe ecosystems. In these areas, there are generally village settlements, and since there are not enough agricultural fields and irrigation opportunities, livestock breeding becomes an important source of living. These areas with high slopes, where soil is lost to erosion, are mostly used for livestock grazing.

According to TÜİK data, the total number of sheep and goats in Turkey, which was 32.2 million in 2004, reached up to 46.1 million in 2018 by an increase of 43.7%. In the same period, the number of sheep and goats, which was 1.5 million in Şanlıurfa province, reached to 2.1 million by an increase of 37%. As of 2018, sheep and goats of Şanlıurfa province accounted for almost 4.5% of the total in Turkey (TÜİK, 2020).

According to 2019 data, Şanlıurfa province comes 3rd in Turkey in sheep and goat breeding with 1,971,707 head of sheep and goats (Şanlıurfa İl Tarım ve Orman Müdürlüğü, 2019).

Southeastern Anatolia Region is more suitable for sheep and goat breeding than dairy farming because of its natural rangelands. Sheep and goat breeding makes a great contribution to the economy of Şanlıurfa, which is located in Turkey's southeast. In Turkey, since sheep and goat breeding mostly relies on grazing, it generates limited input value in production, and herds generally consist of unproductive indigenous breeds. The small size of the enterprises, insufficient input supply, and limited marketing opportunities cause the farmer not to make enough profit in the market (Kaya and Yurtseven, 2019).

Extensive practice of animal husbandry that relies on rangelands and overgrazing are considered significant threats to the steppe ecosystems in Şanlıurfa. Extended irregular and overgrazing around dense settlements are the main reasons for extinction of some steppe plant species. It is estimated that coverage of rangelands and non-agricultural lands representing the steppe ecosystems and corresponding to 40% of provincial surface area has decreased as a result of excessive use.

2.5. The Legal Framework and Institutional Structure Related to Steppes

2.5.1. Policies, Legislation and Mechanisms Associated with the Conservation and Sustainable Management of Steppes

Unlike forests and wetlands, steppes are not defined in the Turkish legislation. On the other hand, steppe ecosystems of Turkey comprise natural steppes, meadows, rangelands and degraded forests of steppic nature, and there are supporting elements associated with conservation and sustainable management of steppes in many policy documents.

In this context, while preparing this strategy and action plan within the scope mentioned above, all international conventions and programs, legislation, policies and mechanisms that may be related to steppe ecosystems were taken into consideration.

International Conventions and Programs

The conventions to which Turkey is a party have the force of law and are part of national legislation. The main international conventions related to steppes and conservation of environment and biodiversity, to which Turkey is a party, are as follows:

- The Convention on the Conservation of European Wildlife and Natural Habitats; BERN (signed by Turkey in 1984)
- The Convention on Wetlands of International Importance especially as Waterfowl Habitat; RAMSAR (signed by Turkey in 1994)
- The Convention on Biological Diversity; CBD (signed by Turkey in 1997)
- The United Nations Convention to Combat Desertification; UNCCD (signed by Turkey in 1998)
- The United Nations Framework Convention on Climate Change; UNFCCC (signed by Turkey in 2004)
- The International Treaty on Plant Genetic Resources for Food and Agriculture; ITPGRFA (signed by Turkey in 2006)

Most of these international conventions aim directly or indirectly at the conservation of steppe ecosystems and the biodiversity they contain. The United Nations Convention on Biological Diversity (CBD) sets out the main framework of the equitable sharing of benefits arising from the use of genetic resources with the conservation and sustainable use of steppe biodiversity, and of how the conservation and sustainable use of steppe biodiversity can be addressed (CBD, 2019).

“Dry and Sub-humid Lands Biodiversity Programme of Work” and “Agricultural Biodiversity Programme of Work” under the Convention on Biological Diversity contain objectives supportive of the conservation and sustainable use of steppe biodiversity. In particular, the importance of assessing the state and trends of biodiversity, identifying and disseminating knowledge and practices of local communities, promoting ecosystem-based resource management, and supporting sustainable livelihoods are addressed.

In addition, the United Nations Framework Convention on Climate Change (UNFCCC) is important for the sustainable use of steppe resources and improving their adaptive capacity to climate change. The United Nations Convention to Combat Desertification (UNCCD) contributes to the conservation of steppe ecosystems in line with the strategic objectives of improving the conditions of degraded ecosystems, including steppe ecosystems, combating desertification/land degradation, promoting sustainable land management and contributing to land degradation neutrality, increasing drought tolerance of fragile ecosystems and contributing to biodiversity and climate change issues (UNCCD, 2019).

The United Nations General Assembly convened the Sustainable Development Summit in 2015 and adopted the "2030 Sustainable Development Goals (SDG)". The Sustainable Development Goals, consisting of 17 Global Goals, are a universal call for action to eradicate poverty, protect our planet, and ensure that all people live in peace and prosperity. Under Global Goal 15, the conservation, sustainable use and restoration of terrestrial ecosystems, the conservation of habitats and species, the support of fair and equitable sharing of benefits from the use of genetic resources, and the promotion of access to such resources, the prevention of illegal hunting and trafficking, financing and provision of sustainable livelihoods for local people are emphasized. This goal underlines the importance of protecting steppe ecosystems and the biodiversity they host, on the way to sustainable development (UNDP, 2019). In addition, on March 2019, the UN General Assembly declared 2021–2030 the "UN Decade on Ecosystem Restoration" and emphasized that along with the conservation of ecosystems, the restoration of ecosystems is needed more than ever and is necessary to achieve the Sustainable Development Goals. This will provide ecological, social and economic benefits in many areas such as ecosystem restoration, biodiversity conservation, poverty alleviation, food security and climate change. At the same time, the UN aims to prevent, stop and reverse the degradation of ecosystems with this global initiative, which contributes to implementation of conventions related to biodiversity, climate change and combating desertification. In this context, the restoration of ecologically important and sensitive steppe ecosystems is becoming increasingly important.

Turkey, as a member of United Nations, is a member of platforms and partnerships, especially organizations affiliated to the UN and other global entities. Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) is an independent intergovernmental body established to support the formulation of policies for protection of the world's biodiversity and ecosystems and the services offered to humanity. It was established in 2012 with the membership of countries that are members of the United Nations Food and Agriculture Organization (FAO) Global Soil Partnership (GSP) in order to contribute to the conservation and sustainable use of soils to ensure food security on a global scale. The aim of the initiative is to support main ecosystem services, protect healthy and fertile soils for food security and improve the world's limited land resources. Both of these platforms offer significant opportunities for steppes.

National Laws and Regulations

All laws and regulations that can contribute to the conservation and sustainable management of steppes, including regulations on conservation of biodiversity, sustainable use of natural resources, agriculture and animal husbandry, have been addressed in detail (Annex 1). The main laws and regulations considered in this context are as follows:

- Law on Pastures (Law No. 4342, dated 25.02.1998) and Regulation on Pastures
- Forest Law (Law No. 6831, dated 31.08.1956) and Forest Management Regulation
- National Afforestation and Erosion Control Mobilization Law (Law No. 4122, dated 23.07.1995), Regulation on Forest Services on Afforestation and Erosion Control, Regulation on Afforestation
- Environmental Law (Law No. 2872, dated 09.08.1983)
- National Parks Law (Law No. 2873, dated 09.8.1983)
- Terrestrial Hunting Law (Law No. 4915, dated 01.07.2003)

- Law on Conservation of Cultural and Natural Property (Law No. 2863, dated 21.07.1983)
- Wetland Conservation Regulation
- Regulation on Procedures and Principles of Determination, Registration and Approval of Protected Areas
- Agricultural Law (Law No. 5488, dated 15.04.2006), Agricultural Basins Regulation, Regulation on Good Agricultural Practices
- Soil Conservation and Land Use Law (Law No. 5403, dated 19.07.2005) and Law Amending the Soil Conservation and Land Use Law (Law No. 6537, dated 15.05.2014), Regulation on the Conservation, Use and Planning of Agricultural Lands, Regulation on Subsidizing Farmers That Implement Environmentally-Friendly Agricultural Land Protection Program and Providing Technical Assistance to These Farmers
- Organic Farming Law (Law No. 5262, dated 03.12.2004) and Regulation on the Principles and Implementation of Organic Farming
- Law on Land Reform regarding rearrangement of land in irrigated areas (Law No. 3083, dated 01.12.1984), Implementation Regulation on Land Consolidation and On-Farm Development Services, By-Law on Protection of Water Basins and Preparation of Management Plans
- Biosafety Law (Law No. 5977, dated 26.03.2010)
- Veterinary Services, Phytosanitation, Food and Feed Law (Law No. 5996, dated 11.06.2010)
- Seed Law (Law No. 5553, dated 08.11.2006)
- Regulation on Removal, Production and Trade of Natural Flower Bulbs, Regulation on the Collection, Preservation and Use of Plant Genetic Resources, Regulation on Conservation of Animal Genetic Resources

A significant part of steppes is used as rangelands/pastures with public ownership. Rangelands may hold three different statuses in terms of ownership:

(i) Rangelands under the Pasture Law,

(ii) Lands for grazing under the Forest Law and

(iii) Public lands (used for grazing).

As to regulation of grazing, Forest Law No. 6831 is taken as legal basis for the forest lands whereas Law on Pastures No. 4342 is taken as legal basis for the rangelands. There is no such legislation for public lands. The Law on Pastures aims at determination and delimitation of pastures, summer pastures, winter pastures, public pastures and meadows, their allocation on behalf of village or municipality legal entities, their use in accordance with the rules to be determined, provision of care and improvement for increasing and maintaining their productivity, continuous monitoring and protection of their use, and changing the type of use when necessary. Regulation on Pastures, which includes the procedures and principles regulating the implementation of the Law on Pastures, includes administrative and executive provisions regarding the delimitation and allocation of rangelands, pastures, and grasslands and grazing plans. In our country, the studies for determination, delimitation and allocation of rangelands still continue. Completion of these studies is important in terms of realizing the necessary conservation and sustainable resource management practices.

There is no special protected area status for steppes in Turkey. Based on the National Parks Law, Terrestrial Hunting Law, International Ramsar Convention, Wetlands Regulation, Law on Conservation of Cultural and Natural Property, and the Environmental Law, some of our natural steppes are covered by different protected area statuses such as National Park, Natural Park, Natural Monument, Nature Reserve, Wildlife Reserve, Wetland of National Importance, Wetland of Local Importance, Special Environmental Protection Area, and Natural Protected Area. These laws contain provisions on the protection of the wildlife and ecosystem values offered by these areas and thus constitute an important base for the conservation of steppes and species.

In addition to these protection statuses, the Soil Conservation and Land Use Law and related regulations, and accordingly declaration of steppes as Agricultural Protected Areas (Large Plains Project) for prevention of degradation of areas with high agricultural potential due to erosion, aridity, pollution and misuse provide an important opportunity for steppes.

Another important law that directly concerns the steppes in Turkey is the Agricultural Law. The Agricultural Law aims to develop and support the agricultural sector and the rural areas and includes provisions for conservation and improvement of natural and biological resources. Steppes are mostly classified and managed as farming areas and rangelands. In the law, the issue of agricultural basins is included as an explicit provision in order to concentrate, support, organize, specialize and integrate agricultural production in suitable areas for its own ecology. For this purpose, regulations that concern supports for the agricultural basins, rural development, animal husbandry, and Environmentally Friendly Agricultural Land Protection Program provide opportunities for the sustainable use of soil and water resources, conservation of steppes with agricultural and animal husbandry practices that support biodiversity, and reduction of intense agricultural pressure on these areas.

The Soil Conservation and Land Use Law, which is another important law on this issue, envisages procedures and principles for planned use, in accordance with the principle of protection and use of soil by preventing loss of quality and quantity of soil, and the sustainable development that prioritizes the environment. This law aims to protect agricultural fields, including agricultural lands with steppe ecosystems. All kinds of interventions to open the natural steppes up for agriculture are within the scope of this law. The studies on land size and land management efficiency within the scope of the law will increase productivity and reduce opening and conversion of marginal lands to agriculture. In addition, the Soil Conservation Boards established in each province within the scope of the Regulation on the Conservation, Use and Planning of the Agricultural Lands have important duties such as the conservation, development and efficient use of agricultural fields, development, conservation and recovery of land features, and adoption of soil conservation measures on a local scale.

Lastly, the Organic Farming Law and the relevant Regulation and Good Agricultural Practices Regulation form the legal basis to encourage eco-friendly agricultural practices. Such practices reduce the degradation of natural lands around the agricultural fields due to agricultural practices. In addition, regulations regarding foraging and protection of plant and genetic resources contribute to the conservation of steppe biodiversity.

National Policy Papers

The relevance of the policy documents to the conservation and sustainable management of steppes is evaluated in detail under 4 different headings, namely National Development Plans and Programs, National Strategies and Action Plans, Institutional Plans and Programs, Regional Plans and Programs (GAP Region) (ANNEX 1. Analysis of Legislation and Top Policy Documents). These documents were scanned for the term “steppe”, and it was seen that the term “steppe” is not mentioned in many documents. In this scanning work, objectives, goals and actions that can contribute to the conservation and management of steppes were examined and assessed in detail, especially in the documents that do not contain the term “steppe”.

National Development Plans

The term “steppe” does not appear in the 9th, 10th, and 11th Development Plans of Turkey; however, nature conservation and biodiversity policies are included in the national programs as a part of the five-year development plan. In the 9th Development Plan, conservation and development of biodiversity and added economic value are determined as a priority (Article 459; Başbakanlık Devlet Planlama Teşkilatı, 2007). As to the goals and objectives of the 10th Development Plan, natural resources and ecosystem services are covered as well as implementation processes by measuring their value, and identification, conservation, sustainable use, development and monitoring of biodiversity, which is important for agriculture, forestry, food and pharmaceutical industries (Article 1037 and 1039; Kalkınma Bakanlığı, 2012). In the 11th Development

Plan (2019-2023), policies and measures related to "Determination, registration, protection, sustainable use, development, and monitoring of biodiversity and genetic resources, prevention of their trafficking, and bringing the benefits of genetic resources and related traditional knowledge to our country (Article 716)" and "Effective management of protected areas by increasing the number of protected areas on land and sea for protection, restoration and sustainable use of ecosystems and ecosystem services (Article 717)" under the subject of "Environmental Protection" constitute an important legal basis for steppes. Under the subjects of "Agriculture", "Urban Infrastructure" and "Rural Development", there are policies and measures related to the conservation, development and sustainable use of natural resources and biodiversity (Türkiye Cumhuriyeti Cumhurbaşkanlığı Strateji ve Bütçe Başkanlığı, 2019).

National Strategy and Action Plans

The Strategy and Action Plans with direct objectives related to the conservation and sustainable management of steppes are as follows:

- National Biodiversity Strategy and Action Plan - NBSAP (2007) and National Biodiversity Action Plan - NBAP (2018-2028)
- Ecosystem-Based Adaptation Strategy in Anatolian Steppe Ecosystems (2018)
- National Strategy and Action Plan for Combating Desertification - NSAPCD (2015-2023)
- Turkey's National Climate Change Strategy (2010-2023), Turkey's National Climate Change Strategy and Action Plan - CCSAP (2011-2023) and Turkey's National Climate Change Adaptation Strategy and Action Plan - NCCASAP (2011-2023)
- National Action Plan (2011)
- Turkey's National Protected Areas and Climate Change Strategy (2011)

NBSAP emphasizes that the existing protected areas do not adequately represent the biodiversity components of Turkey, especially steppe and marine ecosystems. The Strategic Goal 5, "Conservation of steppe biodiversity, sustainable use of its components, equal and fair sharing of benefits arising from the use of genetic resources and combating the loss of steppe biodiversity and its socio-economic consequences", includes objectives and actions related to steppe ecosystems (Çevre ve Orman Bakanlığı, 2007). Since the NBSAP Goals and Objectives are valid for the period of 2018-2028 and are associated with the NBAP, the national goals specified in the NBAP also support steppe ecosystems (Tarım ve Orman Bakanlığı, 2019a). Ecosystem-Based Adaptation Strategy in Anatolian Steppe Ecosystems includes goals related to the conservation and management of steppes under many different subjects, aiming to facilitate and encourage ecosystem-based adaptation strategies and practices in steppe ecosystems for adaptation to climate change (Avcıoğlu-Çokçalışkan et al., 2018; Doğa Koruma Merkezi, 2018). In the Climate Change and Climate Change Adaptation Strategy and Action Plans, there are objectives for determining the carbon sequestration potential of steppe areas and determining and monitoring the effects of climate change on steppe ecosystems and developing adaptation measures (Çevre ve Şehircilik Bakanlığı, 2011a, 2011b, 2011c). In addition, the objectives and actions related to agriculture and food security, land use, forestry, water resources management, ecosystem services and biodiversity contribute to the conservation and sustainable management of steppe ecosystems. NSAPCD includes outputs and actions directly related to the improvement of steppe ecosystems, increasing management efficiency and ensuring their representation in the protection system (Orman ve Su İşleri Bakanlığı, 2015).

In the remaining Strategy and Action Plans specified in Annex 1, the term "steppe" is not mentioned, and there is no policy and measure directly related to steppe ecosystems. On the other hand, all Strategy and Action Plans include indirect goals and actions that can contribute to the conservation and sustainable management of steppe ecosystems under the subjects of agriculture and food security, forestry, land use, climate change and adaptation, rangeland and animal husbandry management, rural development, environmental protection, natural resource management, water management, drought, biodiversity and ecosystem services.

Institutional Plans and Programs

In the Strategic Plan of the Ministry of Agriculture and Forestry (2019-2023), the term "steppe" is not mentioned, but the terms "meadow" and "rangeland" are mentioned. This Strategic Plan includes goals and strategies that can contribute to the conservation and management of steppe ecosystems under the objectives of increasing welfare in rural areas, increasing productivity and quality in agricultural production, sustainable management of soil and water resources, combating climate change, desertification and erosion, and conservation and sustainable management of biodiversity (Tarım ve Orman Bakanlığı, 2018a). The Strategic Plan of the General Directorate of Forestry (2019-2023) aims to prevent soil erosion and reduce grazing pressure by carrying out rehabilitative activities in the rangelands in the forests, forest edges and upper tree lines which are used as rangelands but cannot be transformed into forestlands (Tarım ve Orman Bakanlığı, 2018b). In the resolutions of the III. Agriculture and Forestry Council (2019), there is reference to the determination, conservation, improvement and monitoring of natural resources and biodiversity, especially the sustainable management and implementation of agricultural fields and rangelands (Tarım ve Orman Bakanlığı, 2019b).

Regional Plans and Programs

Southeastern Anatolia Project (GAP) Regional Development Administration produces regional development plans, action plans and programs in line with the national plans and programs for the social and economic development of the GAP Region. In addition, Karacadağ Development Agency also prepares regional plans for the socio-economic development of the TRC2 Region (Diyarbakır-Şanlıurfa). These plans and programs that form policies for the region are as follows:

- GAP Regional Development Administration Strategic Plan (2019-2023)
- GAP Action Plan (2014-2018), GAP Last Situation Report 2018 (GAP RDA, 2019), GAP Administration 2018 Annual Report
- TRC2 Region (Diyarbakır - Şanlıurfa) 2014-2023 Current Situation Report, Regional Plan, Analysis and General Assessment Report
- GAP Regional Tourism Master Plan (2010)
- GAP Regional Development Plan (2002-2010)
- GAP Master Plan (1989)

In the plans and programs, the term "steppe" is not mentioned, and there is no policy and measure directly related to steppe ecosystems. On the other hand, under the strategies and plans prepared by the GAP Regional Development Administration, there are practices that can contribute to the conservation and sustainable management of steppe ecosystems and set an example. Among these, eco-friendly and innovative agricultural practices, including organic and good agriculture, sustainable animal husbandry, efficient and productive use of natural resources, rural development supports in agricultural, non-agricultural, animal husbandry and non-irrigation fields, and tourism practices pursuing the balance between protection-use come to the forefront (GAP Bölge Kalkınma İdaresi, 2014; Sanayi ve Teknoloji Bakanlığı, 2018; 2019a; 2019b). The goals, objectives and strategies of the TRC2 Regional Plan include conservation and sustainable use of soil and water resources, recording biological resources for the conservation of the environment and biodiversity, effective fight against stubble burning, agricultural spraying and input use, eco-friendly agricultural techniques and good agricultural practices, nature tourism and ecotourism, and strategies for diversifying the livelihoods of the rural people, especially in agricultural regions with limited irrigation opportunities (Karacadağ Kalkınma Ajansı, 2011; 2013).

Although there are many policy documents and legislative frameworks to support the conservation and management of steppes, specific legislation for steppes and effective management of steppes is still needed.

2.5.2. Institutional Structure and Capacity in the Conservation and Management of the Steppes

In Turkey, there is no specific institutional structure authorized and responsible for the management of steppe ecosystems. The steppe ecosystems comprise natural steppes, meadows, and rangelands, together with the degraded forests that have steppe quality and are managed through authorities and responsibilities of different institutions under different laws and regulations. The studies on the conservation and management of steppes are mainly preformed by two ministries, namely Ministry of Agriculture and Forestry and Ministry of Environment and Urbanization. These studies are carried out by various general directorates and affiliated provincial directorates.

The General Directorate of Nature Conservation and National Parks (GDNCNP) (Ministry of Agriculture and Forestry) and the Regional Directorates of NCNP, are responsible for inventory, research, conservation, planning and management, rehabilitation, restoration and monitoring activities related to biodiversity and protected areas as well as regulation of terrestrial hunting, operation and control of hunting resources. It is a key institution in terms of conservation and sustainable management of steppe biodiversity, and establishment and management of protected areas representing steppes. The inventory and monitoring studies carried out in 81 provinces in order to take the inventory of biodiversity in Turkey and monitor the species and habitats that are determinants of changes in ecosystem dynamics provide an important base for determining and recording steppe biodiversity. Even though there is no protected area status specially for steppes in Turkey, steppe ecosystems are included in existing protected areas such as National Park, Natural Park, Natural Monument, Nature Reserve, Wetland of National Importance, Wetland of Local Importance, and Wildlife Reserve. In this respect, inclusion of potential steppe areas in protected areas and protection of steppe species and habitats within the existing protected areas, and preparation, implementation and monitoring of species action plans for steppe species are of great importance.

The General Directorate of Forestry (GDF) (Ministry of Agriculture and Forestry) and the Regional Directorates, carry out rehabilitative measures for glades located in forests, forest-edges, and upper tree lines and also in rangelands, summer pastures, winter pastures and grasslands located in the areas where afforestation, soil conservation, and basin improvement activities are carried out. The General Directorate is responsible for the conservation, care and improvement of rangelands, summer pastures, winter pastures and grasslands in the forests, forest edges and upper tree lines of the forests, which are used as rangelands but cannot be converted into forestlands. In these areas, rangeland improvement studies with cultural and technical measures (fertilization, artificial insemination, erosion control etc.) are carried out as well as regulation and planning of grazing. These studies put responsibilities on GDF for in-forest rangelands, that is to say steppe areas.

The General Directorate of Plant Production (GDPP), the General Directorate of Livestock (GDL), the General Directorate of Agrarian Reform (GDAR), the Agriculture and Rural Development Support Institution (ARDSI), the General Directorate of Agricultural Research and Policies (GDARP), and the General Directorate of Agricultural Enterprises (GDAE) under the Ministry of Agriculture and Forestry are the authorized institutions for the sustainable management of natural resources offered by steppe ecosystems used as agricultural fields and rangelands.

Duties of the **GDPP** include increasing the plant production, plant productivity and plant diversity, developing and disseminating organic agriculture and good agricultural practices, popularizing the conscious use of fertilizers based on soil analyses, determination and development of agricultural basins, establishing basin-based production policies, conducting research on water, soil, environment, climate change, cultivation techniques, harvesting and storage, and contributing to improvement and conservation of meadows, rangelands and pastures.

In this context, the GDPP Department of Meadow-Rangeland and Forage Crops and the Department of Good Agricultural Practices and Organic Farming conduct studies that directly contribute to conservation of steppe ecosystems. The Department of Meadow-Rangeland and Forage Crops works on the determination, delimitation and allocation of rangelands, summer pastures, winter pastures, general grasslands and meadows, increasing the production of perennial forage crops and establishing sown pastures. The authority to carry out activities related to rangelands is given to the Ministry of Agriculture and Forestry at the central level and to the Provincial Pasture Commissions at the provincial level The Rangeland Improvement and Management Projects are carried out collaboratively by the Ministry of Agriculture and Forestry, universities and research institutes. In addition, the training and extension activities are carried out for villagers and shepherds. The Rangeland Information System (RIS) is an important system in which rangeland areas are recorded, visualized and monitored via satellite images.

Supports provided within the scope of the Environmentally Friendly Agricultural Land Protection Program (EFALP) managed by the GDPP set a model for the dissemination of eco-friendly agricultural practices. Such practices support the steppe creatures that use agricultural fields and contribute to reducing the pressure of intensive farming practices on the surrounding natural steppe areas.

Among the duties of the **GDL** are improvement of animal husbandry and livestock production, dissemination of high-quality animal breeds, encouraging animal production with methods that protect human health and ecological balance, implementation of livestock improvement programs, and marketing of animal products. Supporting animal breeding in a way to keep the quality of rangelands, performing rotational grazing by determining the stocking capacity, and creating subsidy models for the sustainable management of rangelands in order to reduce the grazing pressure on rangelands are important efforts for the conservation and sustainable management of the steppes used as rangelands.

The **GDAR** is responsible for taking the necessary measures to protect agricultural fields and ensuring their proper use as well as performing land and soil surveys, classification and mapping, preparing land use plans for agricultural purposes or having them prepared, managing agricultural product planning and supports, increasing productivity in agricultural irrigation, ensuring the use of proper irrigation techniques, and paving the way for working on global climate change, drought and desertification.

Sustainable land management and climate-smart agricultural practices, conservation of agricultural biodiversity and increasing the adaptative capacity to climate change in agricultural practices implemented within the scope of the Strategy and Action Plan to Combat Drought (2018-2022) under the coordination of the Agricultural Drought Management Coordination Board, whose secretariat and coordination is assumed by the GDAR, are important studies (Gıda, Tarım ve Hayvancılık Bakanlığı, 2018). Determining the agricultural support framework, priority issues and support items and the amount, and directing agricultural supports within the Agricultural Supports and Steering Board, whose secretariat and coordination is assumed by the GDAR Department of Agricultural Supports, offer opportunities for conservation of steppe biodiversity.

The Instrument for Pre-Accession Assistance for Rural Development (IPARD) is operated by the **ARDSI** in order to compensate for the income losses arising from the producer's commitments to protect the environment and natural resources. With the Agricultural and Environmental Measures within the scope of the program, it is aimed for farmers to adopt more eco-friendly and sustainable practices that can support the conservation of soil, underground waters, surface waters, biodiversity and agricultural fields with high natural value. It provides an important opportunity for economically supporting the rural population in steppe areas and promoting economic activities and production methods suitable for these areas. In this context, a precaution program is being developed to support the great bustard (Otis tarda) friendly agricultural practices, which is an endangered steppe bird, in selected agricultural fields in Polatlı, Ankara.

The **GDARP and its affiliated Research Institutes** are responsible for preparing and managing research projects on agricultural fields, vineyards-orchards, meadows-rangelands and forage crop production resources, biodiversity and genetic resources, effective use of soil and water resources, soil moisture conservation,

biological fertilizers, biological pest management, land degradation, erosion, drought and climate change.

GAP Agricultural Research Institute, one of the affiliated research institutes, serves in the agriculture and animal husbandry sectors, especially in the provinces of the Southeastern Anatolia Region. It is active regionally in the fields of conservation of genetic resources, resource material development, improvement and breeding techniques, plant protection and resistance to diseases, socio-economy and training and extension. In addition, it works on the in-situ conversation of soil moisture and water resources, soil conservation for erosion prevention, irrigation saving and efficiency. With the GAP Agricultural Training Center (GAP ATC) within the Institute, it organizes theoretical and applied agricultural trainings nationally and internationally, contributing to the training of breeders and farmers in the regions that are irrigated or will be opened to irrigation with GAP Project.

Konya Soil Water and Desertification Research Institute works on the conservation of natural resources, and biodiversity, and determining the plant species resistant to semi-arid areas. Bahri Dağdaş International Agricultural Research Institute and Drought Test Centre conducts research on cereals, cash crops, edible legumes, medicinal and aromatic plants, meadow-rangeland forage crops, fruit growing, vegetable growing, biodiversity, genetic resources and animal husbandry. The Aegean Agricultural Research Institute (AARI) and Field Crops Central Research Institute are the leading institutes responsible for the conservation (generally ex-situ) and management of plant genetic diversity. The National Genebank, Turkey Seed Genebank, and a herbarium were established within these institutes. These studies contribute to the conservation and sustainable use of steppe biodiversity and genetic resources.

The **GDAE** is responsible for transferring the seeds, saplings, seedlings and similar goods that it grows, which can adapt to climate change, and the breeding animals and sperms it produces, to the breeders in order to increase and diversify the production of crops and animals and to improve the product quality. In agricultural practices to be carried out in enterprises where steppe ecosystems and related species exist, it is important to promote the breeding of local plant and animal species, implement eco-friendly practices and protect natural and semi-natural steppe ecosystems.

The **General Directorate of Combating Desertification and Erosion (GDCDE), the General Directorate of State Hydraulic Works (GDSHW), the General Directorate of Water Management (GDWM), and the General Directorate of Meteorology (GDM)** under the Ministry of Agriculture and Forestry are also other relevant institutions that have direct and indirect plans and programs for the conservation of steppe ecosystems. The **Department of Education and Publishing (Ministry of Agriculture and Forestry)** makes a significant contribution to in-service and non-public agricultural training and extension activities by observing the biodiversity values of the steppes and sustainable resource use and including them in training programs.

The **Ministry of Environment and Urbanization and the Provincial Directorates of Environment and Urbanization,** are the main institutions responsible for landscape planning, in addition to many other roles. The General Directorate of Spatial Planning has an important position in this regard. In this context, the institution is currently preparing landscaping plans and integrated coastal area plans, and the Spatial Strategy Plan preparation studies, which will bring a landscape planning perspective into the practice in the near future, still continue. With their powers and responsibilities, the General Directorate of Environmental Management for prevention of environmental pollution and adaptation to climate change and the General Directorate for Protection of Natural Assets for registration, approval and announcement of protected areas and especially for the determination, registration and approval of special protected areas and natural protected areas under its authority and management of biodiversity and habitats in these areas are two important bodies considering the steppe ecosystems.

The **Ministry of National Education** for non-formal and formal education, The **Ministry of Industry and Technology** for inclusion of priorities regarding steppes in regional plans and programs and allocation of financial resources, **Academic Institutions** for human resource, research and technology development, Chambers of Agriculture, Producer Organizations and Producer Unions, **Non-Governmental Organizations**

(especially those working on nature conservation) for adoption and dissemination of measures related to nature conservation and sustainable resource use, and the **Private Sector** for implementation and financial support are important stakeholders considering conservation and sustainable management of steppes.

Local Governments are also important stakeholders in terms of planning and management authorities at local level and supporting agricultural and rural services that uphold sustainable resource use. With the "Law No. 6360 on the Establishment of Metropolitan Municipalities and Twenty-seven Districts in Fourteen Provinces and Amendments to Certain Laws and Decree Laws", which was adopted on 06/12/2012 and names and some articles of which were changed with the Law No. 6447 of 14/03/2013, Metropolitan municipalities were established in Aydın, Balıkesir, Denizli, Hatay, Malatya, Manisa, Kahramanmaraş, Mardin, Muğla, Tekirdağ, Trabzon, Şanlıurfa, Van and Ordu provinces with a total population of over 750,000. The borders of Adana, Ankara, Antalya, Bursa, Diyarbakır, Eskişehir, Erzurum, Gaziantep, İzmir, Kayseri, Konya, Mersin, Sakarya and Samsun metropolitan municipalities were extended to the provincial administrative borders. The legal entity statuses of the special provincial administrations in the provinces of Istanbul and Kocaeli, as well as the 28 provinces mentioned above, were removed. In addition, the legal entities of village and town municipalities in these provinces were abolished and they were attached to the municipality of the related district. Consequently, the metropolitan municipality administration showed an expansion from city administration to area administration. As a result, local governments together with the Ministry of Environment and Urbanization started to have an important authority in reducing the pressure created by construction works on agricultural areas, rangelands and forests and preventing the misuse of these areas. New measures should be taken in order to protect rangelands, summer pastures, winter pastures and public pastures and meadows from construction pressure, especially after the extension of the metropolitan municipality borders to the provincial borders.

Although there is no single institutional structure responsible for the conservation and management of steppes in Turkey, there is capacity and various mechanisms within different institutions. In this regard, institutional cooperation becomes even more important for the conservation and management of steppes. In addition, in order to prevent duplication of efforts and to ensure coordination of works between these institutions, capacity should be increased, and efforts should be made more effectively through information sharing and coordination. In this direction, organizational structuring under different strategic purposes, capacity increase and coordination should be prioritized. Moreover, in the Governance Section, recommendations for the establishment of a governance structure that can enable more effective work are presented.

2.5.3. Assessment of Legislation and Institutional Responsibilities on Conservation and Management of Steppes

In this part of the Strategy and Action Plan, laws and regulations related to the conservation and management of the steppes as well as the duties and responsibilities of the key institutions in this field are covered. DKM experts made various evaluations in this context. Firstly, an organogram showing central and local level institutions was prepared (Figure 17). Secondly, by examining together the legislation and the duties and responsibilities of institutions, the overlaps and gaps in key issues related to the conservation and management of the steppes were revealed. In Table 2 produced for this purpose, the legislation and institutional responsibilities were evaluated in two different axes under the key topics related to the conservation and management of steppes. The evaluation made in terms of laws and regulations is shown in the main axis of the table. For the sections, the cells with relevant legislation are shown in green color. In addition, the institutional responsibilities under different topics are specified in the bottom column of the table. The evaluation of the duties and responsibilities of institutions is based on the results of the survey conducted with participating institutions in the First National Steppe Conservation Workshop held in Şanlıurfa on December 2-3, 2019 within the scope of the Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project. In the survey results, the extent of overlapping duties and responsibilities of different institutions and the importance of cooperation for the sustainable management of the steppes stood out. The results of this survey, in which 90 experts from the First National Steppe Conservation Workshop participated, are presented in Annex 2.

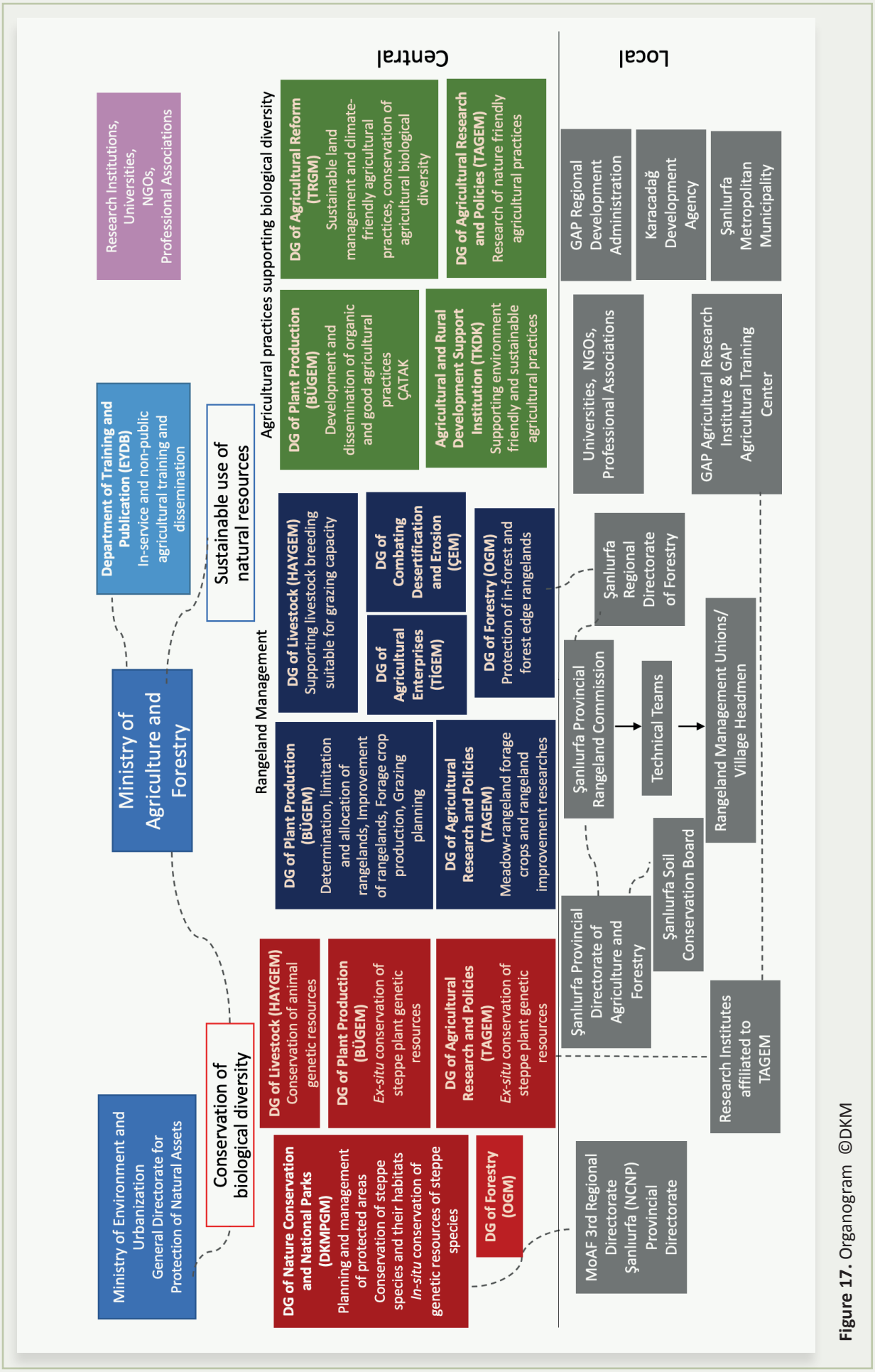

Figure 17. Organogram ©DKM

Table 2. Assessment of Legislation and Institutional Responsibilities on the Conservation and Management of Steppes

	LEGISLATION ON THE CONSERVATION AND MANAGEMENT OF STEPPES																													
SUBJECT HEADINGS	Law on Pasture	Regulation on Pasture	Forest Law	Forest Management Regulation	National Afforestation and Erosion Control Mobilization Law	Regulation on Afforestation	Reg. on Forest Services on Afforestation and Erosion Control	Environment Law	National Parks Law	Land Hunting Law	Cultural and Natural Heritage Prot. Act	Wetland Conservation Regulation	Reg. on Proc. and Prin. of Determ., Registr. and Approval of Protected Areas	Agriculture Law	Agricultural Basins Regulation	Reg. on Good Agricultural Practices	Soil Pres. and Land Util. Law and Amend.	Regulation on the Conservation, Use and Planning of Agricultural Land	Regulation on Supporting Producers Who Prefer EBALP Program	Organic Farming Law and Reg. on the Princi. and Applic. of Organic Farming.	Agrarian Reform Act for Land Arrangements in Irrigation Areas	Applic. Reg. on Land Consolidation and On-Farm Development Services	By-Law on Prot. of Water Basins and Preparation of Management Plans	Biosafety Law	Veterinary Services, Plant Health, Food and Feed Law	Seed Law	Regulation on Removal, Production and Trade of Natural Flower Bulbs	Reg. on the Collection, Preservation and Use of Plant Genetic Resources	Regulation on Conservation of Animal Genetic Resources	**INSTITUTIONS** *** Principal Institution** **** Related Institutions**
Conservation of important species*			■	■				■	■	■	■	■	■	■										■						*GDNCNP **GDF-GDARP-GDPP-GDL
Conservation of plant genetic resources*			■	■				■	■		■	■	■	■										■	■	■	■	■		*GDARP-GDPP **GDNCNP-GDF-GDL
Conservation of animal genetic resources			■	■				■	■	■	■	■	■	■										■	■				■	*GDARP-GDNCNP-GDL (livestock) **GDPP-GDF
Conservation of vegetation	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■							*GDNCNP-GDPP-GDF **GDARP-GDL
Conservation of in-forest/ forest-edge rangelands/ steppes			■			■	■																							*GDF **GDPP-GDNCNP-GDARP-GDL
Conservation of plant species composition - Forage crop diversity*		■												■						■										*GDPP **GDARP-GDNCNP-GDF-GDL
Conservation of plant species composition – Species diversity*		■							■				■																	*GDPP-GDNCNP **GDARP-GDF-GDL
Conservation of soil (including erosion in forest, agricultural fields)	■	■	■	■	■	■	■	■						■	■	■	■	■	■	■	■	■	■							*GDF-GDPP-GDARP-GDAR-GDCDE **GDNCNP-GDL
Grazing planning	■	■	■						■																					*GDPP-GDL **GDF-GDARP-GDNCNP
Determining the carrying capacity of rangelands	■								■																					*GDPP-GDL **GDARP-GDF-GDNCNP
Determining the number and type of animals to graze	■	■	■						■																					*GDL-GDPP **GDARP-GDF-GDNCNP

	LEGISLATION ON THE CONSERVATION AND MANAGEMENT OF STEPPES																													
SUBJECT HEADINGS	Law on Pasture	Regulation on Pasture	Forest Law	Forest Management Regulation	National Afforestation and Erosion Control Mobilization Law	Regulation on Afforestation	Reg. on Forest Services on Afforestation and Erosion Control	Environment Law	National Parks Law	Land Hunting Law	Cultural and Natural Heritage Prot. Act	Wetland Conservation Regulation	Reg. on Proc. and Prin. of Determ., Registr. and Approval of Protected Areas	Agriculture Law	Agricultural Basins Regulation	Reg. on Good Agricultural Practices	Soil Pres. and Land Util. Law and Amend.	Regulation on the Conservation, Use and Planning of Agricultural Land	Regulation on Supporting Producers Who Prefer EBALP Program	Organic Farming Law and Reg. on the Princi. and Applic. of Organic Farming.	Agrarian Reform Act for Land Arrangements in Irrigation Areas	Applic. Reg. on Land Consolidation and On-Farm Development Services	By-Law on Prot. of Water Basins and Preparation of Management Plans	Biosafety Law	Veterinary Services, Plant Health, Food and Feed Law	Seed Law	Regulation on Removal, Production and Trade of Natural Flower Bulbs	Reg. on the Collection, Preservation and Use of Plant Genetic Resources	Regulation on Conservation of Animal Genetic Resources	**INSTITUTIONS** *** Principal Institution** **** Related Institutions**
Allocation of rangelands (areas with important species in general and forest regime)	■	■																												*GDPP-GDF **GDL-GDARP-GDNCNP
Prevention of out-of purpose use (quarry, solar power plant, afforestation, etc.)	■	■	■		■	■		■	■	■	■	■	■				■	■			■	■	■							*GDPP-GDF-GDNCNP **GDARP-GDL
Research on improvement and rehabilitation of steppes or rangelands	■	■																												*GDARP-GDPP **GDF-GDNCNP- GDL
Implementation of the improvement and rehabilitation of steppe or rangelands	■	■	■			■	■			■		■	■																	*GDPP-GDNCNP-GDCDE ** GDARP-GDF-GDL
Agricultural practices supporting biodiversity														■	■	■	■		■	■										* GDPP-GDAR-ARDSI ** GDARP-GDNCNP (protected areas)

** It is important to divide the conservation of important species and plant genetic resources into in-situ and ex-situ conservation and to define institutional responsibilities within this framework. There is need for better cooperation on these issue.*

***Conservation of plant species composition is given under two different headings – forage crop diversity and species diversity - for the evaluation of duties and responsibilities separately. Nevertheless, there is need for cooperation due to overlaps in institutional powers in important areas for both forage crop diversity and biodiversity.*

2.5.4. Local Structure and Capacity at Şanlıurfa Scale

In Şanlıurfa, Şanlıurfa Regional Directorate of Forestry, Şanlıurfa Provincial Directorate of Agriculture and Forestry and 3rd Regional Directorate under the Ministry of Agriculture and Forestry, are key provincial organizations for the conservation and management of steppe ecosystems and are responsible for the execution of the Ministry's duties and responsibilities at the provincial scale. In addition, the Provincial Directorate of Environment and Urbanization, the Provincial Directorate of Culture and Tourism, and the Provincial Directorate of National Education are other relevant provincial organizations.

In Şanlıurfa, there are important boards established within the scope of laws and regulations on the conservation of rangelands and agricultural fields. Among these, **Şanlıurfa Provincial Pasture Commission** is responsible for all kinds of renting of unused rangelands, summer pastures and winter pastures in accordance with the provisions of Law on Pastures and Regulation on Pastures. The works of the commission are carried out by the Şanlıurfa Provincial Directorate of Agriculture and Forestry under the chairmanship of the Şanlıurfa Governorship. The Commission determines the principles of use and grazing plan in the rangelands, winter pastures, summer pastures and public meadows and grasslands every year. Another important board is the **Şanlıurfa Soil Conservation Board**. The Division of Land Consolidation and Agricultural Infrastructure under Şanlıurfa Provincial Directorate of Agriculture and Forestry is responsible for carrying out the secretariat services of the board, as well as participating in the works. The Board works on classification of land and soil resources in Şanlıurfa in accordance with scientific principles, determining the minimum size of the agricultural fields and the agricultural fields with sufficient income and preventing their partition, preparation of the land use plans, evaluation of social, economic and environmental dimensions in the process of conservation and improvement with participatory methods, prevention of out-of-purpose use and misuse, and establishing methods to ensure protection.

In case of Şanlıurfa, GAP Regional Development Administration and Karacadağ Development Agency are regionally key institutions.

With the Decree Law (DL) No. 388, **GAP Regional Development Administration**, which is a central governmental organization with a legal entity under the Ministry of Industry and Technology, headquartered in Şanlıurfa, was given the tasks of "rapid development of the provinces within the scope of the Southeastern Anatolia Project, producing or having plans produced on infrastructure, license, housing, industry, mining, agriculture, energy, transportation and other services for the realization of investments, taking or having necessary measures taken to enhance the educational attainment of the local people, and ensuring the coordination between institutions and organizations". Active in 9 provinces of the Southeastern Anatolia Region, namely Adıyaman, Batman, Diyarbakır, Gaziantep, Kilis, Mardin, Siirt, Şanlıurfa and Şırnak, GAP Regional Development Administration has contributed to the social and economic development and improvement of the region since its establishment in 1989. It carries out studies under the main strategic goals of Improving Culture and Tourism, Ensuring Environmental and Physical Development, Ensuring Social Development, and Ensuring Economic Development. Furthermore, the projects carried out by the Administration especially in the field of agriculture include exemplary recent studies on resource productivity, smart agricultural practices where technology is used extensively as well as nature-friendly agricultural practices that protect ecosystem services (Doğa Koruma Merkezi, 2018b).

Karacadağ Development Agency, established by Law No.5449, is active in the TRC2 Region that consists of Diyarbakır and Şanlıurfa in the Southeastern Anatolia Region since 2009. The main purpose of Karacadağ Development Agency is to improve cooperation between public sector, private sector and non-governmental organizations, to accelerate regional development in line with the principles and policies stipulated in the national development plans and programs by ensuring proper, effective and sustainable use of resources and

activating the local potential, and to reduce inter-regional and intra-regional developmental gaps. The Regional Plan (2014-2023) prepared by the Karacadağ Development Agency determines the main framework of regional development activities and forms the basis for the financial and technical supports of the Agency. Within the framework of this plan, the development agency works in line with its goals, objectives and strategies under the main development areas of Urban Economies and Economic Growth, Human Development and Social Capital, Quality of Life and Territorial Planning, Sustainable Development and Green Growth (Karacadağ Kalkınma Ajansı, 2013).

In addition, **GAP Agricultural Research Institute** affiliated to the Ministry of Agriculture and Forestry is also active in the region. GAP Agricultural Research Institute serves in the agriculture and animal husbandry sectors, particularly in the provinces of the Southeastern Anatolia Region. It is active regionally in the fields of conservation of genetic resources, resource material development, improvement and breeding techniques, plant protection and resistance to diseases, socio-economy and training and extension. In addition, works on in-situ conversation of soil moisture and water resources, soil conservation for erosion prevention, irrigation saving, and efficiency are carried out. With the GAP Agricultural Training Center (GAP ATC) within the Institute, it organizes theoretical and applied agricultural trainings nationally and internationally, contributing to the training of breeders and farmers in the regions that are irrigated or will be opened to irrigation with GAP Project.

Regional development plans and action plans and programs prepared by these institutions for social and economic development and improvement of the GAP Region are the main policy documents to consider. It is important to integrate priorities, strategies and measures regarding the conservation of the steppes and the sustainable use of the steppe resources into these plans and programs, to establish cooperation and to develop supportive financial resources.

3. The Spatial Assessments Regarding the Steppes of Şanlıurfa

3.1. Current situation: Conservation and Management of the Steppes

Şanlıurfa province has a surface area of 1,927,380 hectares. 24,850 hectares (1.3%) of that are composed of settlements[9]. Total population of this province is 2,035,809 according to 2018 TÜİK data (Table 3). The city is densely populated, especially in the central districts of Eyyübiye, Haliliye and Siverek (Figure 18, Figure 19). Districts with the lowest population are Halfeti, Hilvan and Bozova (Table 3).

Table 3. Distribution of population by districts in Şanlıurfa

District	Population
Eyyübiye	379,123
Haliliye	376,251
Siverek	258,265
Viranşehir	195,910
Karaköprü	195,552
Akçakale	113,194
Suruç	104,302
Birecik	95,149
Harran	87,843
Ceylanpınar	87,684
Bozova	58,565
Hilvan	42,829
Halfeti	41,142
Total	**2,035,809**

9. The settlement information was calculated using Corine 2012 data.

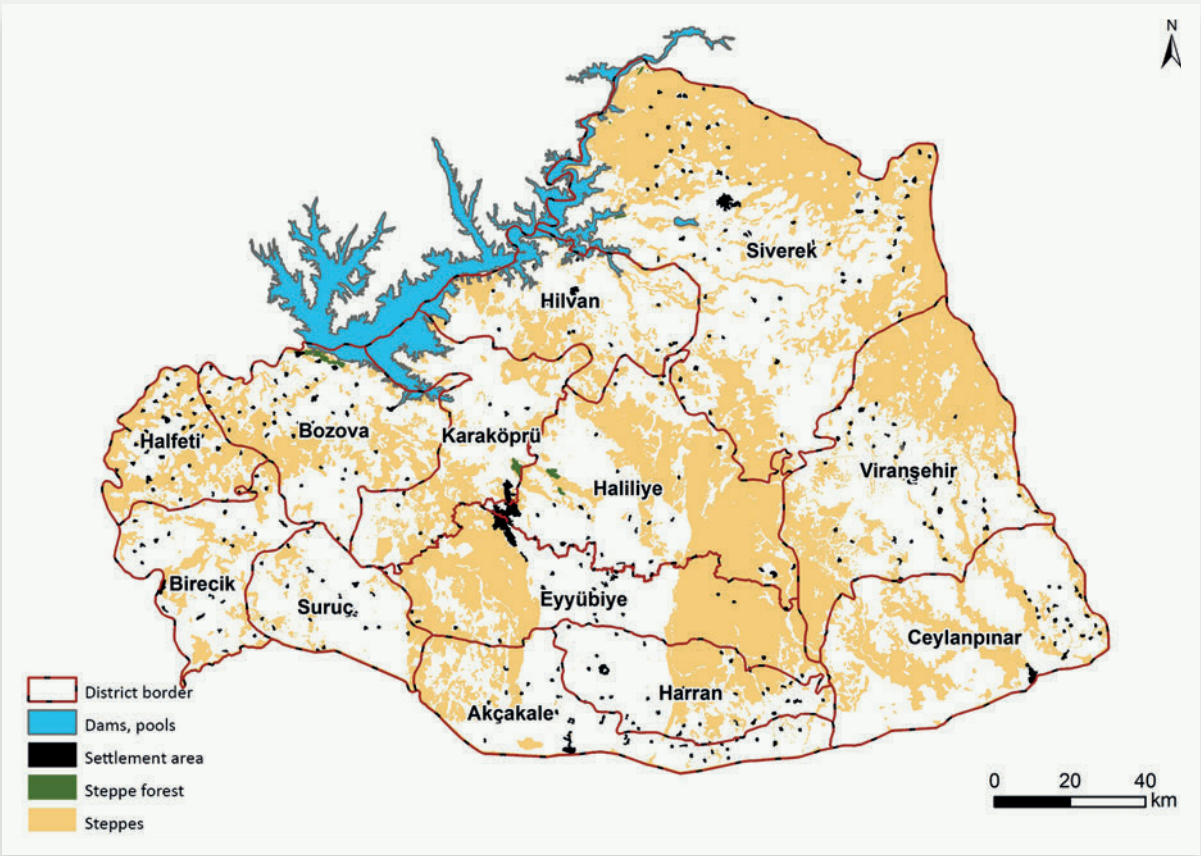

Figure 18. Şanlıurfa steppes (756,098 ha), steppe forests (421 ha) and residential areas (24,850 ha) ©DKM

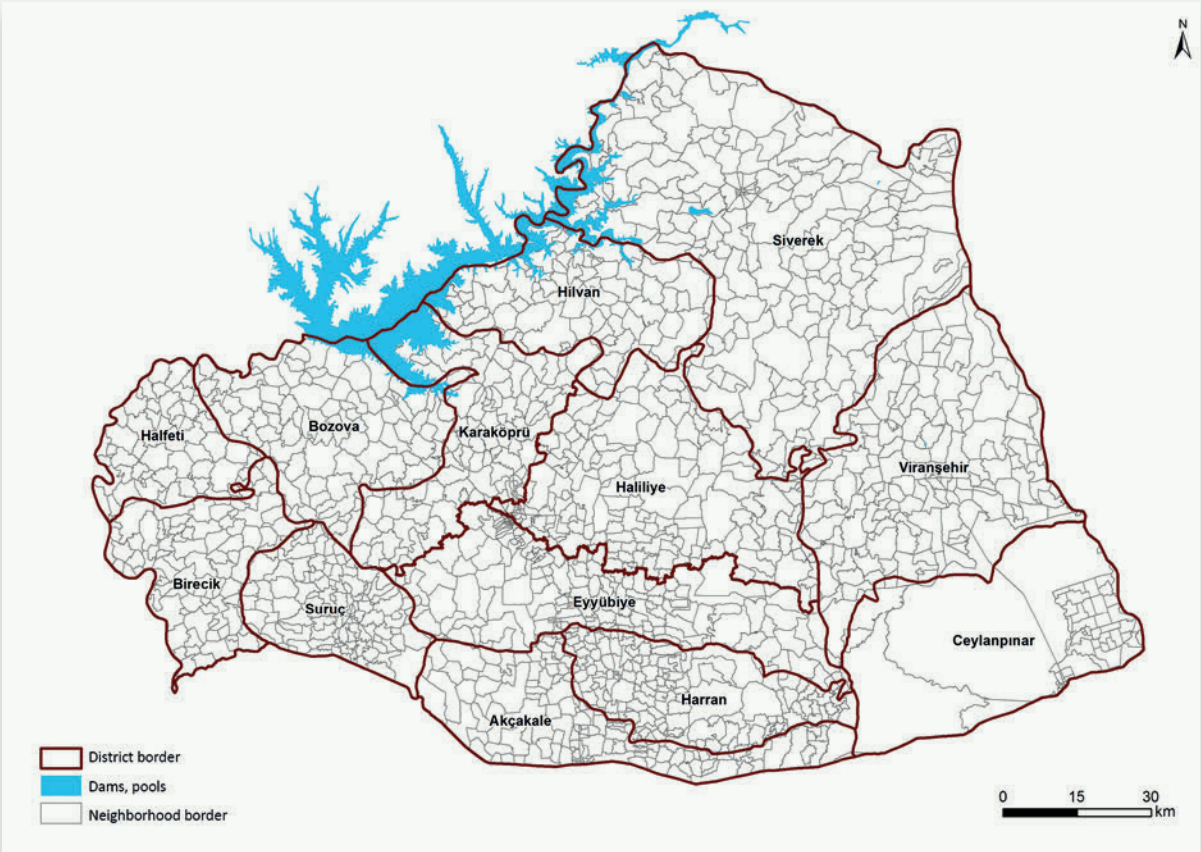

Figure 19. Neighborhood borders in Şanlıurfa ©DKM

Şanlıurfa is one of the provinces with large amounts of steppes in Turkey. In the province, steppes cover 756,098 ha of land, and steppe forests (sparse or closed forest-forming areas in ecological regions dominated by steppes) cover 421 ha of land. Steppes span approximately 39% of the provincial area and stand out as the dominant natural ecosystem in the region. The districts with the widest distribution of steppes throughout the province are Siverek, Viranşehir and Eyyübiye where the population is also high (Figure 20). As for Suruç, it stands out as the district with the lowest coverage of steppes.

In addition to biodiversity that they host, steppes are economically very valuable for local people because they are used as rangelands, and animal husbandry is an important source of income throughout the province. For this reason, there is a significant relationship between the coverage of steppes and the number of livestock in a district. Eyyübiye, Halfeti, Siverek and Haliliye are the districts with a high coverage of steppes. Among these districts, Siverek has the highest number of livestock. Siverek is followed by Viranşehir, Ceylanpınar and Haliliye (Figure 20, Table 4).

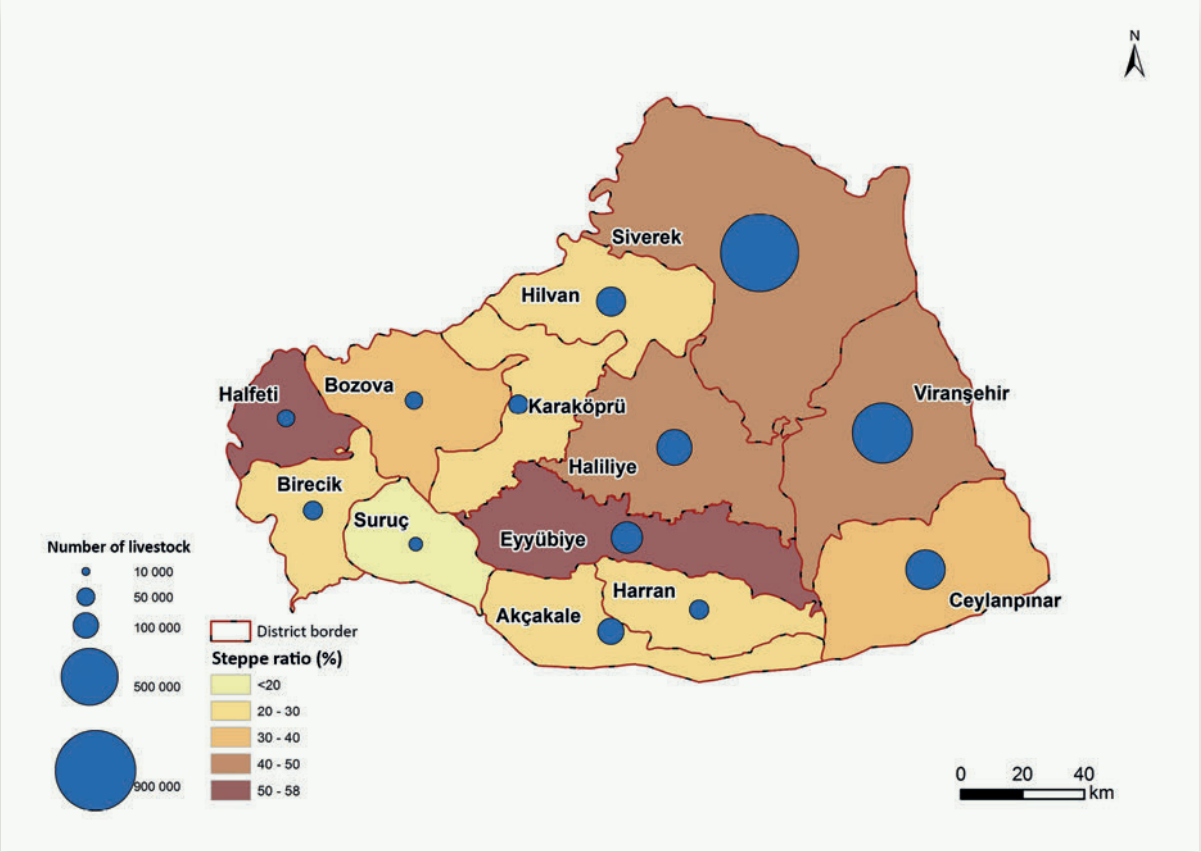

Figure 20. The steppe ratio and the number of livestock in the districts of Şanlıurfa ©DKM

Table 4. Distribution of the steppes, rangelands and number of livestock in Şanlıurfa province by districts (as of 2018)

District name	Surface area of district (ha)	Surface area of steppes (ha)*	Surface area of registered rangelands (ha)**	Coverage of steppes (%)	Registered rangeland ratio in steppes (%)	Number of bovines	Number of ovines	Surface area of steppe forests (ha)*	Surface area of steppes and steppe forests (ha)*
Halfeti	65,002	32,966	864	51	3	1,233	3,112	-	32,966
Harran	92,768	26,537	8,969	29	34	6,865	46,427	-	26,537
Bozova	129,881	42,743	8,709	33	20	13,725	31,281	397	43,140
Hilvan	114,779	34,396	15,462	30	45	14,193	111,149	-	34,396
Siverek	394,307	191,504	69,577	49	36	89,696	80,613	24	191,528
Viranşehir	222,586	104,176	65,104	47	62	83,258	45,378	-	104,176
Haliliye	183,496	89,914	46,191	49	51	31,978	152,402	-	89,914
Ceylanpınar	176,716	5,475	8,536	31	16	19,775	209,955	-	5,475
Suruç	76,532	11,499	573	15	50	8,324	19,475	-	11,499
Birecik	87,167	19,679	1,024	23	5	14,473	41,093	-	19,679
Akçakale	109,663	23,599	10,751	22	46	2,013	8,097	-	23,599
Karaköprü	118,879	34,285	16,961	29	49	8,561	45,927	1	34,286
Eyyübiye	155,604	90,048	21,816	58	24	28,776	118,955	-	90,048
Total	**1,927,380**	**756,098**	**279,694**	**39**	**37**	**352,084**	**2,148,664**	**421**	**756,519**

** The methods used in calculating the surface areas of steppes and steppe forests and the details of data are given in the Section 1.3. Mapping of Turkey Steppes.*

*** Calculated using the registered rangeland information from the Provincial Directorate of Agriculture and Forestry.*

Some of the steppes in the region are used as rangelands. Data on some of these rangelands were digitized, registered and transferred to the RIS system of the Ministry of Agriculture and Forestry. The process of digitizing data on locations of the rangelands in the whole province is ongoing. In Figure 21, distribution of the registered and digitized rangelands across the province as of April 2020 is given. According to these data, there are 279,694 hectares of rangelands registered in Şanlıurfa. According to the available data, most of the registered rangelands are situated in Siverek, Viranşehir and Haliliye. As for Halfeti and Birecik, registered rangelands cover only a limited area. The highest amount of the registered rangelands in steppes comes from Viranşehir, Haliliye and Suruç. Siverek and Viranşehir, where rangelands are widely distributed, are the districts with the highest number of livestock (Table 4).

Figure 21. The steppes (756,098 ha) and rangelands (279,694 ha) of Şanlıurfa province ©DKM

3.1.1. Protected Areas

Şanlıurfa province is one of the important provinces where steppes are protected by legal status. There are 4 protected areas in the province. These are Tek Tek Mountains National Park (NP), Gölpınar Nature Park (NatP), Kızılkuyu Wildlife Reserve (WR), Birecik WR and Birecik Fırat WR. Kızılkuyu WR is in Eyyübiye district, Birecik WR and Birecik Fırat WR are in Birecik district, and Gölpınar NatP is in Karaköprü district. Tek Tek Mountains National Park mostly falls in Eyyübiye district, but it also falls within the borders of Harran and Haliliye (Figure 22). In addition, the Karkamış Flood Plain Wetland, which is a nationally important wetland, is partly located within the borders of Gaziantep and partly of Şanlıurfa.

Among the protected areas, Birecik-Fırat WR stands out with its wetland habitats and Gölpınar Nature Park with its forest habitats. Tek Tek Mountains National Park, Kızılkuyu WR and Birecik WR are very important in terms of steppe habitats and species that use the steppes. Protected areas in the province cover 36,098 ha of land and this corresponds to 1.9%[10] of the surface area of Şanlıurfa province. Tek Tek Mountains National Park, Kızılkuyu Wildlife Reserve and Birecik Wildlife Reserve, which stand out with their steppe habitats, have a total of 33,328 ha of steppe area (according to the updated borders of Kızılkuyu Wildlife Reserve in 2020). In this context, 4.4% of the steppes in the province are under protection with a legal status.

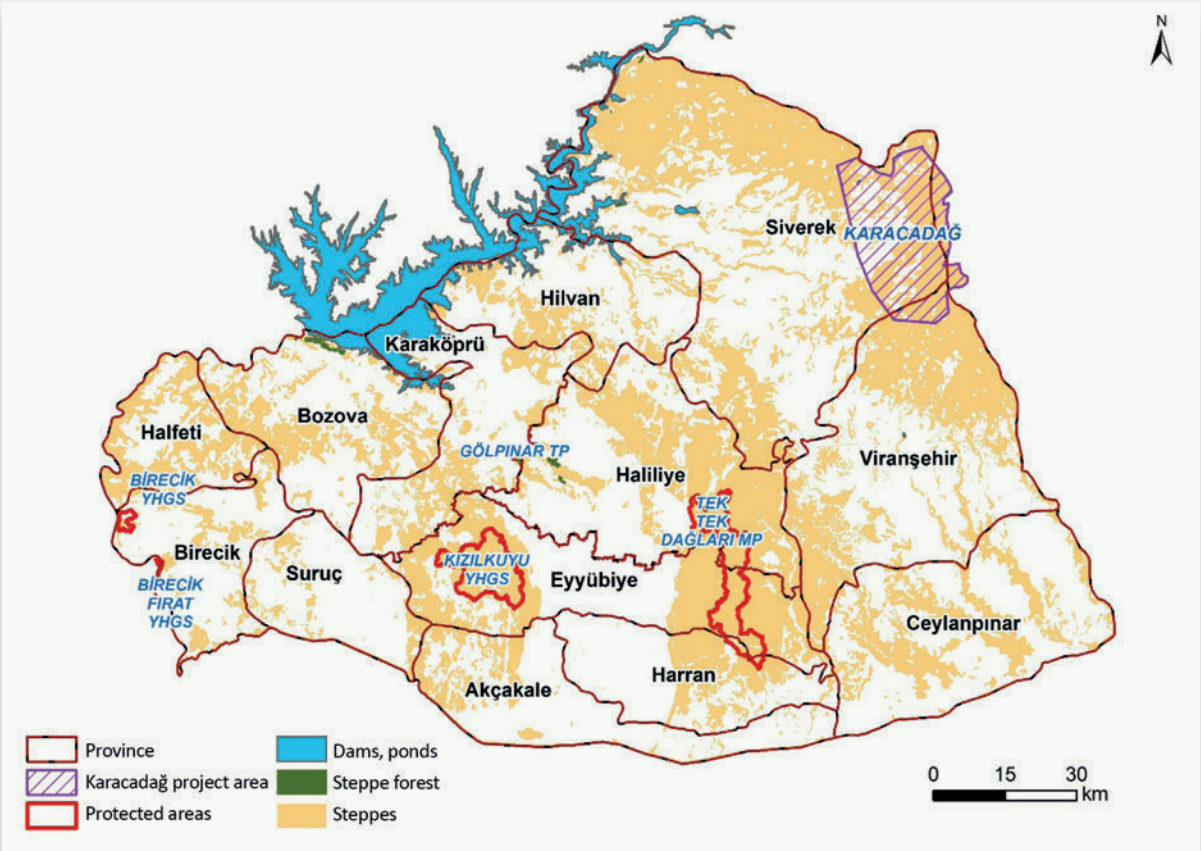

Figure 22. The officially protected areas in Şanlıurfa and Karacadağ project area ©DKM

10. Since there is no numeric data regarding the SITE areas in the province, SITE data is not included in this assessment.

3.1.2. Important Biodiversity Areas

There are studies of different institutions on areas other than protected areas with a legal status that indicate presence of important areas in terms of biodiversity in the province. One of these is the Biodiversity Research conducted by the Society for the Protection of Nature (DHKD) on the scale of the Southeastern Anatolia Region (Welch, 2004). According to the study that uses the Systematic Conservation Planning approach, in which the biodiversity elements and the threats in the region are assessed together, there are 11 Priority Conservation Areas, partially or totally located within the boundaries of Şanlıurfa, and these areas cover 668,857 hectares of land. In Figure 23, the important biodiversity areas discovered as a result of these studies are demonstrated. Detailed information about these areas is given in Annex 3. It is observed that a large part of Halfeti, Birecik and Ceylanpınar districts overlaps with important biodiversity areas.

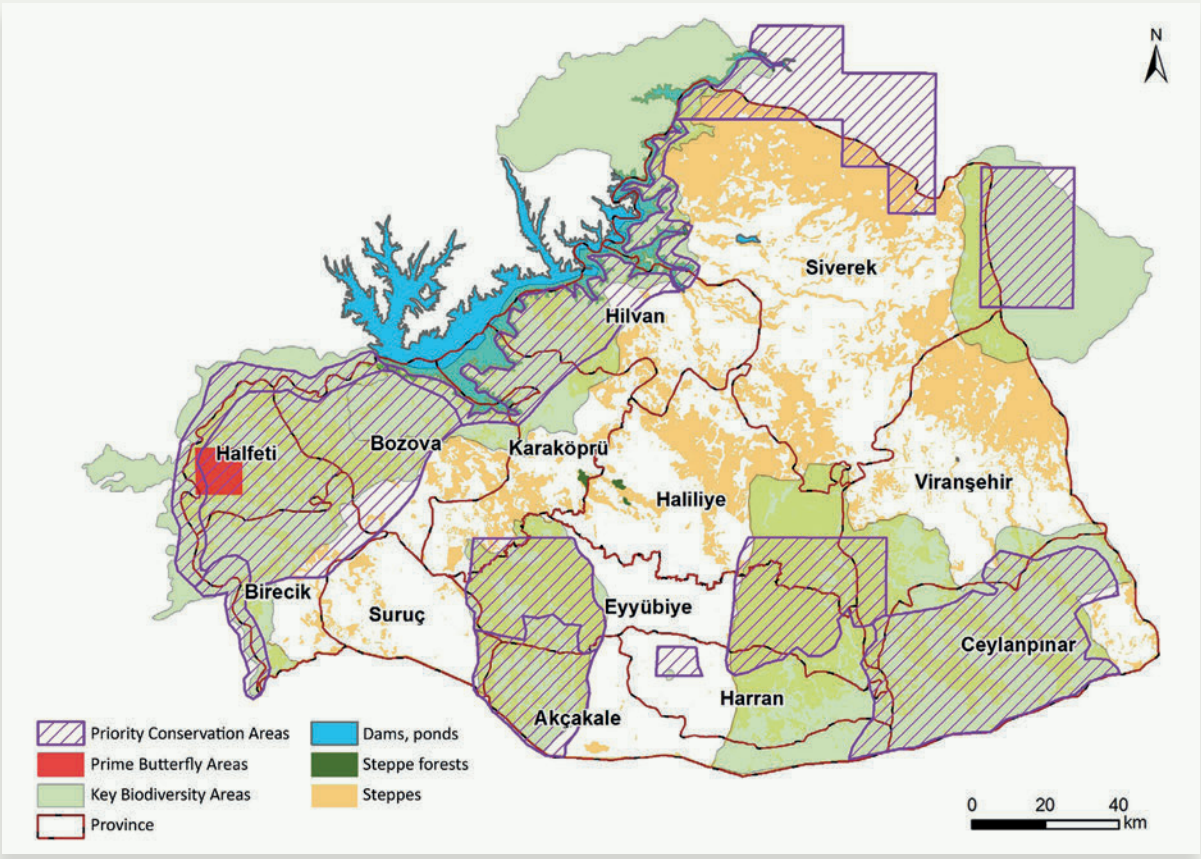

Figure 23. Important Biodiversity Areas in Şanlıurfa Province ©DKM

A significant study carried out on steppe ecosystems and steppe species is the Important Plant Areas (IPA) study conducted by the Society for the Protection of Nature (DHKD) (Özhatay et al., 2003). Two of the IPAs, determined by considering the distribution of rare and endangered plant species, are within the borders of Şanlıurfa province (Karacadağ IPA and Ceylanpınar Steppes IPA; Adıgüzel and Aytaç, 2001).

Another study that aims to reveal important biodiversity areas is the Key Biodiversity Areas defined by Doğa Derneği (BirdLife in Turkey) (KBA; Eken et al., 2006). In this context, 8 of 305 KBAs defined by evaluating the rare and endangered species belonging to many different living groups are located in Şanlıurfa, and their coverage within the borders of Şanlıurfa province is 861,167 ha (Annex 3). These areas are Karacadağ, Ceylanpınar,

Nemrut Mountain, Harran Ruins, Akçakale Steppes, Bozova, Southern Euphrates Valley and Birecik Steppes and Karkamış KBAs. Especially the Akçakale Steppes, Ceylanpınar, Karacadağ and Birecik Steppes are prominent areas in terms of steppe vegetation (Figure 23). Karacadağ, one of the project areas, is also an important area in terms of steppe ecosystems.

Another study carried out on a national scale is the Prime Butterfly Areas (PBAs) determined by Doğa Koruma Merkezi. PBAs are areas determined by taking areas rich in butterfly diversity into consideration, especially for rare, endemic and endangered species (Karaçetin et al., 2011). One of 65 PBAs defined on national scale is within the borders of Halfeti, Şanlıurfa (Figure 23, Annex 3).

The most up-to-date study on the biodiversity of Şanlıurfa is the "Şanlıurfa Land and Inland Water Ecosystems Biodiversity Inventory and Monitoring Project" implemented by the Ministry of Agriculture and Forestry, General Directorate of Nature Conservation and National Parks. With the study completed in 2019, not only data on species from different groups were collected throughout the province, but also areas of importance in terms of biodiversity throughout the province were identified according to these data (Figure 24). These areas cover approximately 888,395 hectares of land in the province and account for 46% of the Şanlıurfa's total surface area. In these areas, monitoring studies have been initiated for the conservation of biodiversity, which is an important development in terms of steppe biodiversity.

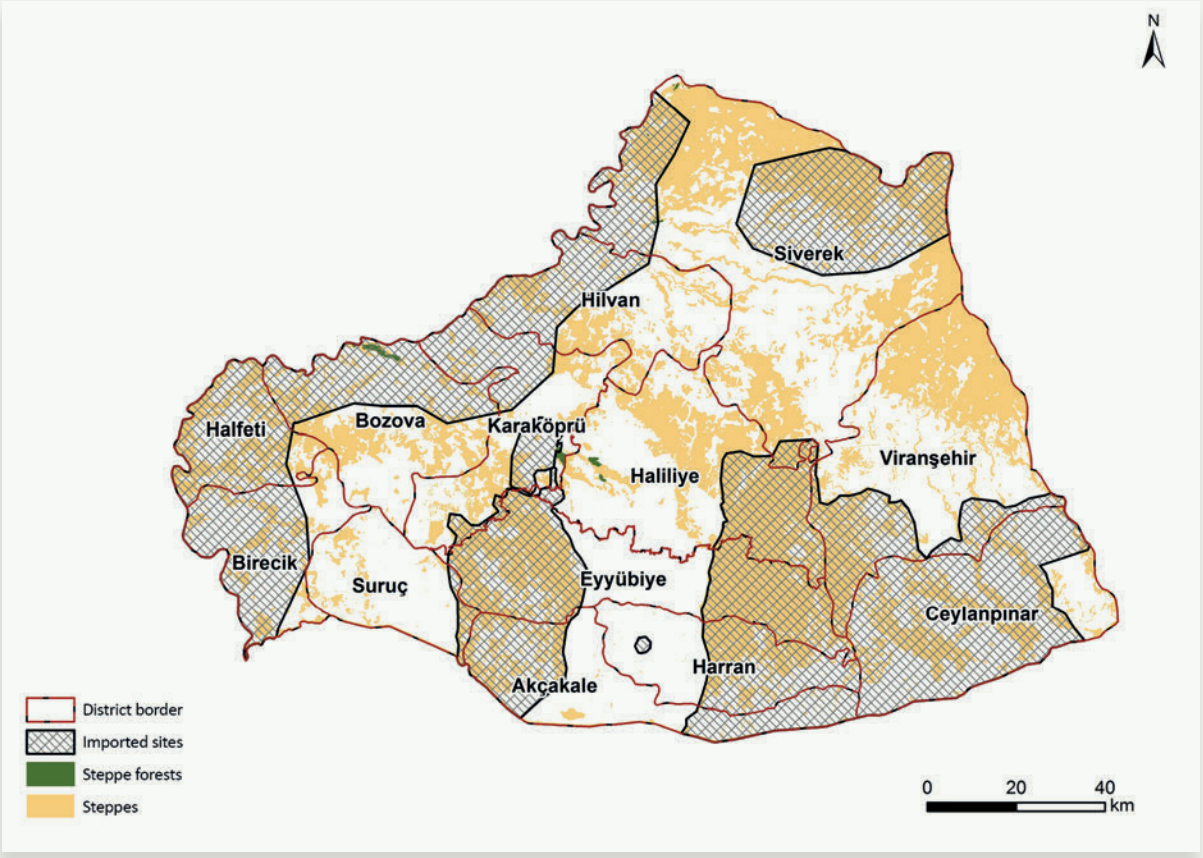

Figure 24. Sites of Importance in terms of biodiversity (888,395 ha), determined as a result of the inventory study in Şanlıurfa ©DKM

3.1.3. Large Plains

Even though it is rather different from the above-mentioned protection statuses, another protection status, mainly about land use, is Agricultural Protected Area (Large Plains) status. More than 252 large plains have been declared as agricultural protected areas with the decision of the Council of Ministers in accordance with the Soil Conservation and Land Use Law No. 5403 in Turkey, in order to prevent degradation of these lands with high agricultural potential and to protect them from erosion, desertification, pollution and misuse. There are 9 agricultural protected areas within the borders of Şanlıurfa province. These plains (Yaylak Plain, Halfeti Plain, Birecik Plain, Suruç Plain, Bozova Plain, Siverek Plain, Harran Plain, Viranşehir Plain, and Ceylanpınar Plain) cover an area of approximately 900,473 hectares, which accounts for 47% of the provincial surface area. Most of Hilvan, Akçakale, Suruç and Ceylanpınar district areas hold the status of agricultural protected areas (Figure 25). There are overlaps between the areas declared as Large Plains and the protected areas with legal status. There are also overlaps between Kızılkuyu WR steppes and Harran and Suruç Large Plains as well as between Tek Tek Mountains National Park and Ceylanpınar and Harran Large Plains. Şanlıurfa Birecik Large Plain intersects with the border of Birecik WR. The steppes may be threatened by the need for new construction work in the stages of processing, storage and marketing of increased plant production with the introduction of irrigation in these plains. In addition, the natural habitats and other elements of biodiversity are expected to decrease as intensive agricultural practices increase in these areas.

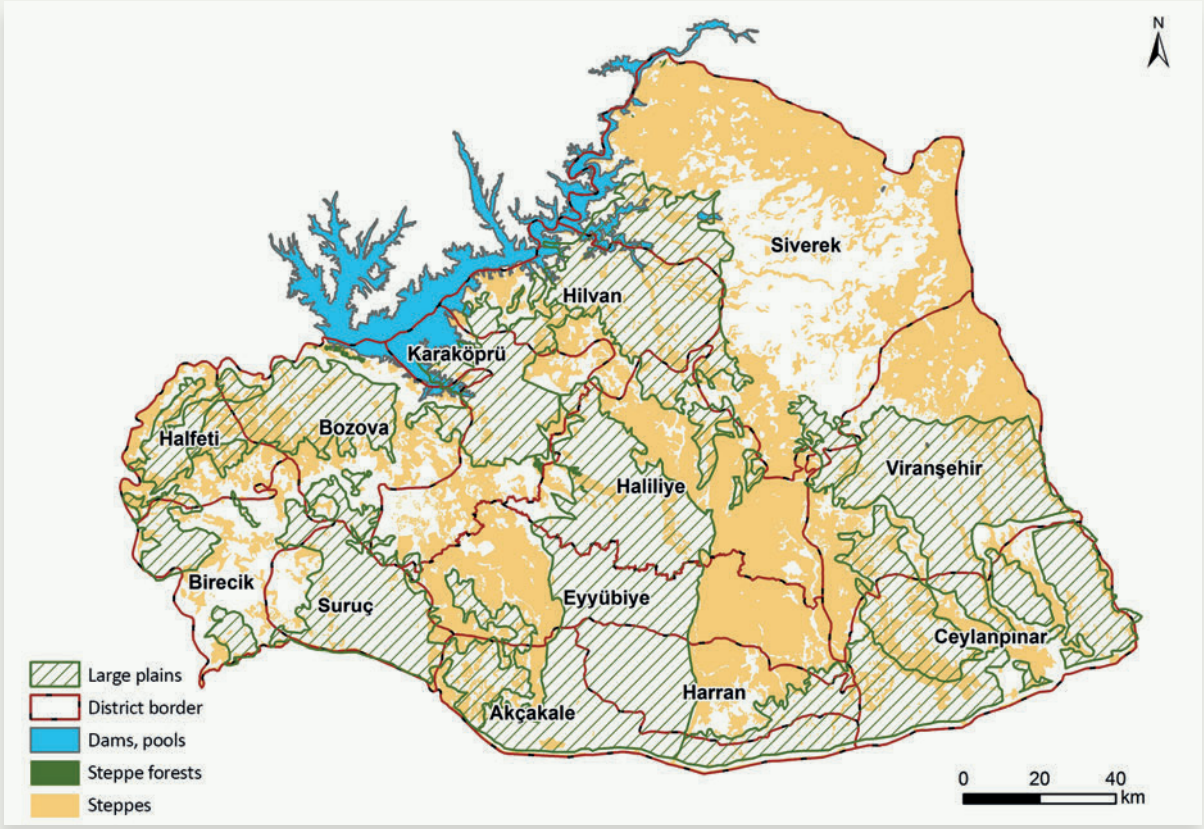

Figure 25. Large Plains within the borders of Şanlıurfa (approximately 900,473 ha) ©DKM

3.2. Threats to Şanlıurfa Steppes

Steppes, especially the plain steppes, which represent the natural vegetation of Şanlıurfa and are vital in terms of biodiversity, are threatened by various factors. Steppes are converted into agricultural fields with increased mechanization in agricultural activities. Increased pressure by settlements, irrigation projects, energy investments, and mining activities can also cause irreversible loss of steppes. One of the important factors causing degradation of the vegetation of Şanlıurfa steppes is overgrazing.

Illegal hunting and species trafficking, excessive collection of plants and some animal species and intensive agricultural practices in the region also threaten steppe ecosystems and the species that they host. Today, steppes continue their existence in stony or rocky areas as islets that contain remains of natural vegetation between agricultural fields and grazing areas. The lack of awareness about the importance of steppe species in the region and the fact that the conservation efforts for these species are limited to the protected areas are the other factors that negatively affect the biodiversity of steppes.

In this section, the results of spatial analyses made for some of these threats are given. While mapping these threats, information obtained from the acknowledged experts and data received from the relevant institutions in the 1st Workshop of the Şanlıurfa Steppe Conservation Strategy and Action Plan were used by spatializing (digitalizing).

3.2.1. Grazing Pressure

Animal husbandry stands out as one of the main sources of income in the province. It is very important that this activity, which is economically important, is sustainable in the long term and grazing is done in a planned manner in order not to damage the natural vegetation of the region. In order to assess the pressure from the current grazing activities on the steppes, numbers of ovine and bovine animals were obtained from TÜİK on a district basis and converted into spatial data, and their relationship with the steppes was assessed spatially. Ovine breeding (mostly sheep breeding) is the most common practice in the province. The districts where animal husbandry is most dense are Siverek and Viranşehir (Figure 26). Furthermore, Viranşehir and Siverek are the districts with the highest ratio of steppe area to district area. Re-visiting of grazing practices and creation of grazing plans in these areas where there is intensive animal husbandry is very important for the conservation of steppes.

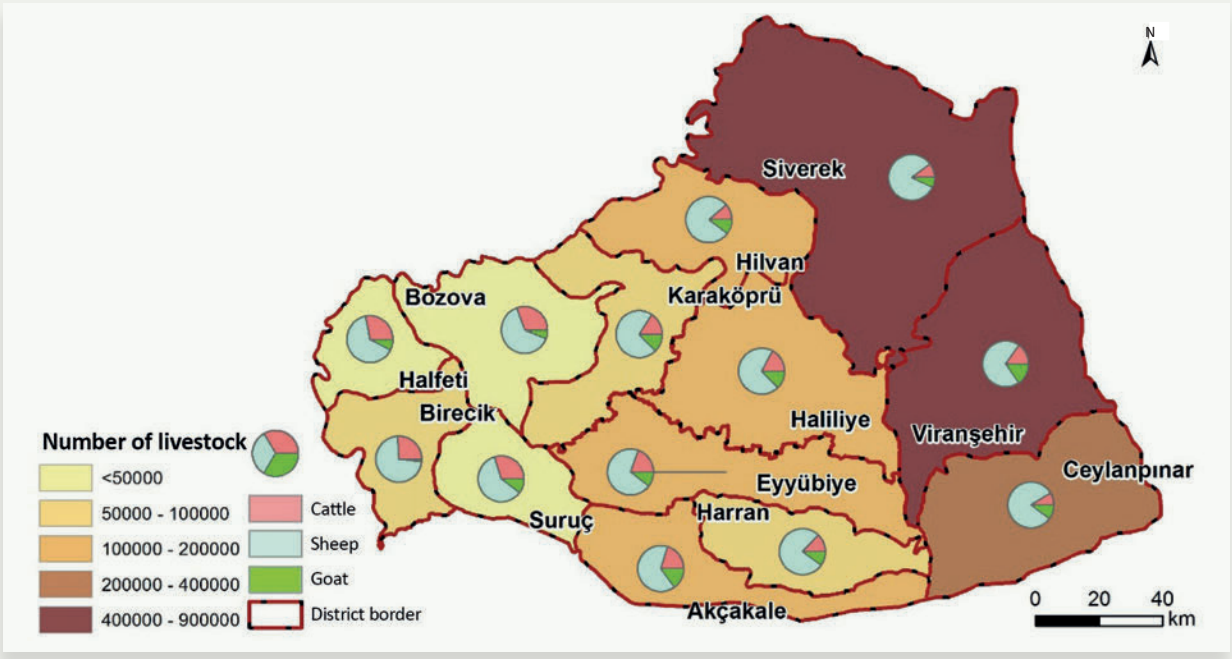

Figure 26. The number of livestock by districts and distribution by species within Şanlıurfa province ©DKM

Even though the number of animals gives an idea of grazing intensity in the district, it provides limited information about where grazing is concentrated in a district. For this reason, places where grazing is intense throughout the province were digitized in line with the information given by the experts from different institutions and organizations that participated in the 1st Workshop of Şanlıurfa Steppe Conservation Strategy and Action Plan held on December 5, 2019 (Figure 27). In Siverek, Viranşehir, Ceylanpınar and Haliliye, overgrazing stands out as an important factor threatening the steppes. This assessment reflects expert opinion, it is recommended to expand on the assessment using actual numbers of animals grazed on registered rangelands in the future.

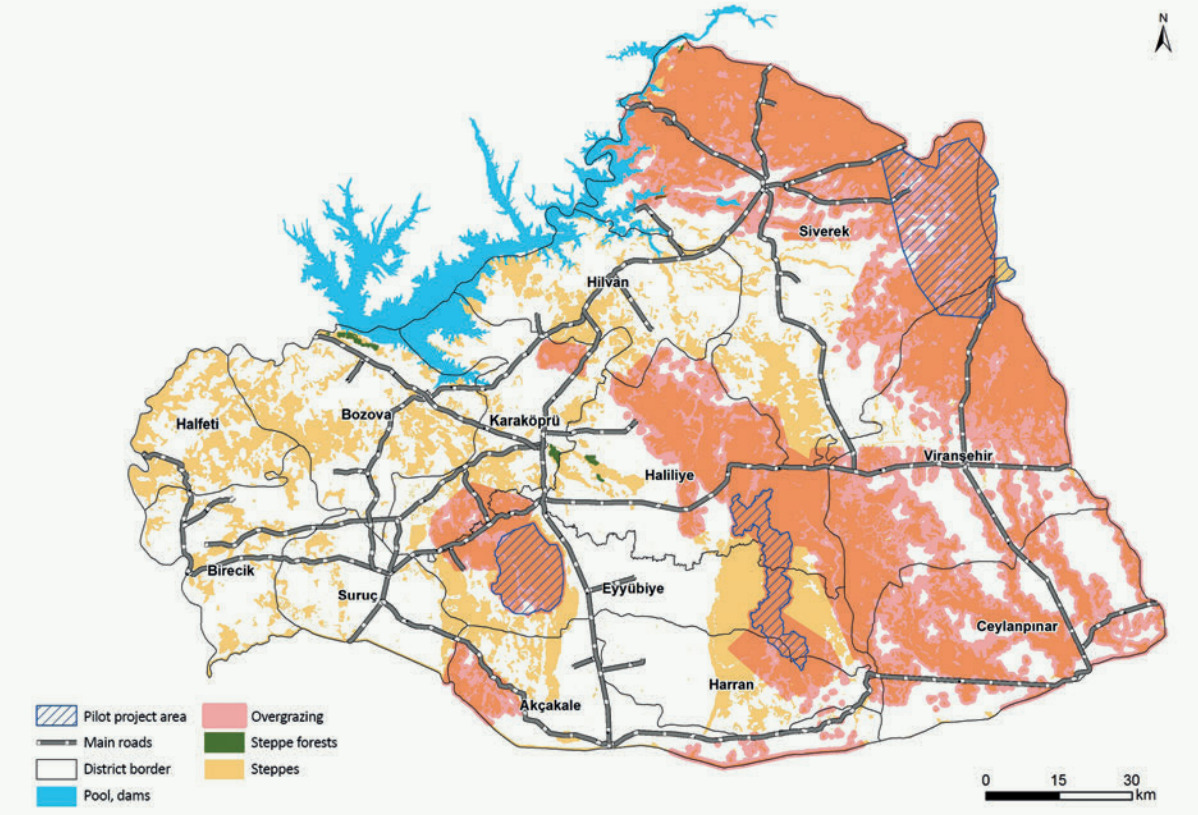

Figure 27. The areas where grazing is concentrated, Şanlıurfa ©DKM

3.2.2. Population Density

One of the greatest threats to steppes is intensity of human activity. Activities such as encroachment of settlements towards natural areas, and road and house constructions directly threaten the steppes. There is no spatial data that provide direct information on where and how human activities have an impact in the province; therefore, the population data are used as an indicator that can provide information about the intensity of human activities. It has been acknowledged that the pressure on natural areas will be higher in and around densely populated areas.

In order to assess the effects of population density on the steppes in Şanlıurfa, the neighborhood-based population data for 2018, and district data for 2018 obtained from TÜİK were spatialized (Figure 28). Since the neighborhood-based data are point data, in order to better examine human activities in spatial terms, an additional analysis was carried out using the night lights layer (Version 4, DMSP OLS) computed with visible spectra and near infrared bands compiled from NOAA (National Oceanic and Atmospheric Administration) Meteorological satellite as an indicator of the intensity of human activities (Figure 29). According to these analyses, Siverek and Eyyübiye, where the ratio of steppes and population is higher, stand out as areas where measures should be taken against human activities.

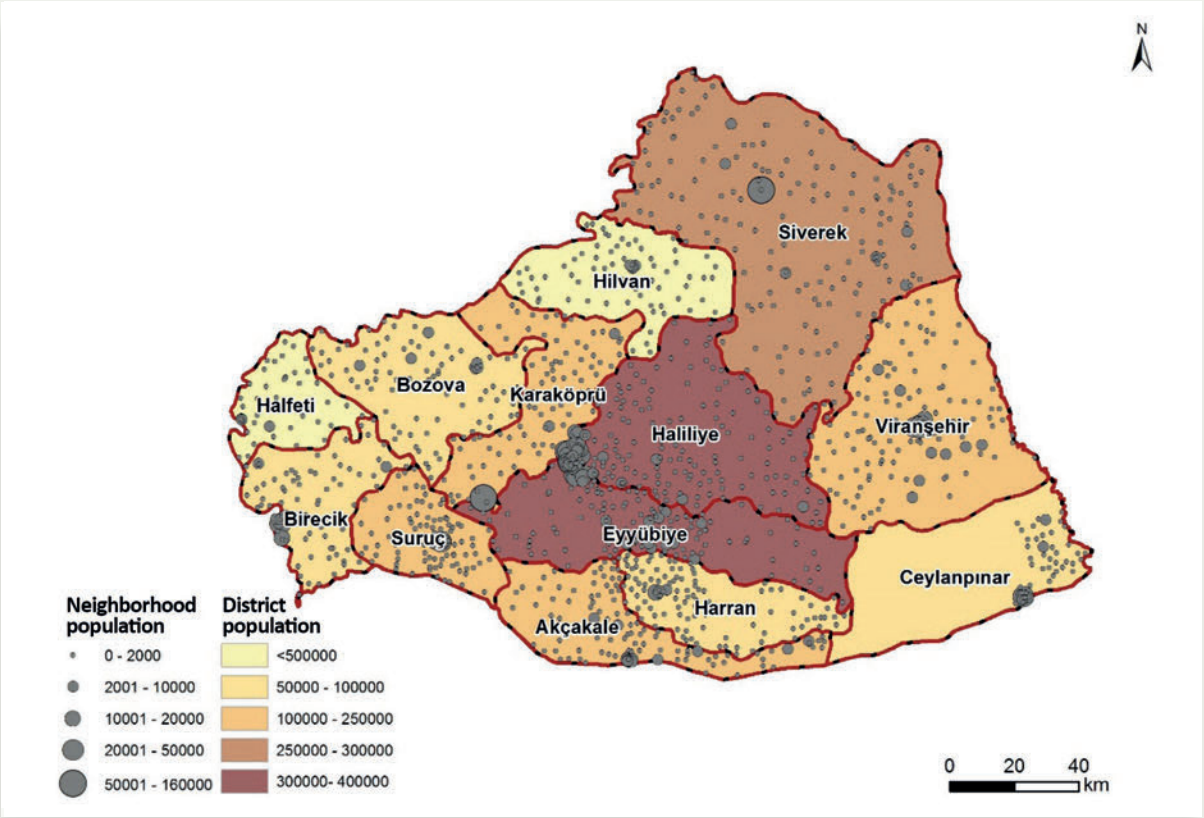

Figure 28. Şanlıurfa population density ©DKM

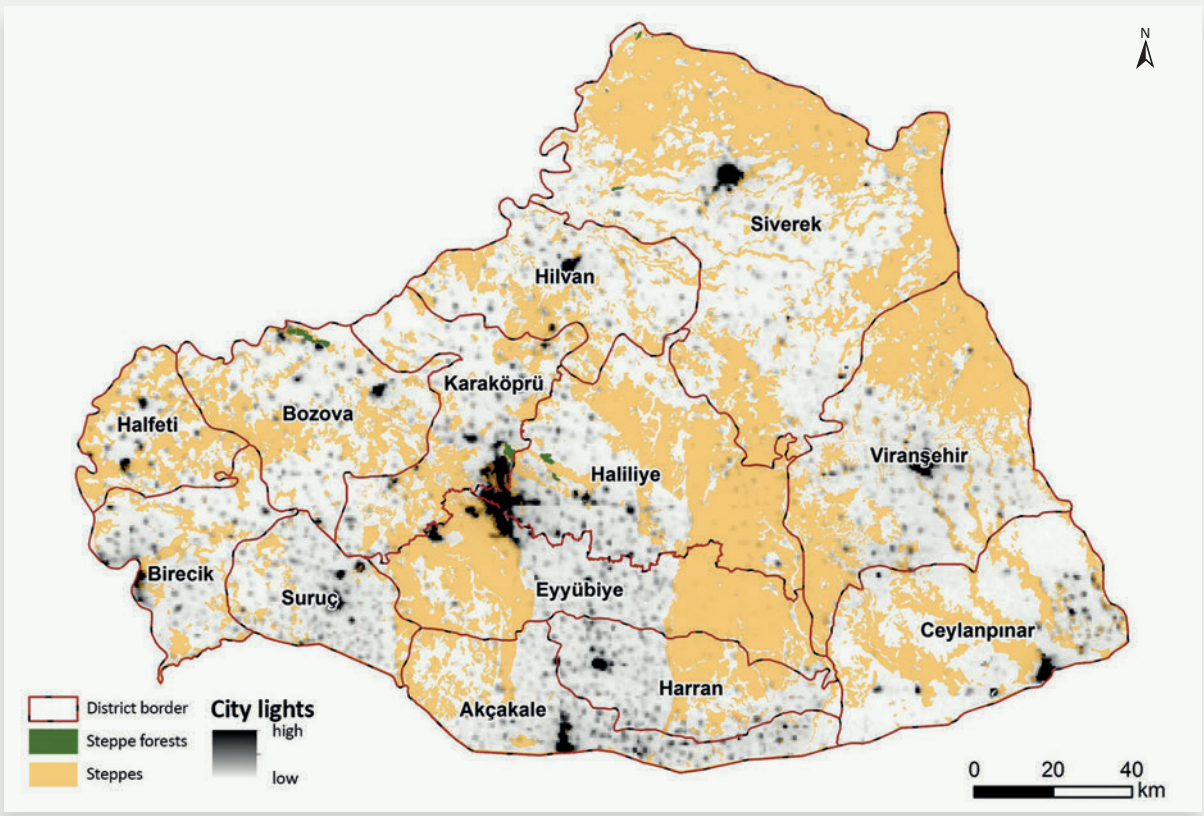

Figure 29. The spatial representation of the city lights of Şanlıurfa ©DKM

These two analyses provide information on the current population density and urbanization. In which direction the city will expand in the future is also an important issue to be taken into account while planning the conservation actions. Thus, it will only be possible to make effective planning considering both present and future conditions. When evaluating where the urbanization pressure in the province may intensify in the future, information provided by the experts from different institutions and organizations that participated in the 1st Workshop of Şanlıurfa Steppe Conservation Strategy and Action Plan was taken into consideration (Figure 30). In this context, especially Haliliye, Eyyübiye and Karaköprü, among other central districts, come into prominence. In the future, the urbanization threat to the steppes is anticipated to intensify in these areas.

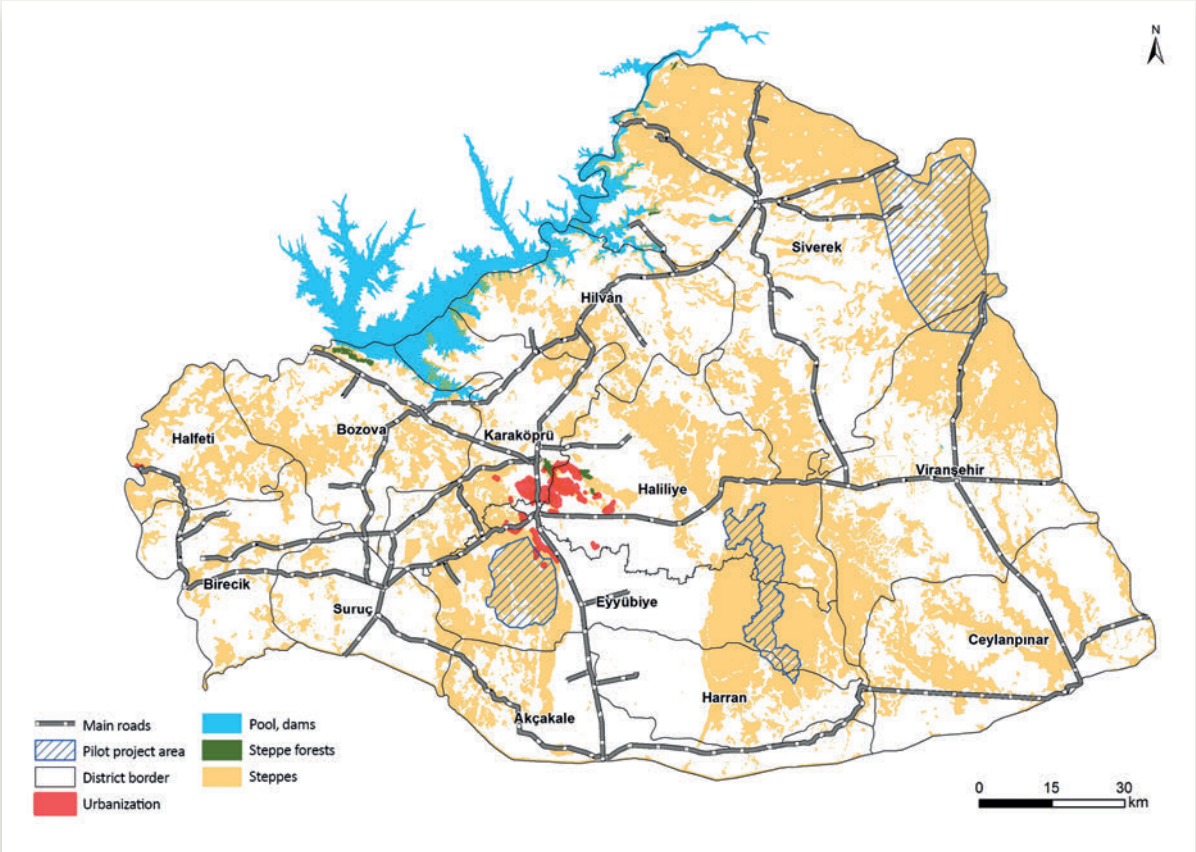

Figure30. The areas where urbanization is intense in Şanlıurfa ©DKM

3.2.3. Drought Risk

Climate change is one of the most threatening factors for steppe ecosystems, similar to all natural ecosystems. Şanlıurfa's climate, which is presently semi-arid, is threatened by drought due to the potential increase in temperatures and decrease in precipitation in the future. Drought risk was used for determination of where today's temperature (lowest and highest) and annual precipitation will change the most in 2070 compared to today. The future projections were calculated using RCP 8.5, one of the IPCC 5th Assessment Report (2013) scenarios. Within this scope, the Emberger Aridity Index (Emberger, 1955) was used[11].

11. The Emberger Aridity Index was calculated using the variables of total annual precipitation, maximum temperature of the hottest month, minimum temperature of the coldest month according to the following formula:
$2000 * BIO_{12}/((BIO_5 - BIO_6) * (BIO_5 + BIO_6 + 546.24))$
Bio12: Total annual precipitation (mm)
Bio5: Average maximum temperature of the hottest month
Bio6: Average minimum temperature of the coldest month
For calculation of the Emberger Aridity Index, the climate surfaces in the WorldClim (https://www.worldclim.org/bio-clim) database were used.

According to the Emberger Aridity Index, the driest areas today are the districts to the south of Şanlıurfa, especially Akçakale, Harran and Ceylanpınar (Figure 31). According to the scenarios of 2070, a 10-18% increase in drought is expected in all districts of Şanlıurfa. It is predicted that the increase in drought will be the highest in the southern districts, which are already the driest districts today (Figure 32). Especially Akçakale, Harran, Suruç and Birecik stand out in this context.

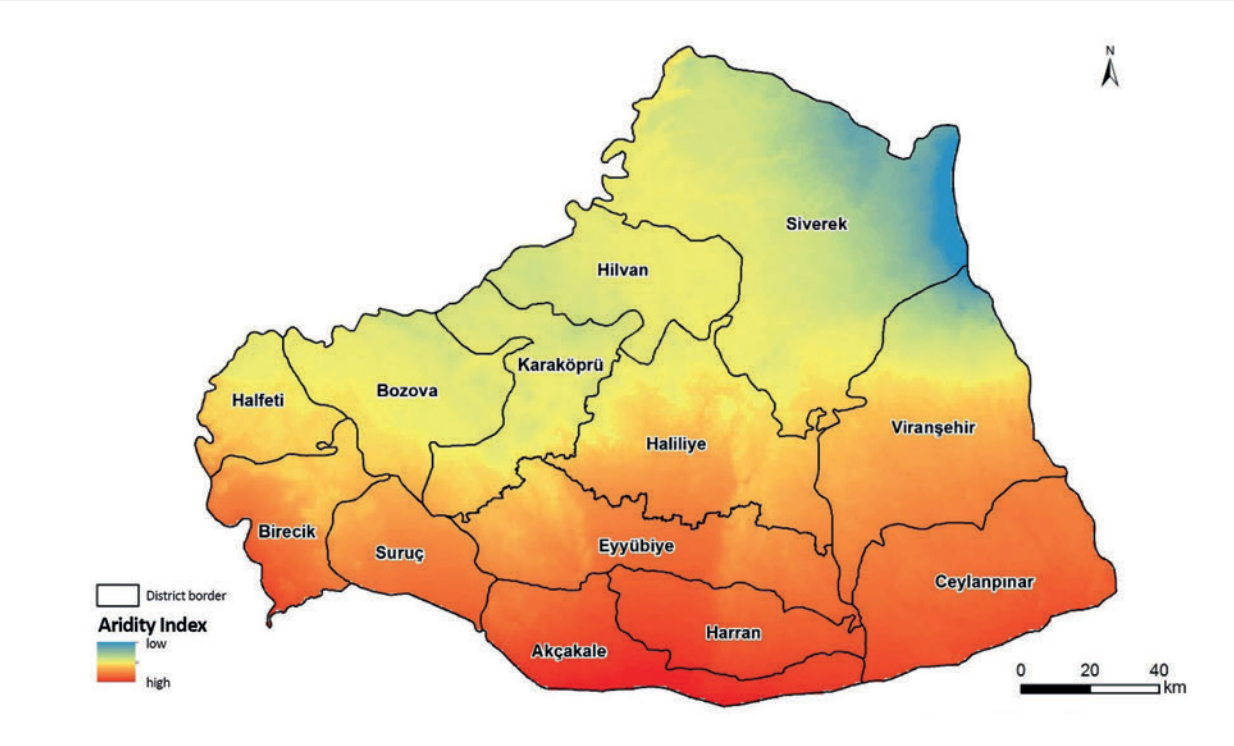

Figure 31. Current drought values of Şanlıurfa province according to the Emberger Aridity Index ©DKM

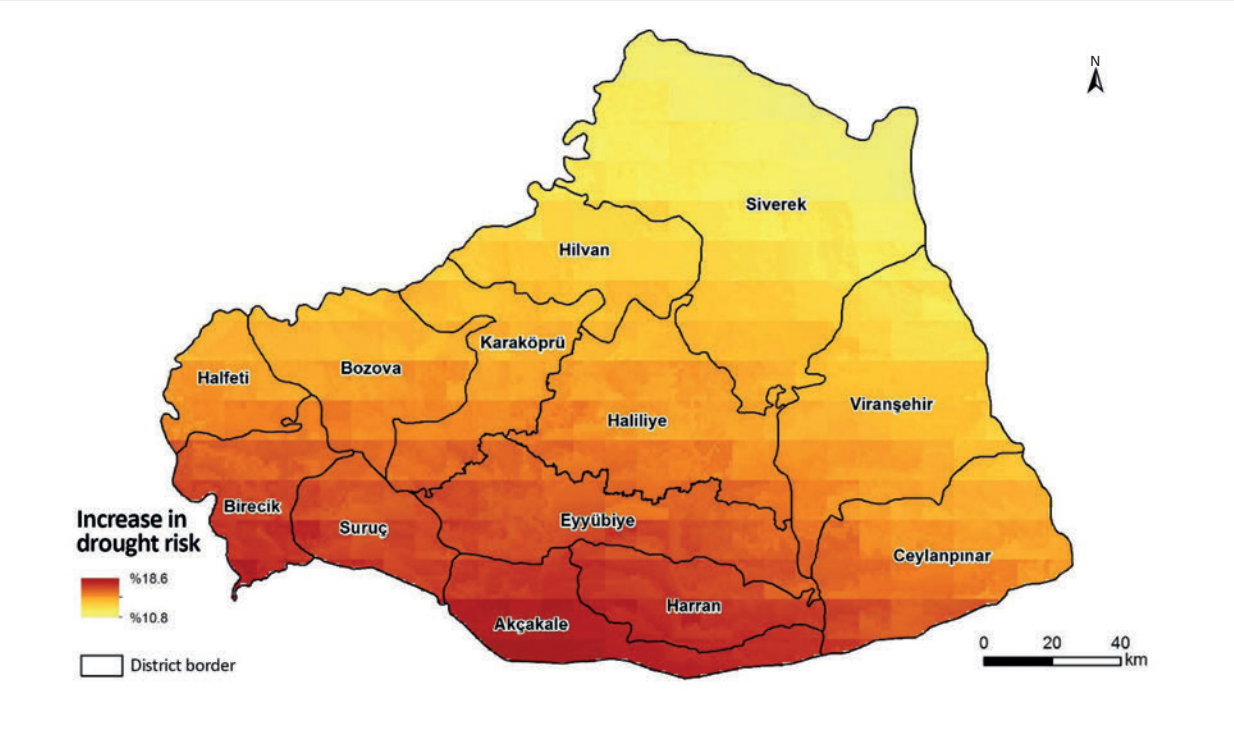

Figure 32. The risk of future drought in Şanlıurfa province according to the Emberger drought index ©DKM

In addition to this study, climate types[12] for both present and future were determined according to the Emberger Aridity Index (Figure 33, Figure 34). According to the Emberger climate classification, while a semi-arid climate (1,128,980 ha) prevails throughout Şanlıurfa today, the south of Akçakale has the characteristics of an arid climate (15,309 ha). Nevertheless, the northeast of Şanlıurfa (partially Siverek and Viranşehir) and the districts of Bozova, Karaköprü and Hilvan have semi-temperate (783,091 ha) climate type characteristics due to the warming effects of the dam nearby (Figure 33). When the future climate types are evaluated, it is predicted that a large part of the south of Şanlıurfa province and almost all parts of Akçakale and Harran districts (341,553 ha) will have arid climate characteristics. Semi-temperate climate type is expected only in the east of Siverek district (98,768 ha) in the future (Figure 34). It is predicted that a semi-arid climate will prevail in the remaining parts of Şanlıurfa (1,487,059 ha).

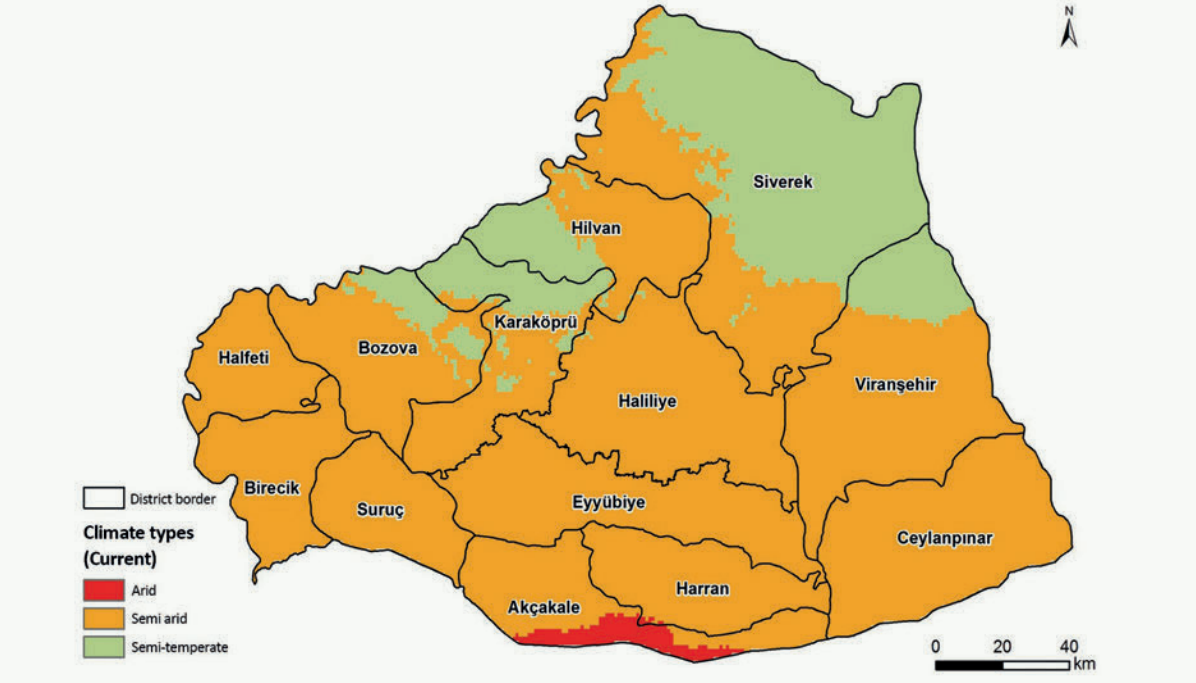

Figure 33. Climate types of Şanlıurfa province determined according to the Emberger Aridity Index (current) ©DKM

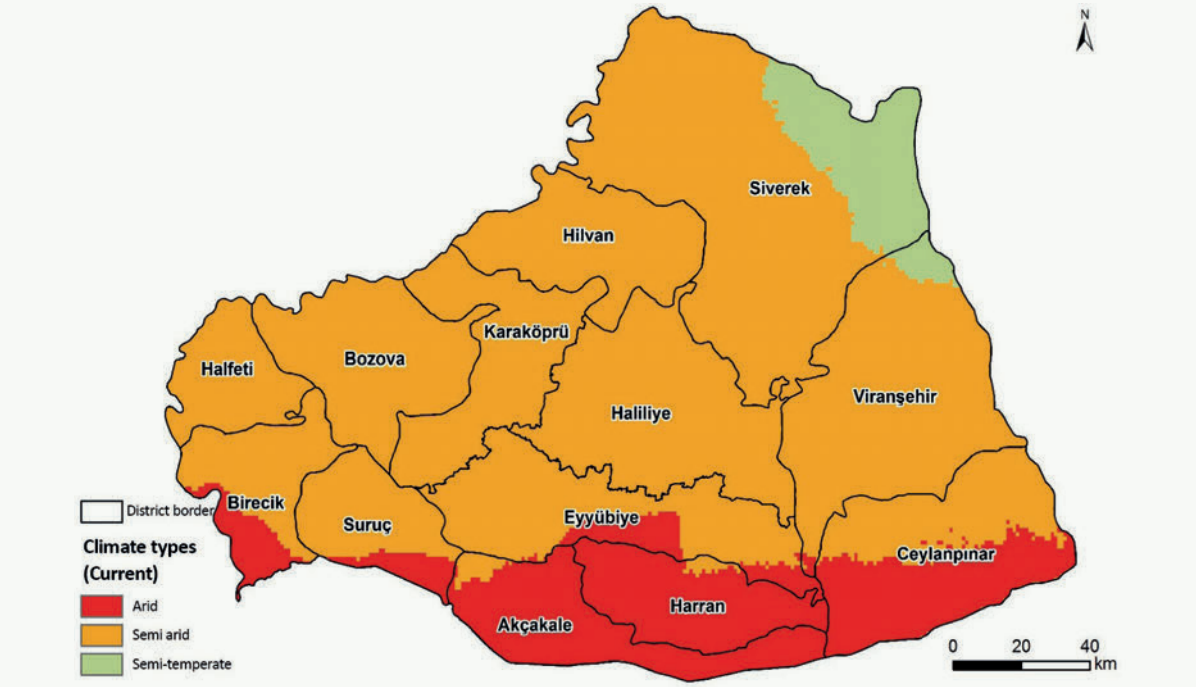

Figure 34. Climate types of Şanlıurfa province determined according to the Emberger Aridity Index (future) ©DKM

12. It was calculated based on the Emberger Aridity Index (<30: Arid; 30-50: Semi-arid; 50-90: Semi-temperate)

It is safe to state that drought, which is expected to become severer in the future, will adversely affect living species, increase water consumption, and cause yield decrease or product loss in agricultural practices, especially in dry farming practices as well as producing ramifications for crop patterns, rangelands, and agricultural pests. For management of steppes in these areas, it is important to start taking precautions against the foreseen drought.

3.2.4. Other Threats

There are many other threats that adversely affect Şanlıurfa steppes. An evaluation regarding these threats was made with the experts from different institutions and organizations that participated in the 1st Workshop of Şanlıurfa Steppe Conservation Strategy and Action Plan held on December 5, 2019. These threats were spatially mapped solely based on information provided by the experts. In other words, unlike the above-mentioned threats, since there is no spatial base data on these issues, this evaluation provides a low resolution map based on expert opinion. These issues are as follows:

1. Agricultural land transformation (including irrigation, stone collection, etc.)
2. Energy generation and mining
3. Illegal hunting/plant collection
4. Intensive agriculture (mechanization in agriculture, use of pesticides and fertilizers, etc.)
5. Pollution (Agricultural pollution, industrial pollution)

In this context, maps in Figure 36 to Figure 40 show the spatial evaluation of these threats individually, which were digitized according to expert opinion. Secondly, when determining areas where threats to steppes were intense, places where threats were cumulatively intense were highlighted by considering all threat surfaces together (Figure 35). According to the spatial evaluation results, steppes situated to the east of Siverek represent the areas where the most threats are present. It is seen that the steppes in Viranşehir, Ceylanpınar and Haliliye following Siverek are also under threat. Karacadağ Steppes, which is one of the protected areas as well as being one of the Steppe Project pilot areas, represents the area where threats to the steppes are the most intense. Especially overgrazing, illegal hunting/illegal plant collection and agricultural land transformation are the most common threats in these areas. In addition, while there is pollution and urbanization threat in Kızılkuyu WR, there is energy generation/mining threat in Karacadağ Steppes.

In the light of all these spatial evaluations, especially the steppes (Karacadağ Steppes and its northwest) located to the east of Siverek and Kızılkuyu WR and Tek Tek Mountains National Park, which are important areas in terms of steppes, stand out as the areas that the most urgent conservation actions for steppes are needed.

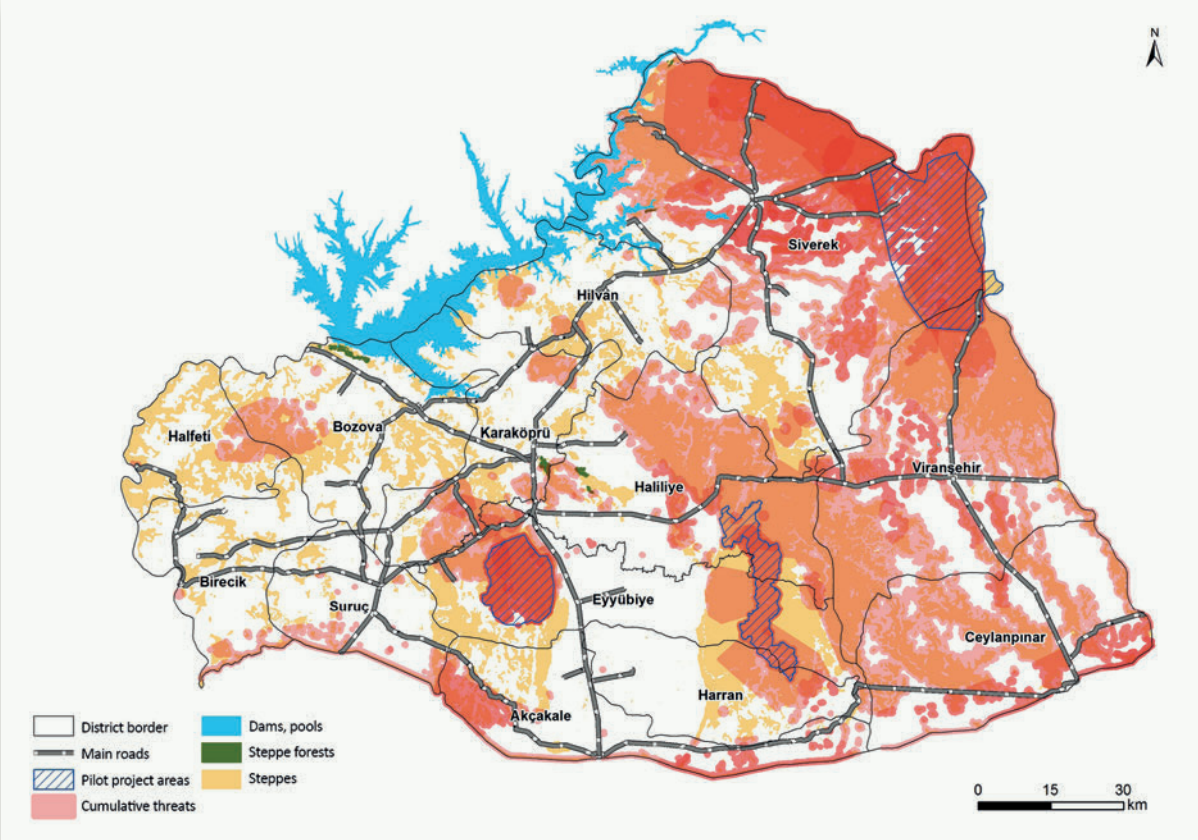

Figure 35. Cumulative representation of the threats to the steppes of Şanlıurfa province ©DKM

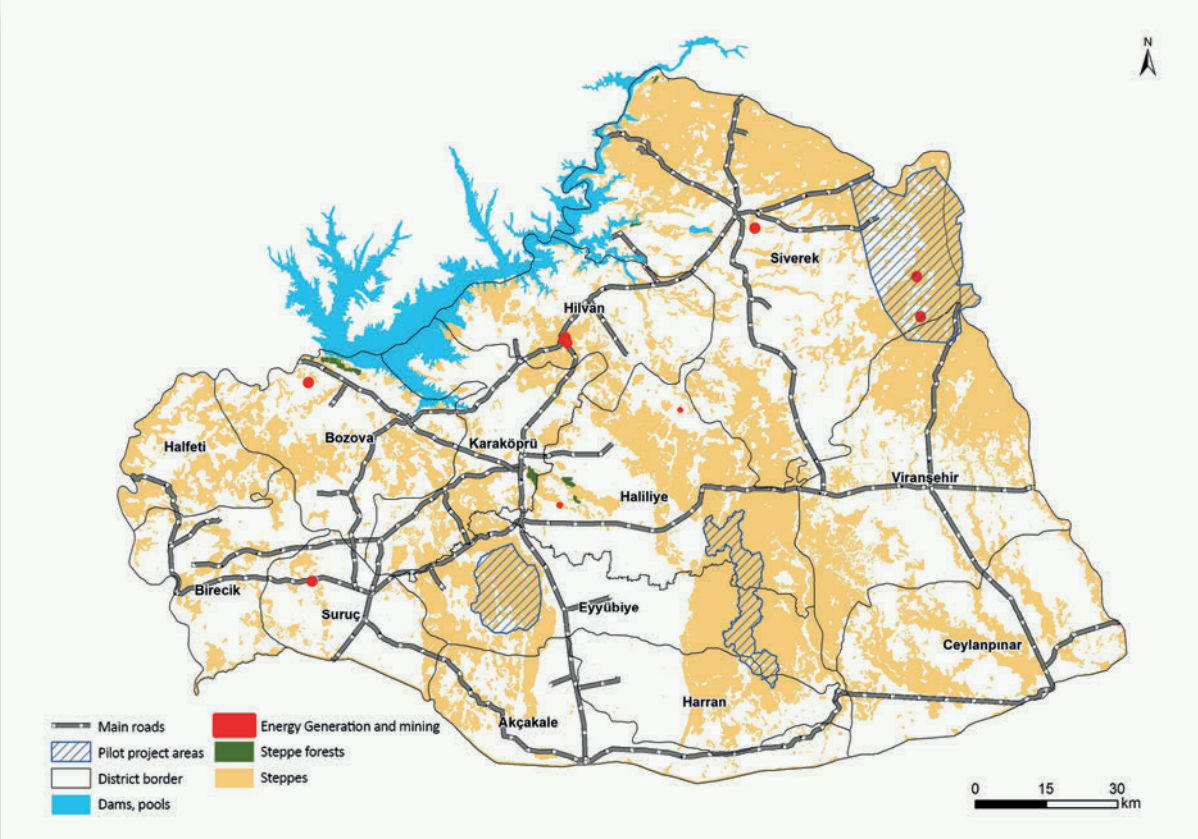

Figure 36. Spatial representation of energy generation and mining pressure on the steppes of Şanlıurfa province ©DKM

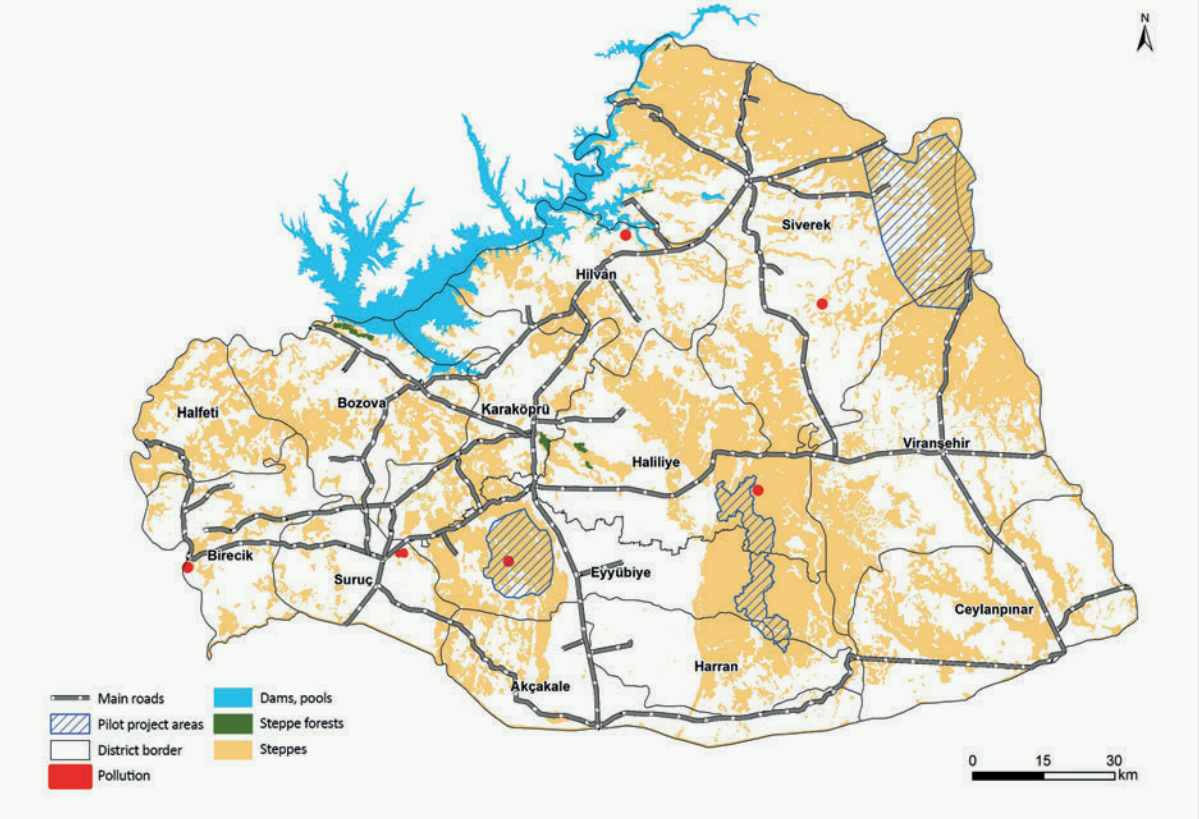

Figure 37. Spatial representation of the pollution threat to the steppes of Şanlıurfa province ©DKM

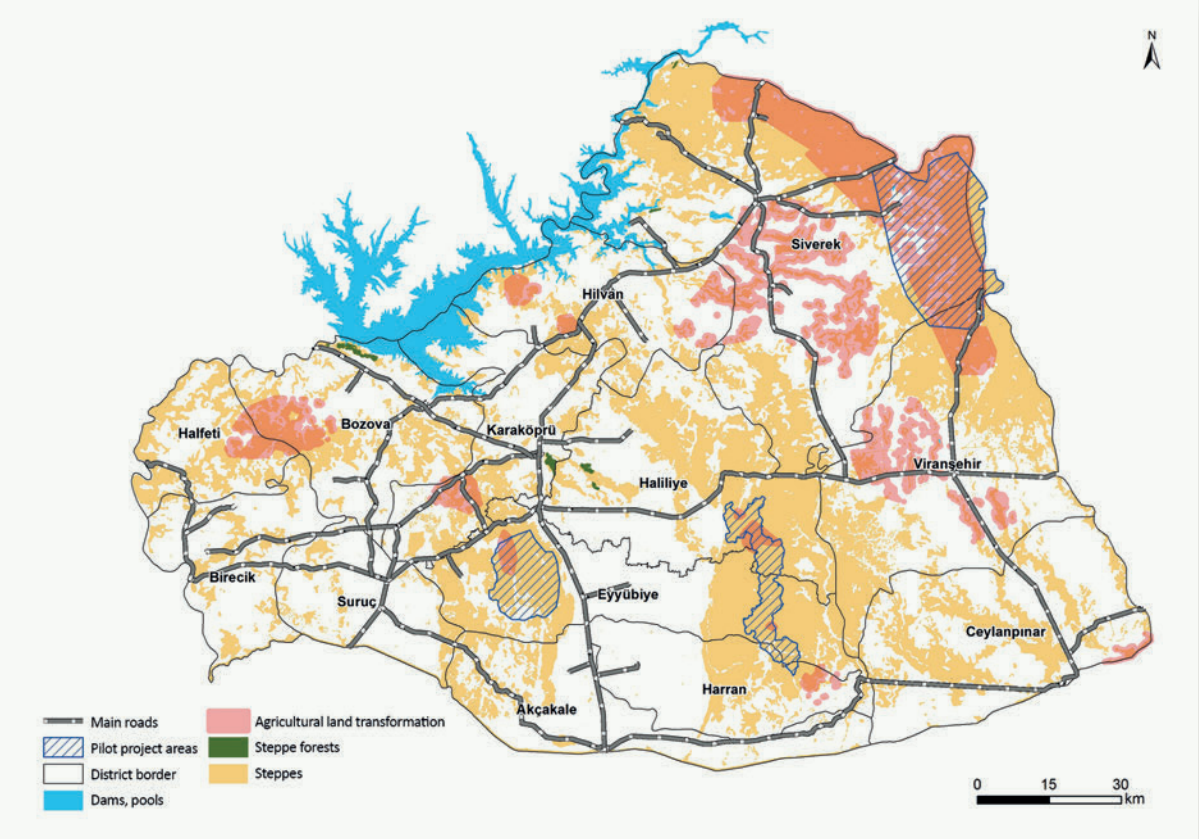

Figure 38. Spatial representation of the agricultural land transformation threat to the steppes of Şanlıurfa province ©DKM

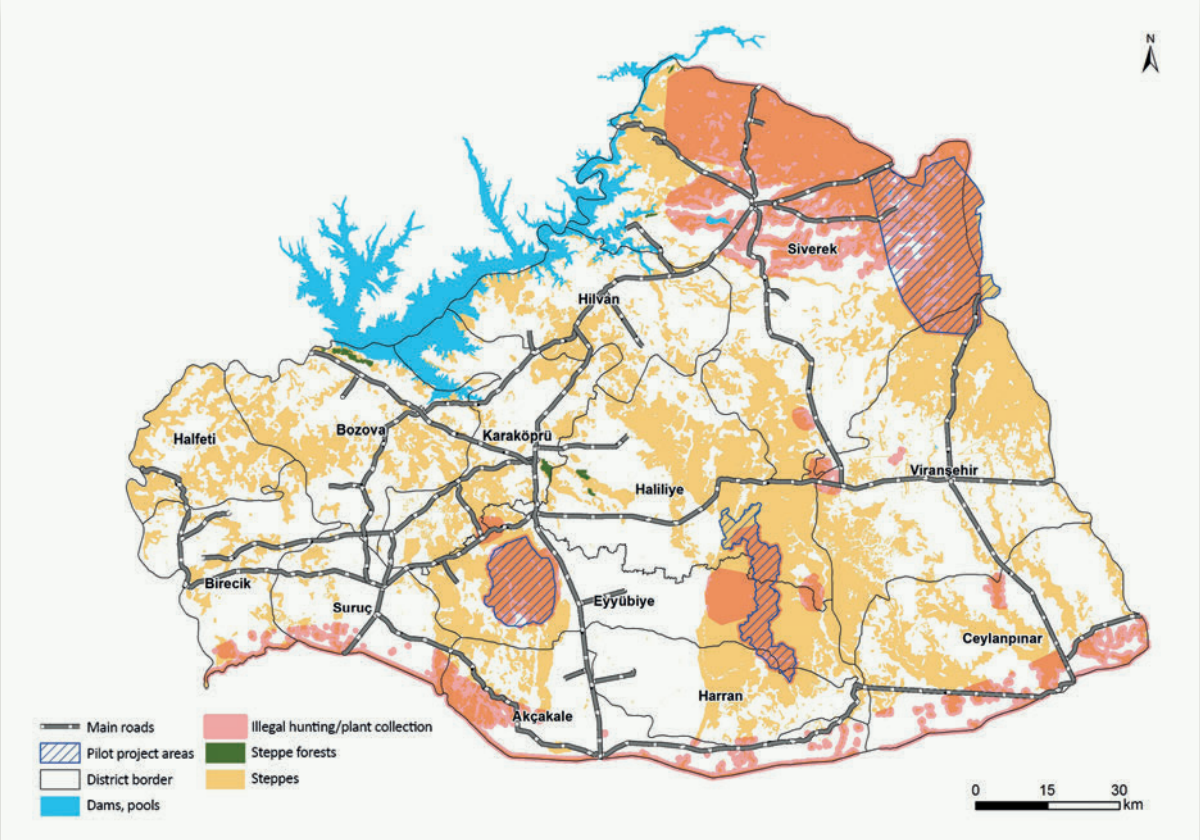

Figure 39. Spatial representation of the illegal hunting/illegal plant collection threat in the steppes of Şanlıurfa province ©DKM

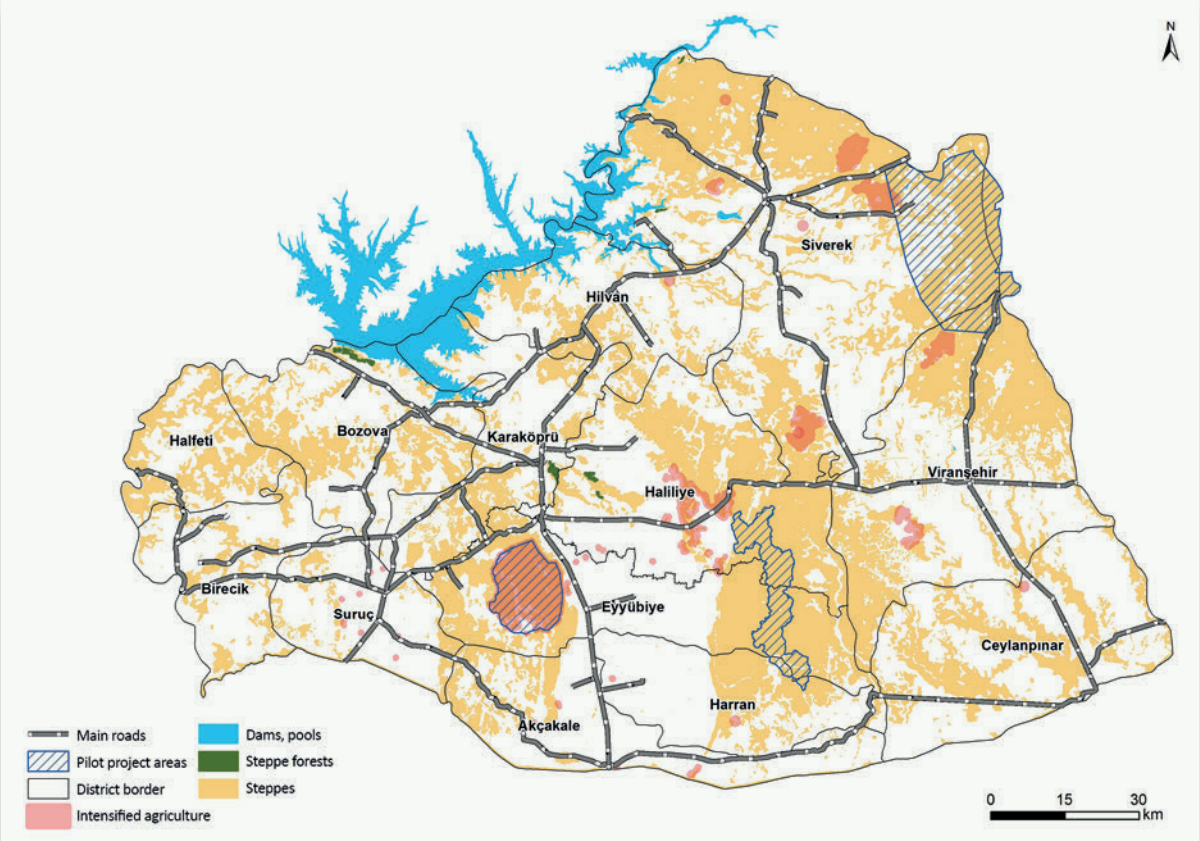

Figure 40. Spatial representation of the intensified agricultural threat in the steppes of Şanlıurfa province ©DKM

Şanlıurfa is one of the most important areas in Turkey in terms of steppe ecosystems. Especially Akçakale, Ceylanpınar, Karacadağ and Birecik Steppes stand out when it comes to steppe vegetation. In this section, spatial evaluations of Şanlıurfa steppes are made, and the current situation of the steppes and the threats to the steppes are analyzed spatially.

Studies for conservation and sustainable management of Şanlıurfa steppes are becoming increasingly important for prevention of these threats. In this context, this Strategy and Action Plan was prepared in order to reduce the threats to the Şanlıurfa steppes and to identify the relevant sustainable development goals.

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4. Şanlıurfa Steppe Conservation Strategy

The Şanlıurfa Steppe Conservation Strategy and Action Plan includes a conservation strategy adopted by all parties for Şanlıurfa steppes and actions to achieve the goals and objectives of this Strategy. This Strategy and Action Plan provides a framework that can be renewed and updated as the goals are achieved and the conditions change.

While preparing the Strategy and Action Plan, the international conventions and programs, laws and regulations, policy documents, strategies, action plans and relevant legislation related to steppe ecosystems were examined and integrated into this study. In addition, knowledge, strategies and actions within the regional plans and programs in which Şanlıurfa is included provided an important basis for this study.

The general objective of Şanlıurfa Steppe Conservation Strategy is to ensure the sociological, ecological and economic sustainability of Şanlıurfa steppes. The strategy includes goals and objectives for conservation of steppes.

4.1. Strategic Goals and Objectives for Conservation of Steppes

Taking into account the current situation of Şanlıurfa steppes as well as spatial evaluations for steppes, policies, legislation and practices related to steppes, 4 strategic goals and 10 strategic objectives under these goals were identified.

First of these strategic goals is the development of a governance and collaboration structure on a local scale, which is one of the most important needs for effective management of steppes. In line with the objectives of the Convention on the Biological Diversity and the National Biological Diversity Strategy and Action Plans (2007 and 2018-2028), conservation of steppe biodiversity is the second strategic goal whereas improvement of the use of resources in steppes within the framework of the sustainability principle is the third. Fourth strategic goal is to improve the livelihoods of the local people who benefit from steppes. Increased welfare for the local people, who benefit from steppes, as well as other strategic goals represent some of the desired results in the long term.

The strategic goals and objectives are given below:

STRATEGIC GOAL 1. Development of a governance and collaboration structure to ensure effective management of Şanlıurfa steppes.

Objective 1.1. Development and implementation of a governance mechanism/model for Şanlıurfa steppes.

STRATEGIC GOAL 2. Conservation of Şanlıurfa steppe biodiversity (at the levels of ecosystem, species, genetic and ecological process diversity).

Objective 2.1. Conservation of Şanlıurfa steppe ecosystems.

Objective 2.2. Conservation of Şanlıurfa steppe species and their habitats.

Objective 2.3. Conservation of the genetic resources of Şanlıurfa steppes.

Objective 2.4. Increasing the adaptive capacity of Şanlıurfa steppes to climate change.

Objective 2.5. Making the value of biodiversity in Şanlıurfa steppes known and increasing its visibility.

STRATEGIC GOAL 3. Improving the use of resources in Şanlıurfa steppes within the framework of the sustainability principle.

Objective 3.1. Scaling-up the agricultural practices that support the steppe biodiversity.

Objective 3.2. Ensuring sustainable and ecosystem-based rangeland management.

STRATEGIC GOAL 4. Improving the livelihoods of the local people who benefit from Şanlıurfa steppes.

Objective 4.1. Developing programs and model practices that can increase the added value of plant production and animal husbandry in the steppes and related areas and their benefits to the local people.

Objective 4.2. Diversifying the income-generating activities for the local people and supporting model practices based on sustainable use of steppes.

4.2. SWOT Analysis of the Strategic Goals and Objectives

The method of SWOT analysis was used to comprehend the current situation regarding the conservation and management of the steppes. SWOT (Strengths-Weaknesses-Opportunities-Threats) analysis is a technique used to determine the strong areas of an institution, system, individual or service, which is open to improvement, and the opportunities and threats faced by them in the external environment. "Strengths" and "Opportunities" are classified as positive issues while "Weaknesses" and "Threats" are classified as issues that require attention.

The current situation regarding the conservation and management of Şanlıurfa steppes is evaluated below in the form of strengths and weaknesses, opportunities and threats. This evaluation is also reflected in the Strategy and Action Plan on the basis of objectives and actions (Table 5).

Table 5. SWOT Analysis for Şanlıurfa Steppes (Strengths, Weaknesses, Opportunities and Threats)

STRENGTHS	WEAKNESSES
· Presence of natural steppes · Existence of national and global protected area statuses and protected areas · Richness of flora and fauna, presence of flagship species such as the Arabian sand gazelle · Being a gene center for some plants, such as Poaceae and legumes · Rich cultural heritage and originality · Presence of uncontaminated reserved agricultural lands · Knowledge of natural resource use · Existence of legislation on rangelands, soil conservation and land use · All authorities and responsibilities related to nature conservation, rangelands and agricultural fields gathered under a single ministry and a strong local organization structure · Existence of relevant organizations and cooperative culture between the organizations · Presence of regional institutions such as GAP Regional Development Administration, Development Agency · Presence of awareness of the problems of and threats to the steppes and initiation of the strategy process · Presence of many ongoing studies and projects (such as the Provincial Biodiversity Inventory and Monitoring Project and the Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project) that are based on the steppe biodiversity in the region	· Lack of awareness about the importance of the biodiversity of steppes · Steppes regarded as unclaimed lands · Incomplete delimitation of the current steppe areas · Insufficient monitoring of steppe species and habitats · Failure to enforce legislation and the lack of deterrent laws · Lack of effective management in the organizations · Lack of staff and capacity · Inadequate data, information management and sharing between different institutions for the conservation and management of steppes · Ineffective use of technological innovations and data (inability to develop technical competency due to lack of equipment and staff) · Lack of training programs on steppes for different interest groups · Insufficient awareness and education about steppes among the local people · Failure to effectively manage nomadic animal husbandry that adversely affects rangelands · Insufficient agricultural policies, incentives and supports for the conservation of steppe areas and biodiversity and lack of diversity of income-generating activities

OPPORTUNITIES	THREADS
· Biodiversity-oriented international commitments and 2030 agenda · Presence of universities and institutes conducting research on steppe areas and their biodiversity · Technological advancements regarding wildlife · Increased awareness of deterioration (drought - species extinctions) · Presence of traditional, sustainable rangeland use principles · Involvement and contributions of GAP administration and Karacadağ Development Agency in rural development strategies · Presence of university studies, research studies, techno parks and incubation centers in the region · Influence of opinion and religious leaders in the region · Local government policies for empowerment of women · Increased tourism potential (Göbeklitepe) · Rural tourism and organic agriculture potential · Cooperation between the Metropolitan Municipality, Breeding Unions and Harran University and the model of heifer ranch center · The program of the Metropolitan Municipality for the use of natural plants in landscape and ornamental works	· Policies supporting use rather than conservation · Out-of-purpose use demands and political pressures about land uses · Impact of irrigation projects on rangelands (opening individual irrigation channels) · Increase in the number of settlements due to migration and population growth · Resistance against change of the socio-cultural structure in the region · Abandonment of traditional and sustainable practices as the socio-cultural structure changes · Overuse of the natural resources due to rural poverty, intensive agriculture and animal husbandry · Overuse of rangelands by the breeders from the districts and even from outside of Şanlıurfa · Increased pollution due to industrial facilities · Increased investment demands for steppe ecosystems (quarries, mining, transportation networks, etc.) · Adverse effects of climate change and drought

Box 4. Gap Analysis

A gap analysis constitutes a baseline for preparation of provincial steppe conservation strategy and action plan. This analysis used multifaceted methods and approaches, and provided key results which are reflected in different parts of this Strategy and Action Plan.

The gap analysis includes following studies:

i) An assessment of the current situation regarding policies, legislation and mechanisms as well as institutional structures and capacities at the local level related to the conservation and sustainable management of steppes. Given in ***Section 2.5 The Legal Framework and Institutional Structure Related to Steppes***.

ii) A spatial assessment of the current situation with respect to conservation of steppes specifically in protected areas and important biodiversity areas, with attention given to the distribution of steppes and steppe forests according to geographical regions and provinces; and threats to and pressures on the steppes of Şanlıurfa. The study is based on a desk study as well as outcomes of the workshops and meetings. Given in ***Section 1. The Steppes of Turkey*** and ***Section 3. The Spatial Assessments Regarding the Steppes of Şanlıurfa***.

iii) A SWOT analysis used as a tool for assessment of internal (strengths and weaknesses) and external factors (opportunities and threats) impacting the conservation and management of steppes at provincial level. The study is based on outcomes of the workshops and meetings. Given in ***Section 4.2. SWOT Analysis of the Strategic Goals and Objectives***.

Key results of the gap analysis:

- *Policies, legislation and mechanisms:*
  There is no definition of steppes in the legislation unlike forests and wetlands. The steppe ecosystems of Turkey comprise natural steppes, meadows, rangelands and degraded forests of steppic nature that are managed by different institutions according to different laws and regulations. Although there is no single institutional structure responsible for the conservation and management of the steppes, there is capacity and various mechanisms distributed within different institutions. Based on these findings, a further assessment was provided to demonstrate a scheme for institutional structuring at national and local levels with regards to conservation and management of steppes. Besides, overlaps and gaps in key issues were revealed by examining legislation together with duties and responsibilities of the institutions. These results all revealed the importance of governance and collaboration mechanisms for sustainable management of the steppes, which is addressed under Strategic Goal 1.

- *Distribution Mapping and Spatial Assessment:*
  The outcomes of these assessments revealed that steppe and steppe forest ecosystems in Turkey (areas that form sparse or closed forests in the ecological regions dominated by steppes) span an area of approximately 33.5 million hectares. According to the analyses, there are approximately 17 million ha of steppes and 552,334 ha of steppe forests in the provinces of Turkey which is major host of steppes. Şanlıurfa's natural vegetation cover, namely steppes which are also important for the biodiversity of the province, cover approximately 39% (756,098 ha) of the province's surface area. Some parts of the steppes in Şanlıurfa fall within the legally established protected areas. Among these, Tek Tek Mountains National Park, Kızılkuyu Wildlife Reserve and Birecik Wildlife Reserve are prominent areas in terms of steppe habitats and species.

- *SWOT Analysis*
  The presence of natural steppes and their biodiversity, existence of core legislative and administrative mechanisms, and existing institutions and studies were strengths whereas lack of awareness of the importance of steppes, inefficient governance, coordination and cooperation issues, difficulties regarding the pasture law were weaknesses primarily indicated. The international commitments, presence of NGOs, universities and existing studies were opportunities while overuse of natural resources and policies supporting use rather than conservation, increased settlement and investment pressure, impact of climate change and drought were external threats indicated. The outcomes of the analysis laid a foundation for the formulation of the Strategy.


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5. Şanlıurfa Steppe Conservation Action Plan

Şanlıurfa Steppe Conservation Action Plan includes actions to achieve the determined strategic goals and objectives. Timetable for the implementation of actions within the scope of the Action Plan is defined as 2021-2023 (short term), 2021-2026 (medium term) and 2021-2030 (long term). There are the responsible institutions and relevant institutions for realization of each action. The purpose of specifying both responsible institutions and relevant institutions is to emphasize the importance of cooperation between the institutions in order to successfully implement relevant actions and to be a guide in this regard.

In addition, for the monitoring and evaluation of the action plan and revision when necessary, a larger set of indicators for both targets and actions, and baselines and endlines of these indicators are given.

5.1. Actions to Achieve the Strategic Goals and Objectives

Priority and strategically important issues in line with the actions determined to achieve the strategic goals and objectives are given below.

5.1.1. Strategic Goal 1

Development of a governance and collaboration structure for effective management of Şanlıurfa steppes

For the conservation of the steppes managed by the powers and responsibilities of different institutions within the scope of different laws and regulations, establishing a local scale governance structure is one of the most important needs.

Accordingly, for the effective implementation, monitoring and evaluation of the Strategy and Action Plan, establishment of a Coordination Board to ensure active participation of all interest groups in decision-making processes regarding the steppes is of top priority. It is recommended that this board should follow the implementation and monitoring of the Strategy through the secretarial services of the **Provincial Directorate of Planning and Coordination** under the Governorship and this be put on the agenda of the Provincial Planning and Coordination Board. Technical support can be provided to the Provincial Directorate of Planning and Coordination by Ministry of Agriculture and Forestry, Nature Conservation and National Parks 3rd Regional Directorate National Parks Department, Ministry of Agriculture and Forestry Şanlıurfa Regional Directorate of Forestry and Ministry of Agriculture and Forestry Şanlıurfa Provincial Directorate of Agriculture and Forestry Rangelands Department. The cooperation protocol (Annex 6) prepared for the Implementation and Monitoring of the "Şanlıurfa Steppe Conservation Strategy and Action Plan" between the Governorship of Şanlıurfa, the Ministry of Agriculture and Forestry Nature Conservation and National Parks 3rd Regional Directorate, the Ministry of Agriculture and Forestry Şanlıurfa Regional Directorate of Forestry and the Ministry of Agriculture and Forestry Şanlıurfa Provincial Directorate of Agriculture and Forestry is an important tool to ensure functioning of this governance mechanism.

For this purpose, capacity building, resource use, communication, monitoring and evaluation, and reporting are among the priority actions for the implementation of the governance mechanism.

The indicators determined at the level of objectives are given below:

i) *An effective governance mechanism*

5.1.2. Strategic Goal 2

Conservation of Şanlıurfa steppe biodiversity (at the levels of ecosystem, species, genetic and ecological process diversity)

In the Convention on Biological Diversity and national policy documents, the conservation of biodiversity, its sustainable use and fair sharing of the benefits arising from the use of genetic resources represent the most basic principles. In this document, conservation of Şanlıurfa steppe ecosystems, species, habitats and genetic resources is the priority objective of strategic importance. In this context, the conservation proposals regarding biodiversity are handled separately under the first two objectives. In the first one, the main actions are to include priority steppes in the frame of protected areas and to determine ecological corridors for steppe ecosystems; in the second one, main actions are about determining the priority steppe species and their habitats, preparing, implementing and monitoring species action plans, especially for steppe-specific species, and conservation of steppe species and habitats in the current protected areas in cooperation with the local people. As to the actions for the protection of genetic resources of Şanlıurfa steppes, recording these species and conserving them ex-situ while raising awareness of the benefits arising from these resources are considered important. Emphasis is put on these actions being carried out through participatory processes that will ensure cooperation between relevant institutions and stakeholders and effective participation of the local people. In addition, legal and administrative regulations at the national level that will support the conservation of steppe biodiversity will contribute to the creation of an enabling environment to achieve these goals.

Importance of increased adaptive capacity of steppe ecosystems to climate change, which represent one of the most sensitive ecosystems, is demonstrated in international conventions and national policy documents. In this document, identifying and monitoring the possible effects of climate change on Şanlıurfa steppe ecosystems, developing adaptation proposals accordingly, preparing adaptation plans, accomplishing implementation of these plans, creating and implementing monitoring action plans are the main actions.

Based on the Convention on Biological Diversity and national policy documents, creating awareness about biodiversity values and the conservation and sustainable use of biodiversity is defined as one of the primary goals. In this document, increased knowledge and awareness among the steppe interest groups about the biodiversity values of Şanlıurfa steppes is included as one of the basic principles to ensure their participation in the processes. In this direction, actions are defined to create the physical structure that will contribute to the promotion, information, communication and education activities in order to increase awareness about the biodiversity values of the Şanlıurfa steppes, to provide synergy between relevant practices in the region and to disseminate good practices. The regional tourism plans and programs are considered to create an important opportunity for nature tourism and ecotourism practices considering sustainable use of Şanlıurfa steppes and their biodiversity. It is also emphasized that all these actions are planned and implemented in cooperation with relevant stakeholders.

The indicators determined at the level of objectives are given below:

i) Change in surface area of the steppes in Şanlıurfa (in percentage)

ii) Change in surface area of protected steppe areas in Şanlıurfa (in percentage)

iii) The number of steppe species that are effectively protected in Şanlıurfa (in numbers)

iv) The number of steppe species in Şanlıurfa that are effectively protected for genetic resources (in numbers)

v) The number of practices for adaptation to climate change (in numbers)

vi) The number of people reached for the promotion and visibility of Şanlıurfa steppes (in numbers)

5.1.3. Strategic Goal 3

Improving the use of resources in Şanlıurfa steppes within the framework of the sustainability principle

As to the improvement of the use of resources in Şanlıurfa steppes within the framework of sustainability, disseminating agricultural practices that support biodiversity and ensuring the sustainable and ecosystem-based rangeland management are the main goals. The most important tools in realization of these strategies are to promote cooperation between relevant institutions and stakeholders and to implement model practices and demonstration studies through which local people actively take part in sustainable use and management of resources and observe their impact concretely.

In this context, establishment and dissemination of model support programs for environmentally-friendly agricultural practices and dissemination of agricultural practices that support biodiversity are handled primarily. Exemplary programs and practices on this subject, such as EFALP and IPARD, provide important tools. In addition, support and incentive mechanisms that can ensure the implementation and continuity of biodiversity-friendly agricultural practices, especially in priority steppe areas and their surroundings in Şanlıurfa, are defined.

For sustainable and ecosystem-based rangeland management, planning all rangeland improvement activities to be implemented in Şanlıurfa, primarily in Kızılkuyu WR, Tek Tek Mountains NP and Karacadağ steppes, in a way that takes biodiversity factors into account, addressing rangeland improvement works with rangeland management projects as a whole, monitoring rangeland improvement activities more effectively, and developing, supporting and disseminating best practices for sustainable and restorative rangeland management are important actions that can contribute to the conservation and sustainable management of steppes, most of which are used as rangelands. Especially, model implementation, pilot and demonstration projects planned with a cooperative approach are important tools for the implementation of sustainable and ecosystem-based rangeland management. In addition, legal and administrative regulations at national level that support the conservation and sustainable management of rangelands will contribute to the creation of an enabling environment to achieve this goal.

Solving the settlement and education problems of nomadic families living in steppes, who account for one of the vulnerable groups, and encouraging and supporting income-generating activities for the nomads are also considered under this goal.

The indicators determined at the level of objectives are given below:

i) Changes in agricultural practices in favor of biodiversity (in number of farmers and area of land)

ii) Changes in surface area under sustainable and ecosystem-based rangeland management (in percentage)

5.1.4. Strategic Goal 4

Improving the livelihoods of the local people who benefit from Şanlıurfa steppes

Increasing awareness of the local people on steppe biodiversity and encouraging them to take part in the sustainable use of steppe resources effectively are the basic principles for the conservation of steppe biodiversity. Supporting the traditional, sustainable natural resource use of the local people whose livelihood is based on the steppe ecosystem is handled primarily. In this context, one of the most important steps is to increase the added value of plant production and animal husbandry practices in the steppe and related areas. Organized work and cooperation in rural production in steppes and related fields is defined as one of the most important tools for the success of the efforts.

Within the scope of the first objective, conducting socio-economic research and value chain analyses to increase productivity and added value and establishing the infrastructure of promotion, marketing, branding and certification based on research are priority actions. In this context, mobilization of available resources for model practices and activating both national and regional structures to create new resources and supports is presented as an important tool.

Another important objective is to diversify and support the livelihoods of the local people in order to reduce the pressure on the steppes and to ensure sustainable use of the steppes. In this regard, beekeeping, ornamental and medicinal-aromatic plant breeding, rural tourism, family farming, local production and especially good agricultural practices are prominent alternative livelihoods (see Annex 5 for details). Actions that will ensure coordination and cooperation with existing institutional structures and mechanisms that provide an important tool in this regard are defined.

In addition, one of the main principles is that women benefit from training and other services equally, given their special needs and their roles in the household. Accordingly, organizing on-site training activities for women, in cooperation with the local institutions and organizations, is among the actions.

The indicators determined at the level of objectives are given below:

i) Change in household income of families benefiting from the program and model practices (in percentage)

ii) Change in household income of families benefiting from supports and best practices (in percentage)

Box 5. Mainstreaming steppe conservation into productive landscapes

The strategy and action plan supports steppe conservation in both the protected areas and the productive landscapes. The mainstreaming options of steppe conservation into productive landscapes provided under the strategic goals are listed below:

i) A governance model, and legislative and administrative regulations to support conservation and management of steppes in both protected areas and productive landscapes. (Strategic Goal 1)

ii) Informed decision making towards landscape level steppe conservation supported through governance, coordination and monitoring mechanisms. (Strategic Goal 1)

iii) Steppe conservation principles integrated into sectoral policies and programmes, strategy and planning documents. (Strategic Goal 1)

iv) Knowledge, capacity and tools developed to integrate steppe conservation principles into both protected areas and productive landscapes. (Strategic Goal 1)

v) Steppe conservation principles integrated into the afforestation works (Strategic Goal 2)

vi) Particular steppe conservation proposals identified, implemented and monitored in both protected areas and productive landscapes (Strategic Goal 2)

vii) Awareness raised and participation encouraged on the sustainable use of natural resources of steppe ecosystems in productive landscapes (Strategic Goal 2)

viii) Conservation and sustainable use of steppe ecosystems integrated into national and regional tourism plans and programmes (Strategic Goal 2)

ix) Agricultural production models and support mechanisms put in place to support steppe biodiversity in both productive landscapes and protected areas including pilot support programmes to be implemented in collaboration with government institutions; incentives put in place for implementation and dissemination of climate-friendly and ecosystem-based adaptation practices (Strategic Goal 3)

x) Sustainable and ecosystem-based rangeland management integrated into steppe biodiversity elements, pilot and demonstration practices implemented and monitored collaboratively (Strategic Goal 3)

xi) Steppe conservation integrated into rural development strategies, programmes and practices; support and incentive mechanisms developed for agriculture and livestock practices and new income generating activities identified and supported to improve livelihoods of local people depending on steppe ecosystems (Strategic Goal 4)

xii) Cooperation and coordination enhanced between key stakeholders across the productive landscapes and protected areas. (All strategic goals)

GOAL 1. DEVELOPMENT OF A GOVERNANCE AND COLLABORATION STRUCTURE FOR EFFECTIVE MANAGEMENT OF ŞANLIURFA STEPPES							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
Objective 1.1. Development and implementation of a governance mechanism/model for Şanlıurfa steppes ***Objective Indicator: An effective governance mechanism***							
1.1.1	Establishing a Coordination Board under the Governorship in a way that will ensure the active participation of all interest groups in the decision-making processes regarding the steppes in order to implement, monitor, and evaluate the Şanlıurfa Steppe Conservation Strategy and Action Plan	2021-2023	Şanlıurfa Governorship, Ministry of Agriculture and Forestry 3rd Regional Directorate, Provincial Directorate of Agriculture and Forestry	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Şanlıurfa Regional Directorate of Forestry, GAP Regional Development Administration, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Provincial Directorate of Environment and Urbanization, Provincial Directorate of Culture and Tourism, Şanlıurfa Forestry Management Directorate, Provincial Coordination and Planning Directorate, GAP Agricultural Research Institute, Provincial Pasture Commission, Provincial Soil Conservation Board, Harran University, Relevant NGOs	Coordination Board endorsed Collaboration protocol signed between institutions	0 0	1 1
1.1.2	Providing administrative requirements related to the duties, working procedures and principles and functioning of the Coordination Board and integrating it into existing institutional structures (Governorship, Metropolitan Municipality and GAP RDA Strategic Plans, etc.)	2021-2023	Şanlıurfa Governorship, Ministry of Agriculture and Forestry 3rd Regional Directorate, Provincial Directorate of Agriculture and Forestry	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Şanlıurfa Regional Directorate of Forestry, GAP Regional Development Administration, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Provincial Directorate of Environment and Urbanization, Provincial Directorate of Culture and Tourism, Şanlıurfa Forestry Management Directorate, Provincial Coordination and Planning Directorate, GAP Agricultural Research Institute, Provincial Pasture Commission, Provincial Soil Conservation Board, Harran University, Relevant NGOs	Number of relevant administrative regulations	0	1
1.1.3	Determining cooperation issues, ensuring and monitoring cooperation for the use of responsibilities and powers of institutions for common purposes of protection and management of steppes	2021-2030	Coordination Board	Harran University, Related NGOs, Private Sector	Number of joint activities	0	5

GOAL 1. DEVELOPMENT OF A GOVERNANCE AND COLLABORATION STRUCTURE FOR EFFECTIVE MANAGEMENT OF ŞANLIURFA STEPPES							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
1.1.4	Ensuring implementation and monitoring of priorities of the Şanlıurfa Steppe Conservation Strategy and Action Plan by means of regional development plans, institutional and sectoral plans and programs (e.g. Ministerial Strategic Plans, GAP RDA Strategic Plan and GAP Regional Development Plans, etc.)	2021-2030	Coordination Board	Harran University, Related NGOs, Private Sector	Number of plans and programs it is integrated into	0	3
1.1.5	Determining, supporting, and disseminating good practices for the conservation of steppes and sustainable use of natural resources throughout the province	2021-2030	Coordination Board	Harran University, Related NGOs, Private Sector	Number of good practices mainstreamed	0	5
1.1.6	Sharing data and results of the studies on Şanlıurfa steppes with the Provincial Directorate of Planning and Coordination and investment institutions in the province in order to observe biodiversity in investments in the province and to monitor its integration into the necessary permit processes (e.g. EIA, etc.)	2021-2026	MoAF (GDNCNP, GDARP, GDPP), FAO	Şanlıurfa Governorship (Provincial Directorate of Planning and Coordination), Şanlıurfa Metropolitan Municipality, Provincial Directorate of Culture and Tourism, Provincial Directorate of Environment and Urbanization, GAP RDA, Relevant Universities	Number of official articles sharing data	0	10

GOAL 1. DEVELOPMENT OF A GOVERNANCE AND COLLABORATION STRUCTURE FOR EFFECTIVE MANAGEMENT OF ŞANLIURFA STEPPES							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
1.1.7	Sharing Şanlıurfa priority steppe area borders and recommendations for conservation with the Soil Conservation Board in order to protect the steppe areas in the large plains from land transformation	2021-2026	Provincial Directorate of Agriculture and Forestry,Soil Conservation Board	Şanlıurfa (NCNP) Provincial Directorate	Number of decisions taken for the conservation of steppe areas	0	1
1.1.8	Establishing and implementing an effective communication model between relevant institutions and stakeholders	2021-2026	Coordination Board	Harran University, Related NGOs, Private Sector	Number of activities related to the communication model	0	5
1.1.9	Holding joint meetings during the implementation of the Fırat Sub-Basin Drought Management Plan	2021-2026	GDWM (Fırat Dicle 1st Sub-Basin Management Committee)	All institutions that make up the Basin Management and Coordination Board	Number of meetings held	0	3
1.1.10	Monitoring and evaluating the implementation of Şanlıurfa Steppe Conservation Strategy and Action Plan, reporting and sharing it annually, making suggestions for the revision of the Strategy according to the monitoring results, discussing the suggestions with the relevant institutions, and making decisions	2021-2030	Coordination Board	Harran University, Related NGOs, Private Sector	Annual report	0	4

GOAL 2. CONSERVATION OF ŞANLIURFA STEPPE BIODIVERSITY (at the levels of ecosystem, species, genetic and ecological process diversity)							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
Objective 2.1. Conservation of Şanlıurfa steppe ecosystems ***Objective Indicator: i) Change in surface area of the steppes in Şanlıurfa (in percentage); ii) Change in surface area of the protected steppe areas in Şanlıurfa (in percentage)***							
2.1.1	Carrying out necessary inventory, monitoring and evaluation studies to increase the surface area of protected areas including priority steppe areas in Şanlıurfa	2021-2030	MoAF	MoAF (GDNCNP, GDPP), Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Environment and Urbanization, Provincial Directorate of Culture and Tourism, Harran University, Relevant NGOs	Number of new protected areas Change in surface area of protected areas with steppes	0 0	2 10%
2.1.2	Effective monitoring of activities that could harm the species representing the vegetation of priority steppe habitats in Şanlıurfa in cooperation with relevant institutions and other stakeholders	2021-2030	MoAF (GDNCNP, GDPP, GDF)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Provincial Directorate of Culture and Tourism, Provincial Directorate of Environment and Urbanization, Şanlıurfa Metropolitan Municipality	Number of activities controlled/ canceled	0	5 /Year
2.1.3	Monitoring the rehabilitation efforts for damaged areas in Şanlıurfa priority steppe areas	2021-2030	MoAF (GDNCNP, GDPP, GDF)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Provincial Directorate of Culture and Tourism, Provincial Directorate of Environment and Urbanization	The area of rehabilitation works	0 Hectare	1,000 Hectares
2.1.4	Making an ecological assessment prior to the afforestation efforts planned in Şanlıurfa steppe ecosystems	2021-2030	Regional Directorate of Forestry, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	Provincial Directorate of Agriculture and Forestry, Relevant Universities, Relevant NGOs	Number of ecological assessment reports	0	1 /Year

GOAL 2. CONSERVATION OF ŞANLIURFA STEPPE BIODIVERSITY (at the levels of ecosystem, species, genetic and ecological process diversity)							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
2.1.5	Determining ecological corridors in Şanlıurfa steppes	2021-2030	MoAF	MoAF (GDNCNP), Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Provincial Directorate of Environment and Urbanization, Harran University	Number of ecological corridors determined	2	3
2.1.6	Increasing the technical capacity of personnel assigned in protected areas for the conservation and monitoring of steppe species	2021-2023	MoAF (GDNCNP)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	Number of Training sessions per year	1/Year	3/Year
2.1.7	Increasing recruitments and bridging the personnel gap for effective management of areas and ensuring protection	2021-2026	MoAF	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	Increase in the number of personnel recruited	0	20%
2.1.8	Achieving decentralization in the Management of Tek Tek Mountains NP	2021-2026	MoAF (GDNCNP)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	Number of staff	1 full-time personnel, 6 workers	5 full-time personnel, 10 workers
Objective 2.2. Conservation of Şanlıurfa steppe species and habitats ***Objective Indicator: The number of steppe species that are effectively protected in Şanlıurfa (in numbers)***							
2.2.1	Identifying and implementing conservation measures for priority steppe areas and priority steppe species in cooperation with relevant institutions and other stakeholders and achieving effective protection in these areas	2021-2026	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	Provincial Directorate of Agriculture and Forestry, Regional Directorate of Forestry, Provincial Directorate of Culture and Tourism, Provincial Directorate of Environment and Urbanization, Relevant NGOs, Relevant Universities	Change in population size of threatened species	0	15%
2.2.2	Achieving protection with wire fences in pilot areas where rare priority steppe plant species are narrowly distributed in Şanlıurfa, placing informative signs about the species at these points	2021-2023	MoAF 3rd Regional Directorate	Provincial Directorate of Agriculture and Forestry, GAP TAEM, Harran University	Number of species protected by fencing Number of information signs	0 0	5 5

GOAL 2. CONSERVATION OF ŞANLIURFA STEPPE BIODIVERSITY (at the levels of ecosystem, species, genetic and ecological process diversity)							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
2.2.3	Preparing, implementing and monitoring species action plans, with priority given to steppe-specific species, in cooperation with relevant institutions and other stakeholders	2021-2026	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry	Provincial Directorate of Culture and Tourism, Provincial Directorate of Environment and Urbanization, Relevant NGOs, Relevant Universities	Number of species action plans	3	8
2.2.4	Supporting detailed ecological research on steppe ecosystems (e.g. population dynamics, herbivorous species-vegetation dynamics, etc.) and developing subject-specific projects	2021-2026	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	Provincial Directorate of Agriculture and Forestry, Harran University Relevant Departments, Relevant NGOs	Number of research and projects	0	2
2.2.5	Reintroducing Arabian sand gazelles into their former habitats	2021-2030	MoAF (GDNCNP), MoAF 3rd Regional Directorate	District Governorships, Harran University Relevant Departments, Relevant NGOs	Number of individuals reintroduced	50	200
2.2.6	Fostering and ensuring cooperation between GDNCNP and GDAE for the protection of Arabian sand gazelles	2021-2026	MoAF (GDNCNP, GDAE)	MoAF 3rd Regional Directorate, Provincial Directorate of Agriculture and Forestry	Number of cooperation protocols	0	1
2.2.7	Identifying the roads and water channels that wild animals cross frequently and placing warning signs at crossing points	2021-2026	MoAF 3rd Regional Directorate	SHW (DSİ) 15th Regional Directorate, 9th Regional Directorate of Highways Şanlıurfa Division, TSR (TCDD) 5th Regional Directorate, Harran University, District Governorships	Number of application sites	3	10
2.2.8	Strengthening cooperation with local people and raising awareness to effectively combat poaching	2021-2026	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Law Enforcement	Provincial Directorate of National Education, Mukhtars, Directorate of Religious Affairs, Relevant NGOs	Number of training sessions / participants	10/300 people	15/400 people

GOAL 2. CONSERVATION OF ŞANLIURFA STEPPE BIODIVERSITY (at the levels of ecosystem, species, genetic and ecological process diversity)							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
2.2.9	Increasing controls in order to fight animal and plant collection from nature, working in cooperation with the local people in areas where these species are found	2021-2026	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Law Enforcement	Provincial Directorate of National Education, Presidency of Religious Affairs, Harran University, Relevant NGOs	Number of permits and documents received from MoAF/year	15/Year	20 /Year
2.2.10	Researching traditional knowledge and new methods, techniques and practices that support the conservation of steppe biodiversity and sustainable use of its resources, sharing the results and implementing model practices	2021-2026	MoAF	MoAF (GDARP, GDAR, GDNCNP), Ministry of Culture and Tourism, Provincial Directorate of Agriculture and Forestry, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Relevant Universities, Relevant NGOs, Media	Number of research	2	5
Objective 2.3. Conservation of the genetic resources of Şanlıurfa steppes ***Objective Indicator: The number of steppe species in Şanlıurfa that are effectively protected for genetic resources (in numbers)***							
2.3.1	Identifying plant and animal species that may be important in terms of genetic resource quality in Şanlıurfa steppes, determining and recording their genetic resources and updating them periodically	2021-2026	MoAF (GDARP, GDNCNP)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, TUBITAK, Relevant Universities, Research Institutes	Number of recorded taxa (species, subspecies ranks)	5	10
2.3.2	Increasing scientific studies and supporting R&D studies in order to protect the genetic resources of ancestral species	2021-2026	MoAF (GDARP)	MoAF (GDNCNP), Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Relevant Universities, Research Institutes	Increase in number of scientific studies	0	20%

GOAL 2. CONSERVATION OF ŞANLIURFA STEPPE BIODIVERSITY (at the levels of ecosystem, species, genetic and ecological process diversity)							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
2.3.3	Ex-situ reproduction of rare, narrow-range priority steppe plant species in Şanlıurfa according to their population and threats to the habitat, ensuring their ex-situ (off-site) conservation in gene banks and botanical gardens.	2021-2026	MoAF (GDARP, GDPP)	MoAF (GDNCNP), Provincial Directorate of Agriculture and Forestry, Şanlıurfa Metropolitan Municipality, Harran University, Research Institutes	Number of cultivated and ex-situ protected species	0	5
2.3.4	Fostering cooperation and realizing joint initiatives for the establishment of a botanical garden in Şanlıurfa	2021-2026	MoAF (GDARP, GDNCNP, Şanlıurfa Metropolitan Municipality)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Harran University, Relevant NGOs	Number of collaboration protocols and joint initiatives	0	1
2.3.5	Compiling, recording and protecting traditional information related to genetic resources, introducing innovations and practices about traditional knowledge	2021-2026	MoAF (GDARP, GDNCNP)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Relevant Universities, Research Institutes, Relevant NGOs	Number of posts shared	12	25
2.3.6	Making the necessary application, labeling and certification procedures for the inclusion of Karacadağ rice associated with steppe biodiversity into the Globally Important Agricultural Heritage System (GIAHS)	2021-2030	MoAF GDARP, Provincial Directorate of Agriculture and Forestry	Universities, Research Institutes, Relevant NGOs, FAO	Number of species included	0	1
Objective 2.4. Increasing the adaptive capacity of Şanlıurfa steppes to climate change ***Objective Indicator: The number of practices regarding adaptation to climate change (in numbers)***							
2.4.1	Conducting modeling and evaluation studies for determining the effects of climate change on Şanlıurfa steppe ecosystems and the ecosystem services they provide, and preparing and implementing a monitoring action plan	2021-2030	MoAF (GDARP, GDNCNP)	MoAF (GDAR, GDPP), Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Provincial Directorate of Environment and Urbanization, Relevant Universities, Research Institutes	Number of modeling and evaluation studies Number of actions implemented	0 0	1 2

GOAL 2. CONSERVATION OF ŞANLIURFA STEPPE BIODIVERSITY (at the levels of ecosystem, species, genetic and ecological process diversity)							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
2.4.2	Developing and implementing adaptation recommendations in coordination with existing studies for the species, areas and ecosystem services that will be most affected by climate change	2021-2030	MoAF (GDNCNP, GDARP, GDPP, GDAR)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Provincial Directorate of Environment and Urbanization, Relevant Universities, Research Institutes	Number of adaptation recommendations implemented	0	5
2.4.3	Preparing and implementing climate change adaptation plans in coordination with existing studies in the protected areas in Şanlıurfa (for example, assisted migration, corridor creation, gene transfer between populations)	2021-2030	MoAF (GDNCNP)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Provincial Directorate of Environment and Urbanization, Relevant Universities, Research Institutes	Number of climate change adaptation plans Number of adaptation plan actions implemented	0 0	1 3
2.4.4	Determining training needs in order to increase the adaptive capacity to climate change in Şanlıurfa steppe ecosystems, and developing and implementing training programs in cooperation with relevant institutions	2021-2023	MoAF (GDNCNP, GDPP)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Provincial Directorate of Environment and Urbanization, Relevant Universities, Research Institutes, Relevant NGOs	Number of participants in the training	0 person	100 people
Objective 2.5. Making the value of biodiversity in Şanlıurfa steppes known and increasing its visibility ***Objective Indicator: The number of people reached for the promotion and visibility of the Şanlıurfa steppes (in numbers)***							
2.5.1	Ensuring effective use of Arabian sand gazelle breeding center in Kızılkuyu WR in order to raise awareness about the biodiversity value of the steppes	2021-2026	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	Provincial Directorate of National Education, Provincial Directorate of Culture and Tourism, Şanlıurfa Metropolitan Municipality, Şanlıurfa Tourism Development Inc.	Number of center visitors/ year	100 people/ Year	200 people/ Year
2.5.2	Ensuring the effective use of the existing administration and visitor center in Tek Tek Mountains NP for the promotion of steppe ecosystems and species	2021-2026	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	Provincial Directorate of National Education, Provincial Directorate of Culture and Tourism, Şanlıurfa Metropolitan Municipality, Şanlıurfa Tourism Development Inc.	Number of center visitors/ year	0 person/Year	1,000 people/Year

GOAL 2. CONSERVATION OF ŞANLIURFA STEPPE BIODIVERSITY (at the levels of ecosystem, species, genetic and ecological process diversity)							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
2.5.3	Diversifying nature tourism and ecotourism practices aimed at promoting the Sanliurfa steppes and its biodiversity, and integrating tourism development routes, corridors and attraction points into regional tourism plans and programs (including plant, bird, butterfly, small mammal, large mammal species observations and tour routes for these species)	2021-2026	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	Provincial Directorate of Culture and Tourism, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Relevant Universities, Şanlıurfa Tourism Development Inc., Urfa Nature Sports Club, Relevant NGOs, agencies bringing tourists to the region or NGOs representing these agencies	Number of routes specific to steppes	3	5
2.5.4	Establishing promotional units in the Karacadağ region to promote the history, geographic, cultural structure and steppe biodiversity of the region and to raise awareness.	2021-2026	Şanlıurfa Metropolitan Municipality	GAP RDA, Karacadağ Development Agency, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, Regional Directorate of Forestry, Provincial Directorate of Culture and Tourism, Universities, Relevant NGOs	Number of promotion units	0	2
2.5.5	Regularly carrying out awareness and training activities for different interest groups (children, youth, women, opinion leaders, farmers, shepherds, imams, etc.) in cooperation with relevant institutions and other stakeholders on the value and biodiversity of the steppes	2021-2030	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry	Provincial Directorate of National Education, Presidency of Religious Affairs, GAP RDA, Şanlıurfa Metropolitan Municipality, Mukhtars, Relevant Universities, Relevant NGOs	Number of trainings and participants	5 500 people	10 1,000 people

GOAL 2. CONSERVATION OF ŞANLIURFA STEPPE BIODIVERSITY (at the levels of ecosystem, species, genetic and ecological process diversity)							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
2.5.6	Regularly implementing and mainstreaming training programs developed within the scope of "Conservation and Sustainable Management of Turkey's Steppe Ecosystems" for teachers and students in and around protected areas, together with the Provincial Directorate of National Education	2021-2030	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of National Education	Harran University, Relevant NGOs	Number of trainings and participants	10 500 people	100 5,000 people
2.5.7	Preparing guides on steppe plants collected and used extensively by the local people and carrying out educational activities	2021-2026	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry	Provincial Directorate of National Education, Presidency of Religious Affairs, Mukhtars, Relevant Universities, Relevant NGOs	Number of Guides and Trainings	1 0	3 3
2.5.8	Producing and distributing printed and visual materials for the effective promotion of protected priority steppe species on different platforms	2021-2026	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry	Provincial Directorate of National Education, Presidency of Religious Affairs, Şanlıurfa Metropolitan Municipality, Relevant Universities, Relevant NGOs	Number of materials prepared and distributed Number of people reached	10 1,000 people	30 5,000 people

GOAL 3. IMPROVING THE USE OF RESOURCES IN ŞANLIURFA STEPPES WITHIN THE FRAMEWORK OF THE SUSTAINABILITY PRINCIPLE							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
Objective 3.1. Scaling-up the agricultural practices that support the steppe biodiversity[13] ***Objective Indicator: Change in agricultural practices that support biodiversity (number of farmers and area of land)***							
3.1.1	Establishing a model support program for environmentally-friendly agricultural practices in the steppes of Şanlıurfa (such as EFALP Program)	2021-2030	Provincial Directorate of Agriculture and Forestry, Coordination Board	Provincial Directorate of Agriculture and Forestry, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Universities (data supply), Chamber of Agricultural Engineers, Chambers of Agriculture, GAP RDA, GAP TAEM	Number of farmers supported	0 person	100 people
					Amount of areas with environmentally-friendly practices within the scope of the support	0 decare	500 decares
3.1.2	Establishing an agriculture and environmental measure program for a species in a pilot area to be selected in Sanliurfa and gradually scaling-up the practices throughout the province based on the experience gained (e.g. IPARD Agriculture-Environment Measure Biological Diversity Sub-Measure Polatlı Great Bustard example)	2021-2023 (in GDAE) 2021-2026 (areas out of GDAE)	MoAF (GDAR, GDNCNP), GDAE (Headquarters and Ceylanpınar)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, MoAF (GDPP)	Number of practices	0	100
					The amount of implementation areas in the province on an annual basis	0 decare	500 decares
3.1.3	Prioritizing the incentives for existing agricultural practices to support biodiversity in protected areas in Şanlıurfa	2021-2030	MoAF (GDNCNP, GDPP, GDAR)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, GAP RDA, Karacadağ Development Agency, Chamber of Agricultural Engineers, Chambers of Agriculture	The area of application	0 decare	200 decares

13. The list of priority areas and surrounding villages determined as a result of the Şanlıurfa provincial inventory study, which is the subject of different actions under the objective, is given in Annex 7.

GOAL 3. IMPROVING THE USE OF RESOURCES IN ŞANLIURFA STEPPES WITHIN THE FRAMEWORK OF THE SUSTAINABILITY PRINCIPLE							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
3.1.4.	Increasing the support for organic and good agriculture and cooperating with leading farmers for this purpose	2021-2026	Provincial Directorate of Agriculture and Forestry, ARDSI Şanlıurfa Provincial Coordinator	Ministry of Finance, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Chambers of Agriculture, Relevant Universities, Şanlıurfa Commodity Exchange, Relevant NGOs	Number of farmers supported Area of application	10 people 2.236 decares	20 people 4.500 decares
3.1.5	Ensuring the continuity of legumes and forage crops by putting them to crop rotation (especially in cotton production) under crop rotation support conditions	2021-2026	Provincial Directorate of Agriculture and Forestry	GAP TAEM, GAP RDA, Karacadağ Development Agency, Chamber of Agricultural Engineers, Chambers of Agriculture	Number of farmers supported Area supported annually for crop rotation	0 person 0 decare	50 people 200 decares
3.1.6	Supporting and disseminating no-till and direct planting practices in areas owned by local people	2021-2030	Provincial Directorate of Agriculture and Forestry	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of Agriculture and Forestry, GAP TAEM, GAP RDA, Karacadağ Development Agency, Relevant Universities, Research Institutes	Increase in number of relevant applications Increase in the amount of application area	0 0	20% 20%
3.1.7	Researching and implementing alternatives to reduce insecticide use in agriculture (for example, use of specific insecticides, integrated pest management, organic agriculture pest control methods, smart pulverization systems)	2021-2026	Provincial Directorate of Agriculture and Forestry, GAP TAEM	GAP BKI, Chamber of Agricultural Engineers, Provincial Directorate of Environment and Urbanization, Chambers of Agriculture, Relevant Universities	Number of research	0	2
3.1.8	Establishing and implementing incentive programs that support the reduction of insecticide and herbicide use by using integrated pest control methods in the agricultural lands around the priority steppe areas in Şanlıurfa	2021-2030	MoAF (GDPP, GDFC)	MoAF (GDNCNP, TKDK), Provincial Directorate of Agriculture and Forestry, GAP BKI, Karacadağ Development Agency, Chamber of Agricultural Engineers, Chambers of Agriculture	Increase in the area of application	0	25%

GOAL 3. IMPROVING THE USE OF RESOURCES IN ŞANLIURFA STEPPES WITHIN THE FRAMEWORK OF THE SUSTAINABILITY PRINCIPLE							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
3.1.9	Increasing support for modern irrigation techniques	2021-2030	ARDSI Şanlıurfa Provincial Coordinator, SHW 15th Regional Directorate, Provincial Directorate of Agriculture and Forestry	MoAF (GDARP), GAP RDA, Karacadağ Development Agency, Irrigation Unions, Chamber of Agricultural Engineers, Chambers of Agriculture	Increase in area of application	0	30%
3.1.10	Developing and disseminating support for adoption and implementation of nature and climate-friendly local experience and new methods, techniques and practices in cooperation with relevant institutions and other stakeholders	2021-2030	MoAF (GDARP, GDAR)	Provincial Directorate of Agriculture and Forestry, Şanlıurfa Metropolitan Municipality, GAP RDA, Karacadağ Development Agency, Relevant Universities, Relevant NGOs	Number of support programs	0	2
					Number of practices supported	0	5
3.1.11	Mainstreaming alternative practices to reduce stubble burning in Şanlıurfa (for example; use of milling cutters, direct planting, use of stubble as feed, etc.)	2021-2026	Provincial Directorate of Agriculture and Forestry - Rural Development Branch	ARDSI Şanlıurfa Provincial Coordinator, GAP RDA, Karacadağ Development Agency, Chamber of Agricultural Engineers, Chambers of Agriculture	Number of relevant practices	2	4
3.1.12	Informing and raising awareness about agricultural practices that support biodiversity	2021-2026	Provincial Directorate of Agriculture and Forestry	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, GAP RDA, GAP TAEM, Agricultural Chambers, Relevant Universities	Number of events and programs	0	5
					Number of people reached	0 person	100 people

GOAL 3. IMPROVING THE USE OF RESOURCES IN ŞANLIURFA STEPPES WITHIN THE FRAMEWORK OF THE SUSTAINABILITY PRINCIPLE							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
Objective 3.2. Ensuring sustainable and ecosystem-based rangeland management[14] ***Objective Indicator: Change in surface area under sustainable and ecosystem-based rangeland management (in percentage)***							
3.2.1	Planning and monitoring all rangeland rehabilitation activities in Şanlıurfa, especially Kızılkuyu WR, Tek Tek Mountains NP and Karacadağ steppes, taking into account biodiversity elements, and developing cooperation between institutions to use the results of the survey and priority species/area information (including protected areas)	2021-2026	Provincial Pasture Commission, MoAF (GDNCNP)	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Doğa Koruma Merkezi, GAP-TAEM, Harran University	Area of rangeland rehabilitation studies that include biodiversity elements	0 decare	1,000 decares
3.2.1.1	Conducting research and model practices on the use of local seeds and plants in rehabilitation studies for sustainable rangeland management	2021-2023	Provincial Directorate of Agriculture and Forestry, GAP TAEM	MoAF (GDPP, GDARP), Harran University, Relevant NGOs	Number of model practices	0	1
3.2.1.2	Making and disseminating best practices for holistic grazing management for sustainable and restorative rangeland management	2021-2023 (application) 2021-2026 (dissemination	Provincial Directorate of Agriculture and Forestry	FAO, Harran University, Relevant NGOs	Number of model practices	0	10
3.2.1.3	R&D and production studies in local seeds in meadow and rangeland rehabilitation efforts for sustainable rangeland management	2021-2026	MoAF (GDARP, GAP TAEM)	Provincial Directorate of Agriculture and Forestry, Relevant Universities	Number of R&D and production studies	3	5
3.2.1.4	Ensuring plantation of forage crops and provision of feed support for livestock to reduce animal pressure on steppes	2021-2026	Provincial Directorate of Agriculture and Forestry	MoAF (GDPP), Şanlıurfa Metropolitan Municipality, Unions and Cooperatives	Number of families/ people benefiting from the support	0 person	50 people

14. The list of priority areas and surrounding villages determined as a result of the Şanlıurfa provincial inventory study, which is the subject of different actions under the objective, is given in Annex 7.

GOAL 3. IMPROVING THE USE OF RESOURCES IN ŞANLIURFA STEPPES WITHIN THE FRAMEWORK OF THE SUSTAINABILITY PRINCIPLE							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
3.2.1.5	Conducting and encouraging case studies for the use of organic fertilizers and soil microbiology enrichment preparations for sustainable and restorative rangeland management	2021-2026	Provincial Directorate of Agriculture and Forestry	Şanlıurfa Metropolitan Municipality, Unions and Cooperatives	Number of model practices	0	3
3.2.2	Making protocols with universities and/ or private sector for increasing the allocated budget for effective monitoring of rangeland rehabilitation practices (rangeland; area, biodiversity, biomass soil organic matter ratio, composition, the success of breeding studies, number of grazing animals by breed, etc.)	2021-2030	Provincial Directorate of Agriculture and Forestry	Provincial Pasture Commission, Relevant Local Governments, Relevant Universities, Relevant NGOs	Increase in the allocated budget	0	50%
					Number of monitoring studies created in priority areas	0	5
3.2.3	Developing the infrastructure to use remote sensing and grazing planning application tracking systems for more effective monitoring of rangeland rehabilitation practices	2021-2026	Provincial Directorate of Agriculture and Forestry	MoEU (General Directorate of Land Registry and Cadaster), Provincial Pasture Commission, Relevant Local Authorities, Relevant Universities, Relevant NGOs	Rangeland rehabilitation application area where remote sensing and application tracking systems are used	0 decare	100 decares
3.2.4	Preparation of annual rangeland status reports on a provincial basis	2021-2030	Provincial Directorate of Agriculture and Forestry	Provincial Pasture Commission, Relevant Local Governments, Relevant Universities, Relevant NGOs	The number of studies conducted throughout the province	0	1 /Year
3.2.5	Completion of rangeland determination and delimitation studies	2021-2026	Provincial Directorate of Agriculture and Forestry	MoEU (Land Registry and Cadaster General Directorate, National Real Estate Directorates)	Completion rate of rangeland determination and delimitation studies	60%	100%

GOAL 3. IMPROVING THE USE OF RESOURCES IN ŞANLIURFA STEPPES WITHIN THE FRAMEWORK OF THE SUSTAINABILITY PRINCIPLE							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
3.2.6	Continuing to work on and evaluate cadastral maps with rangeland survey teams for non-registered areas	2021-2026	Provincial Directorate of Agriculture and Forestry	MoEU (Land Registry and Cadaster General Directorate)	Change in the area of lands with completed cadastre	0	20%
3.2.7	Strengthening the implementation and control mechanisms in the field in cooperation with the relevant institutions and other stakeholders to prevent rangeland occupations and to protect rangelands (personnel, equipment)	2021-2023	Provincial Pasture Commission	Provincial Directorate of Agriculture and Forestry Şanlıurfa Metropolitan Municipality, Mukhtars	Number of staff	7	10
3.2.8	Strengthening the capacity of the technical teams and increasing the awareness of senior managers in order for the Provincial Pasture Commission to work effectively	2021-2023	Provincial Directorate of Agriculture and Forestry	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Şanlıurfa Governorship, Şanlıurfa Metropolitan Municipality	Number of capacity building studies and activities	1 /Year	1 /Year
3.2.9	Establishment of Rangeland Management Unions in pilot areas to be selected and dissemination of this structure in Şanlıurfa	2021-2026	Provincial Directorate of Agriculture and Forestry, FAO	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Şanlıurfa Governorship, Şanlıurfa Metropolitan Municipality, relevant NGOs, relevant neighborhood mukhtars	Number of Rangeland Management Unions	0	3

GOAL 3. IMPROVING THE USE OF RESOURCES IN ŞANLIURFA STEPPES WITHIN THE FRAMEWORK OF THE SUSTAINABILITY PRINCIPLE							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
3.2.10	Training for the dissemination of the sustainable grazing plan experience gained from the "Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project" across Şanlıurfa, implementing capacity-building programs and providing technical support	2021-2026	Provincial Directorate of Agriculture and Forestry, FAO	MoAF (GDF, GDNCNP), Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Harran University, relevant NGOs	Number of District Grazing Plans	0	3
3.2.11	Realizing climate change adaptation and improvement model projects in rangelands and animal husbandry	2021-2026	MoAF (GDARP, GDPP)	Provincial Directorate of Agriculture and Forestry, Relevant Universities, Research Institutes	Number of pilot projects	0	1
3.2.12	Including grazing planning in trainings for rangeland users and their families and people managing herds, putting emphasis on the importance of the steppes and the sustainable use of their resources	2021-2023	Provincial Directorate of Agriculture and Forestry, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	Breeders' Unions, Relevant NGOs	Number of trainings and participants	0 0 person	2 150 people
3.2.13	Determining the social, economic and ecological infrastructure and making the necessary arrangements to support the traditional livestock activities of the nomads	2021-2026	Provincial Pasture Commission	Provincial Directorate of Agriculture and Forestry, Karacadağ Nomads' Association, Ceylanpınar Nomads Assistance and Solidarity Association, Siverek Nomads' Association, Related Universities	Change in the number of nomads Change in the income of the nomads	0 0	10% 25%

GOAL 4. IMPROVING THE LIVELIHOODS OF THE LOCAL PEOPLE WHO BENEFIT FROM ŞANLIURFA STEPPES							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
Objective 4.1. Developing programs and model practices that can increase the added value of plant production and animal husbandry in the steppes and related areas and their benefits to the local people ***Objective Indicator: Change in household income of families benefiting from the program and model practices (in percentage)***							
4.1.1	Encouraging and supporting the establishment of organized structures such as unions, associations, cooperatives and especially women's cooperatives in rural production in steppes and related fields	2021-2026	Provincial Directorate of Agriculture and Forestry	GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality	Number of organized structures supported	2	4
4.1.2	Conducting socio-economic studies in which the gender equality perspective is taken into consideration to increase the productivity and added value of the local people benefiting from the Şanlıurfa steppes in plant production and livestock practices and realizing the value chain analysis of the production	2021-2023	Provincial Directorate of Agriculture and Forestry	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Relevant Universities, Relevant NGOs	Number of studies Increase in production revenues	2 30%	3 70%
4.1.3	Carrying out informative and geographical indication studies for the protection of biodiversity-friendly production and lifestyles, ecological and cultural values associated with steppes	2021-2026	Chamber of Industry and Commerce, Commodity Exchange, MoAF (GDARP, GDPP, GDNCNP)	Provincial Directorate of Agriculture and Forestry, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Relevant Universities	Number of geographical indication applications made	0	2

GOAL 4. IMPROVING THE LIVELIHOODS OF THE LOCAL PEOPLE WHO BENEFIT FROM ŞANLIURFA STEPPES							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
4.1.4	Establishing the infrastructure for promotion, marketing, branding and certification, in cooperation with the relevant institutions and other stakeholders, of the products associated with steppes, establishing a marketing network, informing and implementing model practices	2021-2026	MoAF (GDPP, GDNCNP, GDAR)	Provincial Directorate of Agriculture and Forestry, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Relevant Universities, Relevant NGOs	Number of model practices	1	2
4.1.5	Including existing strategies and practices to improve the livelihoods of the local people and nomads benefiting from the steppe in the regional development programs and incentive mechanisms; diversification of rural development supports for small holders/family farmers, especially women and youth	2021-2026	Provincial Directorate of Agriculture and Forestry	Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, TKDK Şanlıurfa Provincial Coordinator, GAP TAEM, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Relevant Universities, Chamber of Industry and Commerce, Commodity Exchange	Number of support and incentive programs with priorities Number of types of rural development supports	2 2	4 4
4.1.6	Implementing programs that will encourage the conservation of local animal breeds, which are important in terms of genetic resources, kept by farmers and develop them on the basis of productivity, introducing necessary incentives and monitoring the numbers	2021-2026	Provincial Directorate of Agriculture and Forestry	GDAE, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Relevant Universities, relevant NGOs	Number of relevant programs	3	5
4.1.7	Implementing and disseminating model practices for the establishment of accredited nature farms in integrated cattle breeding	2021-2026	Provincial Directorate of Agriculture and Forestry	Unions and Cooperatives, Şanlıurfa Metropolitan Municipality, GAP RDA, Relevant Universities, Research Institutes	The number of farmers making efforts to establish accredited nature farms	0	1

GOAL 4. IMPROVING THE LIVELIHOODS OF THE LOCAL PEOPLE WHO BENEFIT FROM ŞANLIURFA STEPPES							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
4.1.8	Ensuring international certification to create added value from products from rangelands	2021-2026	MoAF (GDPP, GDARP)	Unions and Cooperatives, Şanlıurfa Metropolitan Municipality, Relevant Universities, Research Institutes	Number of products certified	0	1
Objective 4.2. Diversifying the income-generating activities for the local people and supporting model practices based on sustainable use of steppes ***Objective Indicator: Change in household income of families benefiting from supported activities and best practices (in percentage)***							
4.2.1	Determination of alternative income sources for rural development, especially in priority areas and their surroundings identified as a result of the provincial survey of Şanlıurfa and infrastructure studies	2021-2026	Provincial Directorate of Agriculture and Forestry, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate	MoAF (GDNCNP, GDPP, GDAR, GDARP, GDL, ARDSI), GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, GAP TAEM, Harran University, FAO	Feasibility study of alternative income sources	0	2
4.2.2	Supporting and implementing livelihood diversification practices, especially including beekeeping, ornamental and medicinal-aromatic plant breeding, rural tourism, family farming and local production, good agricultural practices, in cooperation with relevant institutions and other stakeholders in the steppes of Karacadağ	2021-2026	Provincial Directorate of Agriculture and Forestry, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Regional Directorate of Forestry	ARDSI Sanliurfa Provincial Coordinator, GAP TAEM, Provincial Directorate of Culture and Tourism, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, GAP TAEM, Relevant Universities, relevant NGOs, FAO	Number of families/ people that benefit from the support per year	0 person/ Year	5 people/ Year
					Number of model practices	0	2

GOAL 4. IMPROVING THE LIVELIHOODS OF THE LOCAL PEOPLE WHO BENEFIT FROM ŞANLIURFA STEPPES							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
4.2.3	Carrying out activities for production, marketing and branding of traditional handicrafts and touristic products from natural and medicinal plants in cooperation with relevant institutions and other stakeholders and supporting practices in order to diversify income based on rural tourism and ecotourism in priority steppe areas and their surroundings	2021-2026	Provincial Directorate of Agriculture and Forestry	GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Provincial Directorate of National Education, Provincial Directorate of Culture and Tourism, Relevant Universities, FAO	Number of families/ people that benefit from the support per year Number of model practices	0 person/ Year 0	5 people/ Year 2
4.2.4	Developing and supporting alternative income sources, especially including rural tourism, family farming and local production, good agricultural practices, in collaboration with relevant institutions and other stakeholders in the Ceylanpınar and Akçakale steppes	2021-2026	Provincial Directorate of Agriculture and Forestry	ARDSI Şanlıurfa Provincial Coordinator, Şanlıurfa (Nature Conservation and National Parks) Provincial Directorate, Regional Directorate of Forestry, Provincial Directorate of Culture and Tourism, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, GAP TAEM, Relevant Universities, FAO	Number of capacity building studies and activities Number of families/ people that benefit from the support / year Number of model practices	1/Year 0 person/ Year 0	1/Year 5 people/ Year 2
4.2.5	Supporting silvopastoral practices where plant production and animal husbandry practices will be implemented efficiently together and realization of model projects	2021-2026	Provincial Directorate of Agriculture and Forestry, Regional Directorate of Forestry	ARDSI Şanlıurfa Provincial Coordinator, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, GAP TAEM, Relevant Universities, FAO	Number of model practices	0	2
4.2.6	Examining international experiences in priority areas and their surroundings for the development of local animal husbandry products such as milk and dairy products within the scope of rural tourism and creating a model for Şanlıurfa after making observations on site	2021-2026	Provincial Directorate of Agriculture and Forestry	Provincial Directorate of Culture and Tourism, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Şanlıurfa Chamber of Industry and Commerce, relevant NGOs	Model and implementation plan for Şanlıurfa	0	1

GOAL 4. IMPROVING THE LIVELIHOODS OF THE LOCAL PEOPLE WHO BENEFIT FROM ŞANLIURFA STEPPES							
No	**Actions**	**Timetable**	**Responsible Institutions**	**Relevant Institutions**	**Indicators**	**Current Value (unit and quantity)**	**Target Value (unit and quantity)**
4.2.7	Establishing processing facilities for meat and meat products, milk and dairy products in priority areas and their surroundings, diversifying products, introducing high value-added products to the market, and encouraging cooperative formation	2021-2026	Provincial Directorate of Agriculture and Forestry	GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Şanlıurfa Chamber of Industry and Commerce, Relevant NGOs	Number of facilities and initiatives	1	3
4.2.8	Establishment of Medicinal Aromatic Plant Center in Şanlıurfa	2021-2026	MoAF (GDARP), Provincial Directorate of Agriculture and Forestry	Forest Regional Directorate, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, GAP TAEM, Relevant Universities, FAO	Medicinal Aromatic Plant Center	0	12
4.2.9	Registering, cultivating and supporting the production of steppe species with medicinal and aromatic characteristics	2021-2026	MoAF (GDARP, GDPP), Provincial Directorate of Agriculture and Forestry	MoAF (GDNCNP, GDF), GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, Relevant Universities, Relevant NGOs, FAO	The number of steppe plants registered and produced as medicinal aromatic plants	0	5
4.2.10	Developing and implementing technical capacity and training activities for prioritized livelihoods, and conducting on-site training activities for women, especially considering the roles of women in the family	2021-2026	Provincial Directorate of Agriculture and Forestry	MoAF (GDNCNP, GDPP, GDAR, GDARP, GDL), ARDSI Şanlıurfa Provincial Coordinator, GAP RDA, Karacadağ Development Agency, Şanlıurfa Metropolitan Municipality, GAP TAEM, Harran University	Number of capacity building and training activities Number of women attending trainings	0 0 person	5 100 people

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6. The Governance Model

In the workshops and meetings held during the preparatory process, it was stated that a number of boards could be established within the Governorships for the follow-up of specific issues and this Strategy, which was prepared on a provincial basis, could also be carried out by a board within the Governorship. In this context, it was predicted that such a board could be established according to the **"Regulation on the Establishment of the Provincial Directorates of Planning and Coordination (Official Gazette Date: 13.07.1988 Official Gazette Number: 19871)**. This regulation regulates the establishment, duties and working principles of the Provincial Directorates of Planning and Coordination, which were established to help the governors fulfill duties assigned to the governorships by the development plans, the annual programs attached to them and the relevant legislation. Among the duties of the Provincial Directorate of Planning and Coordination are:

- Doing research to determine the economic and social structure of the province, and preparing provincial inventories by using data collected from the relevant public and private organizations,
- Monitoring public investments in the province included in the annual programs and plans, identifying problems that arise and require coordination, determining the necessary measures to be adopted, notifying the governorship and helping adopt them,
- As well as duties such as preparing a justified report on coordination and monitoring issues that should be brought to the Provincial Coordination Board, making preliminary preparations for the work of this board, and conducting secretariat services.

There are also technical committees in Şanlıurfa, including the Provincial Pasture Commission and the Soil Conservation Board, and these formations carry out their work through local specialized representatives. With this approach and in the light of current experience in the province, it was proposed that **Şanlıurfa Steppe Conservation Strategy and Action Plan Coordination Board** be established under the chairmanship of the Governorship. A cooperation protocol was accordingly drafted, demonstrating the responsibilities and distribution of tasks between Şanlıurfa Governorship, Nature Conservation and National Parks 3rd Regional Directorate, Şanlıurfa Regional Directorate of Forestry and Şanlıurfa Provincial Directorate of Agriculture and Forestry for the establishment of this Board and the effective implementation of the Şanlıurfa Steppe Conservation Strategy and Action Plan.

The main goal of the Board is to ensure the coordination and cooperation between the governmental organizations and relevant stakeholders for the effective implementation, monitoring and evaluation of the Şanlıurfa Steppe Conservation Strategy and Action Plan.

Key stakeholders at provincial level will be represented in the Coordination Board for the conservation and sustainable management of Şanlıurfa steppes.

The Members of the Coordination board: The ***Şanlıurfa Steppe Conservation Strategy and Action Plan Coordination Board***, which will be formed with the approval of the Governorship, will be established under the chairmanship of the Governor or Deputy Governor, with participation of

- Şanlıurfa Governorship,
- Nature Conservation and National Parks 3rd Regional Directorate,
- Şanlıurfa Regional Directorate of Forestry,
- Şanlıurfa Provincial Directorate of Agriculture and Forestry,
- Şanlıurfa Provincial Police Department
- Şanlıurfa Provincial Command of Gendarmerie,

- Şanlıurfa Provincial Directorate of Environment and Urbanization, National Real Estate Directorate,
- Provincial Coordination and Planning Directorate,
- GAP Agricultural Research Institute,
- Şanlıurfa Metropolitan Municipality,
- GAP Regional Development Administration,
- Karacadağ Development Agency,
- Şanlıurfa Sheep and Goat Breeders Association,
- Provincial Pasture Commission representative,
- Provincial Soil Conservation Board representative,
- Independent Experts Group representative, and
- Local Non-Governmental Organizations, with at least two representatives determined among the applicants.

The Board may invite relevant institutions and organizations in necessary matters.

It is envisaged that the Board meets at least twice a year.

6.1. Duties of the Coordination Board

The duties are to carry out the following works for the conservation and sustainable management of the Şanlıurfa steppes:

1. Creating and implementing an effective communication model between relevant institutions and stakeholders for the promotion of the Şanlıurfa Steppe Conservation Strategy and Action Plan.
2. Establishing the necessary infrastructure for the monitoring and evaluation of Şanlıurfa Steppe Conservation Strategy and Action Plan and ensuring its implementation.
3. Identifying the needs of the Board members and the institutions and organizations they represent to contribute to the conservation and management of the steppes and working towards meeting those needs.
4. Ensuring that successful conservation and sustainable management experiences in Şanlıurfa steppes are supported and disseminated throughout the province.
5. Establishing cooperation to provide international and national certification in order to generate added value from the products obtained from Şanlıurfa steppes and rangelands.
6. Supporting the activities conducted to introduce and promote Şanlıurfa steppes, good conservation and sustainable management practices and important species in the region.
7. Evaluating the work of the Board and its progress in the Şanlıurfa Steppe Conservation Strategy and Action Plan and monitoring the work of the technical experts group that provide technical support.

Coordination Board consists of:

- The Secretariat,
- The Technical Implementation Unit

The Board is supported by the Independent Experts Group.

The structuring of the Board and the relations of the units with each other are shown in Figure 41.

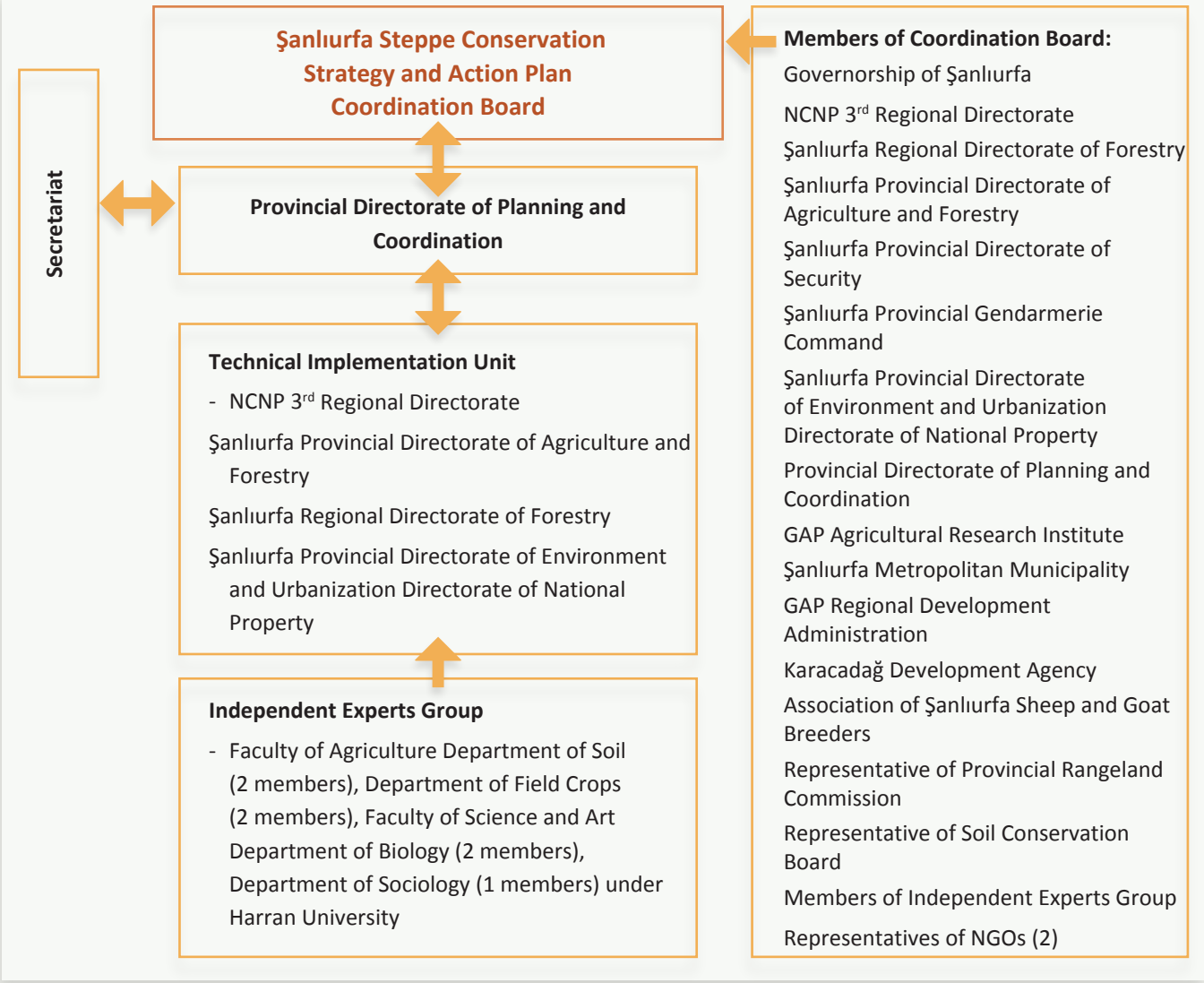

Figure 41. Proposed structure for Şanlıurfa Steppe Conservation Strategy and Action Plan Coordination Board

The Secretariat: The secretarial duty for the Coordination Board is carried out by the Provincial Directorate of Coordination and Planning. The Technical Implementation Unit supports the Secretariat as necessary.

The duties of the Secretariat are as follows:

- Producing invitations and announcements of the Coordination Board meetings to be held twice a year,
- Informing the head of unit who will chair the meeting,
- Preparing the meeting agenda in close cooperation with the Technical Implementation Unit and drafting and sharing the meeting minutes with the members,
- Sharing the technical reports and information submitted by the Technical Implementation Unit with the Coordination Board.

Technical Implementation Unit: This unit, which carries out technical duties for the Coordination Board and is responsible for the implementation of the Strategy, consists of representatives from:

- Ministry of Agriculture and Forestry, 3rd Regional Directorate of Nature Conservation and National Parks
- Ministry of Agriculture and Forestry, Şanlıurfa Provincial Directorate of Agriculture and Forestry
- Ministry of Agriculture and Forestry, Şanlıurfa Regional Directorate of Forestry
- Şanlıurfa Provincial Directorate of Environment and Urbanization, National Real Estate Directorate.

The duties of the Technical Implementation Unit are as follows:

1. Implementing the decisions taken by the Coordination Board and providing technical support to the Secretariat,
2. Technical monitoring of the implementation of the Strategy and Action Plan,
3. Ensuring the dissemination of the Strategy and Action Plan,
4. Providing technical information to the Board regarding Şanlıurfa Steppe Conservation Strategy and Action Plan activities,
5. Producing solutions in close cooperation with the Independent Experts Group in cases where technical issues arise during the implementation of the plan,
6. Reporting on the progress in relation to the Şanlıurfa Steppe Conservation Strategy and Action Plan.

Independent Experts Group;

This group consists of representatives from Harran University,

- Faculty of Agriculture, Department of Soil (2 representatives)
- Faculty of Agriculture, Department of Field Crops (2 representatives)
- Faculty of Arts and Sciences, Department of Biology (Flora-1, Fauna-1 representative)
- Faculty of Arts and Sciences, Department of Sociology (1 representative)

and provides technical support to the implementation of the Strategy in close cooperation with the Technical Implementation Unit.

The duties of the Independent Experts Group are as follows:

1. Taking part in the Coordination Board through a representative
2. Providing scientific support in the implementation of the Strategy and Action Plan,
3. Supporting the dissemination of the Strategy and Action Plan.

Reporting: In order to strengthen the coordination and cooperation between governmental organizations and stakeholders for the effective implementation, monitoring and evaluation of the Şanlıurfa Steppe Conservation Strategy and Action Plan, necessary information about the process is obtained via official correspondences to be made with the institutions and organizations involved in implementation of the Strategy at the middle and end of each year, and is submitted to the Board. Reporting related works are carried out by the Secretariat. Incoming reports are arranged by the Secretariat with the technical support and contribution of the Technical Implementation Unit and submitted to the Coordination Board.

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Gazella marica
(Arabian sand gazelle)

7. The Monitoring System

Establishing and implementing a model for monitoring and evaluation of the Şanlıurfa Steppe Conservation Strategy and Action Plan is determined as one of the duties of the Şanlıurfa Steppe Conservation Strategy and Action Plan Coordination Board.

The monitoring system will be one of the most important management tools for the Şanlıurfa Steppe Conservation Strategy and Action Plan. This system is characterized by a systematic process to track changes against goals and objectives of the Şanlıurfa Steppe Conservation Strategy and Action Plan.

Monitoring and evaluating the implementation progress of the Şanlıurfa Steppe Conservation Strategy and Action Plan enables the Coordination Board to develop solutions for problems encountered in practice. Contributing to the monitoring efforts made by different institutions and organizations in Şanlıurfa province, strengthening cooperation between organizations and ensuring coordination are some of the main duties of the Coordination Board. It is recommended that monitoring studies be conducted in a participatory way by independent experts to be assigned by the Coordination Board.

In line with the goals and objectives of the Şanlıurfa Steppe Conservation Strategy and Action Plan, monitoring is recommended in the following areas:

1. Progress in the implementation of Şanlıurfa Steppe Conservation Strategy and Action Plan,
2. Monitoring efforts in the priority steppe areas and species and monitoring of changes in the condition of species and their habitats,
3. Changes in the condition of rangelands,
4. Changes in the severity of threats to the priority steppe areas and species,
5. Success of conservation and sustainable management practices (monitoring the effects of conservation activities, habitat restoration efforts, management effectiveness of the protected areas, success of rangeland management practices, conversion of agricultural fields, success of environmentally-friendly /nature-friendly/ climate-smart/ organic/ holistic agricultural practices, etc.).

In addition, it is necessary to establish a system for long-term monitoring for the effects of climate change, which has been one of the most important issues regarding the ecosystem and the distribution of species in Şanlıurfa in recent years. When the Şanlıurfa Steppe Conservation Strategy and Action Plan is put into practice, it is recommended that the Coordination Board ensures cooperation between relevant institutions and establishes the necessary technical and financial support.

The current status and results of the monitoring activities are presented at each Coordination Board meeting and the members are accordingly informed. Proposing amendments to the Şanlıurfa Steppe Conservation Strategy and Action Plan in the light of the monitoring results, and discussing and resolving these with the relevant institutions increases the effectiveness of the implementation.

One of the most important outputs of the monitoring system is the annual reporting of the activities of the Şanlıurfa Steppe Conservation Strategy and Action Plan Coordination Board and sharing it with the relevant institutions. This way, progress, success and problems in implementation and lessons learned are regularly recorded.

Proposed Monitoring and Evaluation Plan:

Monitoring Subject	Evaluation	Method	Responsible Institution	Reporting Period
Monitoring the progress of the implementation of the Şanlıurfa Steppe Conservation Strategy and Action Plan	Progress Report of the Şanlıurfa Steppe Conservation Strategy and Action Plan	Interviews and evaluations made by the group of independent experts	Coordination Board Secretariat	Annual
Monitoring priority steppe habitats, species, threats to them, and conservation efforts for them	Monitoring Report for Priority Steppe Habitats and Species	Field works	Şanlıurfa (NCNP) Provincial Section	Every 2 years
Monitoring the management effectiveness of the protected areas	Şanlıurfa Protected Areas Management Effectiveness Assessment Report	Implementation of METT by GDNCNP	Şanlıurfa (NCNP) Provincial Section	Every 3 years
Monitoring the status and management practices of rangelands across the province	Provincial Rangeland Status Report	Satellite image analysis and land works	Provincial Pasture Commission	Every 2 years
Monitoring the changes in agricultural fields and good practices in agriculture-livestock throughout the province	Provincial Agriculture and Livestock Status Report	Farmers registery system, satellite image and land works	Directorate of Provincial Agriculture and Forestry	Every 3 years

All reports prepared as a result of the monitoring studies are evaluated in the meetings of the Şanlıurfa Steppe Conservation Strategy and Action Plan Coordination Board and the decisions taken for effective management are implemented by the relevant institutions.

8. Steppe Terminology

1. **Alien Species:** Species intentionally or unintentionally carried by humans to a place, area, or region where it does not naturally occur.
2. **Anatolian Steppes:** Mostly anthropogenic steppes where xerophytic herbaceous plants are predominant in Central Anatolia, Eastern Anatolia and Southeastern Anatolia Regions with low rainfall, arid and semi-arid climate.
3. **Anthropogenic Steppe:** Steppes that are formed by destruction of forest cover as a result of human activities such as overgrazing, clearing for agriculture, fuel supply, etc.
4. **Climate Change:** In addition to natural climate changes observed over comparable time periods, changes in the climate as a result of human activities that directly or indirectly disrupt the composition of the global atmosphere.
5. **Climate Variability:** Deviation of a climate variable from its long-term average values in a region.
6. **Climax:** The steady-state reached by a community as the final phase of succession.
7. **Desertification:** "Land Degradation" that occurs as a result of various factors including climate change and human activities in arid and semi-arid areas.

   Characteristic species of the vegetation decrease or disappear, overall vegetation cover decreases significantly, the amount of bare soil increases, grass becomes shorter, and dwarf shrubs, also seen in semi-deserts, become predominant.
8. **Drought:** The event in which the biomass productivity of the land is negatively affected because of insufficient absorption of atmospheric moisture (rain, snow, dew, etc.) by the soil and excessive evaporation, resulting from improper land management and/or significant hydrological imbalances when the rainfall is below average for years and/or is irregular.
9. **Ecosystem:** A dynamic system in which plant, animal and microorganism communities and their non-living environments interact as a functional unit.
10. **Erosion:** The process in which the soil clusters (aggregates) are disintegrated and transported by factors such as water, wind and gravity; consequently accumulating in environments different from where they were once located.
11. **Forage Plants:** Plants that are cultivated as animal feed or grow naturally and usually contributes to the conservation of soil and water and to increased the yield of the crops that come after them in the crop rotation. They are harvested and dried or put in silages to be fed immediately or later.
12. **Governance:** Basically, the processes and structures that enable society to share power and transform it into individual and social activities. It refers to participatory decision-making and management processes based on cooperation, where different actors apart from governmental institutions take responsibility.
13. **Grass (Poaceae - Gramineae) Steppes:** Steppes dominated by the species of the grass family.
14. **Grassland Vegetation:** Type of vegetation that is distributed in the temperate zone, where the amount of rainfall and/or groundwater is higher than in steppes; tall grasses are dominant with a few woody plants.

    In terms of agricultural production and use, humid areas with tall grasses harvested to be used as animal feed are characterized as mown grasslands. In terms of vegetation, herbaceous vegetation in the areas surrounding the wetlands and the vegetation that grows in the humid areas above the tree border are considered grasslands.

15. Grazing: Letting livestock feed by dispersing in rangelands, highlands, and meadows.

16. Gypsum Steppe: Steppes that occur on soils with high gypsum content, with a high rate of endemism.

Major gypsum steppes in Turkey are situated in the region between Nallıhan-Beypazarı-Ayaş-Polatlı-Sivrihisar, the region between Kayseri and Sivas (especially around Akkışla), and the region between Narman and Tortum, Hafik-Zara and Çankırı.

17. High Mountain Steppe: Steppes dominated by thorny plants such as milkvetches (Astragalus), and prickly thrifts (Acantholimon), which are generally situated between 1,600 to 3,000 m of altitude.

In Turkey, they are seen in the Eastern Taurus Mountains and higher parts of the mountains in Central Anatolia and Eastern Anatolia Regions.

18. Invasive Alien Species: Species of plants, animals, fungi, and microorganisms that accidentally or deliberately enter or are released into a natural environment, which is not their habitat under normal conditions, and reproduce, develop, spread in these environments, causing many adverse effects in the new environment.

19. Low Mountain Steppe: The most common steppe type in Turkey located on the mountain slopes between 800-1600 m, which generally host soft-leaved plants (malacophyll) and have a floristically rich composition.

It is seen in the Central, Eastern, and Southeastern Anatolia regions in Turkey.

20. Lowland Steppe: Steppes found on flat or slightly sloped arid lands in Turkey, which are usually dominated by Artemisia species.

They are seen in the lowland plains of Central Anatolia and Southeastern Anatolia Regions. Most of the areas that were once lowland steppes in the past have lost this character and have been transformed into agricultural production areas.

21. Malacophyll Steppe: Steppes dominated by herbaceous plants with broad and soft leaves.

The main formations of the low mountain steppe, malacophyll steppes are common in Turkey.

22. Marly Steppe: Steppes with a high rate of endemism, seen in calcareous white soils with a high rate of clay.

Ayaş, Beypazarı, Polatlı, Sivrihisar, Yunus Emre, Mihalıççık, Hafik, Zara, Çankırı and Kırşehir are the regions where marly steppes are seen.

23. Natural Steppe: Steppes located in regions where ecological conditions such as climate, soil and geomorphological features do not allow tree growth and natural forests.

24. Overgrazing: Intensive grazing for long periods of time without allowing the natural vegetation to recover, causing deterioration of the vegetation and decrease of plant diversity.

25. Pasture: See Rangeland.

26. Rangeland: An area that has been allocated for grazing of livestock and producing forage plants or has been used for this purpose for hundreds of years.

While steppe is a type of vegetation, rangeland is a form of land use.

27. Rangeland Dependent Livestock: A form of animal husbandry in which it is essential to feed animals outdoors on plants that grow naturally on rangelands, and with additional feeding in certain periods.

28. Salt-tolerant (Halophytic) Steppe: Steppes formed by salt-tolerant plants (halophytes), which grow on salty soils, dominated by species belonging to the Amaranth (Amaranthaceae) and Leadworts (Plumbaginaceae) families.

In Turkey, they are seen around the salt lakes and salt marshes in Lake Tuz, Seyfe, Burdur, Konya plain, Acıgöl, Develi closed basin, along Aras Valley from Kağızman to Iğdır-Aralık, on salty areas between Kırıkkale-Balışeyh, Çorum-Sungurlu, Yozgat-Yerköy, around Çankırı, and around Balıkdamı and Kavuncu lakes in Eskişehir, around Kayseri Tuzla Lake and Nallıhan-Davutoğlan.

29. **Semi-Arid Climate (Semi-Desert Climate):** Climate type that is characterized by an average rainfall of between 250 and 500mm.

30. **Serpentine Steppe:** Steppes with serpentine (ultramafic rocks) soil rich in heavy metals such as magnesium, iron, nickel, chromium, which have poor vegetation and a high endemism rate since this soil is not suitable for plant growth.

    In Turkey, serpentine steppes are found around Kütahya, Balıkesir, between Adana - Erzincan, Gölbaşı-Ankara-Kırıkkale and Doğanşehir and in Muğla, Antalya, Mersin and Hatay along the Taurus Mountains.

31. **Steppe:** A type of vegetation distributed in the temperate zone receiving an average annual rainfall of 300-500 mm that has low groundwater and is dominated by xerophytic herbaceous plants with less woody plant cover.

    They are seen in the interior parts of North America, southeast of South America, south of Africa, extending from China to Eastern Europe in Asia. While the term "steppe" is generally used in the Palearctic Region, different names can be used in the above-mentioned regions to refer to the same (pampas in South America, prairie in North America, veld in South Africa).

32. **Steppe Climate:** Climate seen in the interior parts of the continents where summer months are hot, arid and semi-arid, and winter months are cold, the temperature difference between the seasons is high and rainfall is low.

33. **Steppe Culture:** A lifestyle that emerged as a result of adaptation of human culture to steppe ecosystems.

34. **Steppe Ecosystem:** A dynamic system in which the plant, animal and microorganism communities specific to steppes and their non-living environments interact as a functional unit.

35. **Steppe Forest:** Forest areas located in ecological regions dominated by steppes.

    The difference from steppes with trees is that these areas are mostly in the transitional regions from forest to steppe.

36. **Steppe Species:** Species that are adapted to steppe conditions whose existence depends on steppes.

37. **Steppe Vegetation:** Vegetation adapted to steppe conditions.

38. **Steppes with Trees:** Steppes with tree and shrub cover below 40%.

    Different names may be given by different specialties for the same field or formation, for example; the place we call steppes with trees can be named as "Degraded Forest", "Forest with Openings" in terms of forestry or "Sparse Forest" in terms of ecology. However, in this study, the terms used with regard to steppes are duly explained.

39. **Succession:** The change in the structure, composition, processes, relationships, and other characteristics of a community or ecosystem over time.

40. **Successional Change:** See Succession.

41. **Thorn-cushion (Tragacanthic) Steppe:** Steppes dominated by thorny cushion forming plants, such as milkvetch (*Astragalus*), and prickly thrift (*Acantholimon*).

42. **Transhumance:** A semi-nomadic rural lifestyle people generally lead on high mountain plateaus far from the village because of the nutritional needs of their livestock in summer months.

9. Glossary

Adaptation to climate change	The process of developing, strengthening and implementing strategies to combat the effects of climate events (risks), gain benefits and manage effects.
Biodiversity	"The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems." (CBD, 1992)
Biogeography	The discipline that studies the geographical distribution of organisms and the geographical factors that affect that distribution.
Biological control	The struggle to keep the harm below a level that causes economic damage by using other living organisms against pests, diseases and weeds in the plant.
Biological resources	Biological resources include genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity (CBD).
Climate-smart agriculture	An approach that helps to guide actions needed to transform and reorient agricultural systems to effectively support development and ensure food security in a changing climate. It aims the following: sustainably increasing agricultural productivity and income, adapting to and building resilience against climate change, and reducing and/or eliminating greenhouse gas emissions, where possible (FAO).
Crop rotation	The practice of growing a series of different species of crops in succession in a certain order on the same land. This improves soil quality, increases soil productivity, and reduces threat of plant diseases and erosion.
Desertification/ land degradation	The land degradation in arid, semi-arid and sub-humid areas resulting from various factors, including climatic variations and human activities. Decline in the biological and economic productive capacity of agricultural fields, rangelands and forests or the complete disappearance of productivity in these areas, resulting in processes such as land degradation, soil erosion caused by the effects of wind and/or water in arid, semi-arid and sub-humid areas, loss of soil in physical, chemical, biological or economic terms, and loss of vegetation on the soil and resulting from land use processes (UNCCD).
Direct seeding	The method that allows planting at once without tillage before planting. In no-tillage farming, unlike traditional practices, no tillage is carried out until re-seeding after harvest and the seeding is carried out with special drills that can plant on the area covered with stubble from the previous crops. This method increases productivity and profitability, contributes to food security and is also climate and environmentally friendly.
Drought (Aridity)	A naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems. It is divided into meteorological drought and agricultural drought (UNCCD).
Environmental-friendly agriculture	Practices and applications that protect soil and water resources and their quality, support biodiversity, reduce environmental impacts from pesticides, pollution, soil erosion and greenhouse gas emissions. The aims are sustainable agricultural productivity and increased income, building adaptation to and resilience against climate change, and if possible, reducing and/or eliminating greenhouse gas emissions.
Ecological corridor	Natural or artificially designated connection areas that allow movement of species by ecologically connecting habitats in geographic regions close to each other.
Ecological zone	Large terrestrial or aquatic areas that are ecologically and geographically defined, unique in terms of their environmental conditions and species they host.
Ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit (CBD 1992).

Ecosystem-based adaptation	The use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change (CBD 2009).
Ecosystem-based management	An approach to maintaining or restoring the composition, structure, functioning, and delivery of services of natural and altered ecosystems for the goal of achieving sustainability. It is based on an adaptive, collaboratively developed vision of desired future conditions that integrates ecological, socioeconomic, and institutional perspectives, applied within a geographic framework, and defined primarily by natural ecological boundaries (MEA 2005). https://www.biodiversitya-z.org/content/ecosystem-services
Ecosystem services	Benefits people obtain from ecosystems. These include provisioning services such as food and water, regulating services such as regulation of floods, drought, land degradation, and disease, supporting services such as soil formation and nutrient cycling, and cultural services such as recreational, spiritual, religious and other non-material benefits (MEA 2005). By IPBES (2019), "Nature's Contributions to People" has been started to be used instead of "Ecosystem Services", which allows for an understanding of the relationship and interaction between people and nature from a more comprehensive perspective. https://www.biodiversitya-z.org/content/ecosystem-based-management
Endemic	Originates from the Greek word "endomos" and means "native, restricted to a certain place". Plant or animal species found only in a certain geographical area.
***Ex-situ* conservation (Off-site conservation)**	The conservation of components of biodiversity outside their natural habitats (CBD 1992).
Food security	Food security refers to all individuals' ability to access adequate, safe and nutritious food in physical, social and economic terms to meet the nutritional needs and food preferences required for an active and healthy life at all times. Food security is generally defined with 4 main components: availability, accessibility, utilization, and stability.
Gender equality	Regardless of their gender, individuals enjoying equal rights and opportunities and equal treatment and developing personal knowledge and skills and making choices in all areas they want. Equality is achieved when gender inequalities are eliminated, equal social values, equal rights and equal responsibilities are attached to each individual regardless of their gender, and individuals have equal access to resources (opportunities) to enjoy the abovementioned.
Genetic resources	Genetic material of actual or potential value (Any material of plant, animal, microbial or other origin containing functional units of heredity) (CBD 1992).
Geophyte	"Geophyte" is a combination of the Latin words "geo" and "phyta" meaning plant, and means "underground plants, hidden plants". The storage organs of these plants are metamorphosed in the form of bulbs, tubers, corms or rhizomes and are underground. Geophytes, which are generally ornamental plants, are also called "flower bulb".
Grazing plan	Implementation plan specifying details such as grazing season, stocking capacity, grazing system, breed and number of livestock, start and end dates of grazing for regular grazing in the rangelands, summer pastures, winter pastures and public meadows and grasslands (definition in the legislation).
Habitat	Place or environment where an organism or population naturally occurs (CBD 1992).
Halophyte	A salt-tolerant plant that grows in soil or waters of high salinity, salt marshes, and places where salt water is transported with the effect of the wind.

Holistic grazing management / Holistic planned grazing	A flexible and proactive grazing planning method that provides the opportunity to include ecological restoration and socio-economic gains in the planning process, prevents overgrazing by giving the plants recovery time to adapt to the season, generally creates a strong hoof effect with high herd density, and can be applied at all scales and in all climates. It was developed by the Zimbabwean biologist Allan Savory (Savory Institute), inspired also by grazing under predator pressure of wild herds and their continuous motion patterns.
***In-situ* conservation (On-site conservation)**	The conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties (CBD 1992).
Integrated pest management (integrated pest control)	Pest management system to keep pest populations below a level that causes economic damage, by taking into account their population dynamics in cultivated plants and their relations with the environment, using appropriate control methods and techniques (definition in the legislation).
Land consolidation	Preventing land degradation and fragmentation with natural and artificial effects, establishing more functional new parcels economically, ecologically and socially by combining multiple parcels taking into account natural features, integrity of use and property rights in fragmented lands and determining the forms of utilization of these parcels by evaluating the land characteristics and area, providing village and land development services (definition in the legislation).
Land degradation neutrality (LDN)	A state whereby the amount of healthy and productive land resources necessary to support the ecosystem functions and services remains stable or increases within the specified temporal and spatial scales (UNCCD).
Marginal agricultural land	Areas with low soil productivity, low accessibility, fragility and heterogeneity. Lands on which only traditional tillage agriculture is carried out due to soil and topographic limitations.
Medicinal and aromatic plant	All plants and plant parts mainly used in cosmetic and pharmaceutical industries. They are used in fresh, dried, cut, uncut, crushed, powdered or other forms.
No-till farming	The practice of seeding or planting directly into a field (agriculture or pasture) with no tilling performed after harvesting the previous crops.
Phytogeography	The branch of biogeography, the discipline that studies the geographical distribution of plant communities and plant ecology.
Rangeland rehabilitation	Taking and implementing various physical and technical measures aimed at facilitating grazing, soil and water conservation as well as irrigation, fertilization, weeding, seeding and similar biological techniques to enhance rangelands, summer pastures and winter pastures and public meadows and grasslands in terms of feed efficiency and quality (definition in the legislation).
Rangeland management	A rangeland planning and management style based on scientific data, without damaging the vegetation, soil, water and other natural resources in order to benefit from rangelands, summer pastures, winter pastures and public meadows and grasslands in the most proper way.
Restorative rangeland management	The set of practices and planning processes that enable meadows, grasslands and steppe ecosystems to reach more resilient, productive and higher biodiversity than before through the use of holistic grazing management (holistic planned grazing) in addition to their grazing planning. Beyond sustainability, this establishes positive feedback “win-win” processes, with economic gain and ecological restoration taking place together.
Rehabilitation	Measures taken to rehabilitate degraded ecosystems or habitats following exposure to impacts that cannot be completely avoided and/ or minimized. Rehabilitation emphasizes the reparation of ecosystem processes, productivity and services, whereas the goals of restoration also include the re-establishment of the pre-existing biotic integrity in terms of species composition and community structure. https://www.biodiversitya-z.org/content/rehabilitation

Restoration	The returning process of an ecosystem or habitat that has been degraded, damaged, or destroyed, to its original coexistence structure, the natural integrity of the species and their natural functions. https://www.biodiversitya-z.org/content/restoration
	Tahrip olan, zarar gören veya yok olan bir ekosistem veya habitatın orijinal birliktelik yapısına, türlerin doğal bütünlüğüne ve doğal fonksiyonlarına kavuşur duruma getirilmesi. https://www.biodiversitya-z.org/content/restoration
Rotational grazing	Grazing the animals on certain parcels of rangelands and grasslands for certain periods according to the calculated carrying capacity. This allows the animals to be grazed in certain parts of the rangelands at certain periods, while the other parts are left to rest and improve until it is their grazing turn.
Silvopastoral	The management system where trees and grass and grazing lands are located together on the same land and that envisages benefits from both resources together. The trees provide shade and protection for animals as well as wood while the grazing lands provide more animal yield and income than treeless areas of similar kind. In silvopastoral areas, usually ovine animals (sheep, goats) are grazed. Silvopastoral systems also contribute to wildlife development, water quality, soil productivity, and conservation of soil from water and wind erosion.
Steppe forest	Areas forming sparse or closed forests in ecological regions dominated by steppes.
Stubble burning	Burning the roots and straws that remain in the field after harvest. This causes loss in humus and moisture in soil and acceleration of erosion.
Sustainable land management	The use of land resources, including soil, water, animals and plants, for provision of products to meet the changing needs of people, and to ensure the long-term conservation of the productive potential of these resources and the continuity of their environmental functions. Sustainable land management aims to increase the economic and social well-being of the affected communities, maintain the services provided by the ecosystem, and strengthen the adaptive capacity to manage climate change.
Sustainable use	The use of components of biodiversity in a way and at a rate that does not lead to the long-term decline of biodiversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations (CBD 1992).
Systematic Conservation Planning	Systematic Conservation Planning (SCP) is the process of establishing a conservation management system with clearly defined conservation objectives that the entire biodiversity is represented in a permanent (long-term) manner and not limited to protected areas. A conservation system is planned at regional and/or national scales by using biological and socio-economic data together.
Xerophyte	A drought-resistant desert plant that grows in arid environments. These plants grow in deserts and alkaline, acid, salty and dry soils.

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Pistacia palaestina
(Terebinth)

ANNEX 1. Analysis of Legislation and Top Policy Documents

INTERNATIONAL CONVENTIONS and PROGRAMS

Title of the Convention	Scope of the Convention
The Convention on Biological Diversity (CBD, 1997)	It aims at the conservation and sustainable use of biodiversity and the fair sharing of benefits derived from the use of genetic resources. In the 10th Meeting of the Conference of the Parties to the Convention, the Biodiversity Strategic Plan and the 2020 Biodiversity Targets, which are called Aichi Targets, were accepted for the main purpose of halting the loss of biodiversity in the world by 2020. The vision of the Strategic Plan is a world of "Living in harmony with nature" where "By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people". The Strategic Plan includes targets for 2015 and 2020 in 20 headlines ("Aichi Biodiversity Targets") that are organized under five strategic goals. These goals and targets include mainstreaming biodiversity concerns throughout government and society and addressing the underlying causes of biodiversity loss; reducing the pressures on biodiversity and promoting its sustainable use; improving the status of biodiversity by safeguarding ecosystems, species, and genetic diversity; enhancing the benefits derived from biodiversity and ecosystems for all (the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising From Their Utilization comes into force); enhancing implementation through participatory planning, knowledge management, and capacity building. It sets out the framework for means to address the conservation and sustainable use of steppe biodiversity.
The Convention on Biological Diversity Programme of Work	The Conference of the Parties to the Convention on Biological Diversity (COP) has established 7 thematic programmes of work that correspond to the main biomes on the planet. Two of these are associated with the conservation and sustainable management of steppe biodiversity. Arid and semi-arid lands programme of work (decision V/23, Annex 1) comprises objectives related to assessments of the status and trends of biodiversity in arid lands, Mediterranean, arid, semi-arid, grassland and savannah ecosystems, building knowledge on ecological, physical and social processes, identifying local and global benefits, identifying practices of good management including knowledge, innovation and practices of local people and promoting specific measures for the conservation and sustainable use of biodiversity, promoting a responsible resource management through an ecosystem-based approach, and supporting sustainable livelihoods by diversifying livelihoods, sustainable harvesting, innovative and sustainable use of biodiversity. The objectives of the agricultural biodiversity programme of work (decision V/5, annex) are assessment of the state and trend of agricultural biodiversity, underlying causes of change and knowledge of management practices; determining adaptive management techniques, practices and policies; capacity building, raising awareness and promoting responsible actions, and mainstreaming national plans and strategies to relevant agricultural policies for the conservation and sustainable management of agricultural biodiversity.

Title of the Convention	Scope of the Convention
United Nations Framework Convention on Climate Change (UNFCCC, 2004)	It encourages parties to cooperate in the international arena against the effects of global warming on the climate, caused by human-induced activities, to reduce greenhouse gas emissions, to cooperate on research and technology, and to protect carbon sinks. The management of sensitive natural resources such as steppe ecosystems and the adaptation of these ecosystems to climate change are important. As stated in Article 2, the natural adaptation of the ecosystem to climate change is one of the objectives of the convention.
United Nations Convention to Combat Desertification (UNCCD, 1998)	It provides long-term strategies and objectives on land restoration and rehabilitation, sustainable land management and sustainable management of water resources to combat desertification/land degradation and drought. The UNCCD 2018-2030 Strategic Framework Document defines a vision of a future that avoids, prevents and reverses desertification/land degradation and mitigates the effects of drought in affected areas and neutralizes land degradation in line with the UN 2030 Sustainable Development Goals. Strategic Objectives 2, 3 and 4 are determined as improving the conditions of affected ecosystems, combating desertification/land degradation, promoting sustainable land management and contributing to the neutralization of land degradation, increasing the drought resistance of fragile ecosystems and contributing to biodiversity and climate change issues. Steppe areas, many of which are of rangeland characteristics, are faced with land degradation, and there is a biological/ecological and economical decrease or loss of productivity in these areas. Therefore, strategies, objectives, approaches and practices within the scope of the convention are important for steppe ecosystems.
Sustainable Development Goals (2015)	Sustainable Development Goals (SDG), also known as the Global Goals, consist of 17 Goals towards eliminating poverty, protecting our planet and ensuring that all people live in peace and prosperity. In relation to the conservation and sustainable management of steppes, SDG 15 has been determined as “To protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss”. Under this goal, there are targets related to the conservation of terrestrial ecosystems, their sustainable use and restoration, the conservation of habitats and species, the fair and equitable sharing of the benefits gained from the use of genetic resources, and the promotion of access to such resources, the prevention of illegal hunting and smuggling, the provision of financing and the provision of sustainable livelihoods to local people.
IPARD Framework Agreement and Sectoral Agreements	IPARD is the Rural Development component of the Instrument for Pre-Accession Assistance, established by the European Union (EU) to support candidate and potential candidate countries. It aims to support the harmonization initiatives for the implementation and management of the Common Agricultural Policy, Rural Development Policy and related policies of the European Union and policy development in this context. It is important for the opportunities it creates to compensate agricultural producers for loss of income arising from their commitments to the conservation of the environment and natural resources.

NATIONAL LAWS and REGULATIONS

Legislation	Scope of the Legislation	Relevance to the Steppes
Pasture Law (No. 4342 of 25.02.1998)	The law covers determination of rangelands, summer pastures, winter pastures, and public rangelands and meadows, allocating them to the legal entities of the village or municipalities, utilizing them in line with the rules to be determined, their maintenance and rehabilitation, increasing and sustaining their productivity, supervising their use regularly, protecting them and changing the purpose of use when necessary.	Most of the steppe areas are classified and managed as rangelands. This law not only provides for the protection of rangelands but also determines the basic principles of their utilization.
Pasture Regulation (No 23419 of 31.07.1998)	The principles and procedures for the implementation of the Law on the Amendment of Some Articles of the Pasture Law No. 4368 dated 11.06.1998 are regulated by the Pasture Law No. 4342 and 25.02.1998. It includes administrative and managerial provisions regarding the restriction and allocation of rangelands, meadows and summer pastures, and grazing plans.	The Pasture Law has been elaborated by addition of paragraphs to some of its articles. This way, the Pasture Law also regulates the protection-utilization principles of the meadows, rangelands, summer pastures or other areas mentioned in the law that may be related to steppes.
Forest Law (No. 6831 of 31.08.1956)	It includes principles for planning, operating forests, and conservation of forests and its ecosystems.	It constitutes the framework for the management, development and protection of "degraded forests", which are of steppic nature. In this respect, it is closely related to the improvement and conservation of the steppe areas or the degradation of the steppe vegetation. In addition, it includes the prevention of soil erosion and reducing the pressures of grazing on forests by means of rehabilitation works in in-forest, forest edge and upper forest line.
Forest Management Regulation (Official Gazette No. 26778 of 05.02.2008)	It aims to determine the procedures and principles regarding the inventory of the state forests, forests belonging to the legal entities and private forests, the arrangement, renewal, interim inspection, implementation of the management plans, changes in the plan, and performing or arranging the inspection.	It implements the ecosystem-based functional planning approach, which takes into account the economic, ecological, social, and cultural functions of forests, with the management plans. As a result of the biodiversity inventories, forestry activities are carried out according to the biological characteristics and ecological demands of species in places where important, endangered, rare, and endemic species and similar sites are identified.

Legislation	Scope of the Legislation	Relevance to the Steppes
National Afforestation and Erosion Control Mobilization Law (No. 4122 of 23.07.1995)	It regulates the principles and procedures of afforestation and erosion control works to be carried out by public institutions and organizations and real and legal persons in order to increase the forest area and tree wealth, to establish and improve the balance between soil, water and plants, and to conserve environmental values.	It includes provisions on special afforestation, including in degraded forest areas, areas reserved by grazing plan, and passage ways for summer pastures and winter pastures, which have been used since ancient times, in terms of rehabilitation works in forests, forest edges and upper forest line rangelands and prevention of soil erosion.
Regulation on Forest Services on Afforestation and Erosion Control (Official Gazette No. 29945 of 11.01.2017)	It covers afforestation, rehabilitation, erosion and flood control, prevention of avalanches and landslides, rangeland rehabilitation, tree rehabilitation, seed and seedling production, nursery and reconstruction works to increase forest area, increase biodiversity and rebuild the degraded forest ecosystem.	
Regulation on Afforestation (Official Gazette No. 30927 of 23.09.2019)	It includes the arrangements for the regulation of the expenditures to be made for the restoration works and the collection of the revenues. It elaborates on the procedures and principles regarding afforestation, rehabilitation, erosion and flood control, prevention of avalanches and landslides, rangeland rehabilitation, tree rehabilitation, production of seeds and seedlings of forest trees, shrubs, and flora, nursery and reconstruction works.	
Environment Law (No. 2872 of 09.08.1983)	It covers the relevant procedures in order to protect the environment, which is the common asset of all living things, in line with the principles of sustainable environment and sustainable development. The Law regulates the permissions to polluting activities within the scope of the "polluter pays" principle and the penalties to be paid in case of polluting the environment, and it also states that activities known to have a polluting effect within the scope of the "Preventive Principle" require Environmental Impact Assessment.	Conservation of biodiversity and the ecosystem is essential. Protection of natural resources such as air, water, and soil and prevention of pollution are basically handled by this law. Stubble burning, destruction of meadows and rangelands and all activities that cause erosion are prohibited. However, in the regions where the second crop is planted, controlled stubble burning is allowed within the scope of the action plan prepared by the governorships.
National Parks Law (No. 2873 of 09.8.1983)	It regulates the principles of selection and designation of national parks, nature parks, natural monuments, and nature reserves of national and international value in Turkey and the conservation, development, and management of such areas by preserving their features and character.	Natural steppes may fall within the borders of protected areas. The law includes provisions on the wildlife hosted by these areas and protection of ecosystem values.

Legislation	Scope of the Legislation	Relevance to the Steppes
Terrestrial Hunting Law (No. 4915 of 01.07.2003)	It includes provisions regarding the protection and development of game and wild animals together with their natural habitats for sustainable game and wildlife management, controlling and regulating hunting, using hunting resources to the benefit of the national economy, and cooperating with relevant public and private law legal entities. Within the framework of the law, areas where wild animals that are threatened or are in danger of extinction are naturally found are protected for the conservation of these species together with their habitats without deteriorating their ecosystem characteristics.	Wildlife protection and breeding areas are established according to this law. Based on the law, the "Regulation on Principles and Procedures for Protection of Game and Wild Animals Together with their Habitats and Prevention of Pests and Diseases" governs the procedures and principles regarding the protection of the habitats of game and wild animals, translocation of species, their placement, protective measures, their collection and capture in nature, management of predatory species and management of their pests and diseases. It also includes provisions on species of game and wild animals, their survival in the natural environment, their protection, protected areas, habitats, capture, collection, scientific research, banding and marking, and diseases together with penal provisions.
Law on the Conservation of Cultural and Natural Property (No. 2863 of 21.07.1983)	It determines the definitions regarding the movable and immovable cultural and natural assets that need to be protected and regulates the transactions and activities to be carried out. Natural Reserves are announced according to this Law.	Some of the natural steppes fall within the borders of the protected areas. The law includes provisions on the conservation of the wildlife hosted by these areas and the ecosystem values.
Regulation on the Protection of Wetlands (No.28962 of 04.04.2014)	It provides especially for the implementation of the Convention on Wetlands of International Importance as Waterfowl Habitat (Ramsar Convention), cooperation and coordination between institutions and organizations, protection and development of wetlands.	The regulation is important for the protection of wetland ecosystems and the management of the ecosystem services they provide. Shallow lakes and wetlands intertwined with steppe ecosystems and their ecosystem services are important in terms of conservation.

Legislation	Scope of the Legislation	Relevance to the Steppes
Regulation on Procedures and Principles (No. 28358 of 19.07.2012) and the Amending Regulation (No. 31070 of 16.03.2020)	It determines the procedures and principles regarding the registration, approval, and designation of national parks, nature parks, natural monuments, natural reserves and wetlands, as well as the determination, registration, approval, change, and the designation of the natural asset, natural sites, and specially protected areas. Except for movable natural assets, it covers natural assets, natural sites, special environmental protection areas , national parks, nature parks, natural monuments, nature reserves, and wetlands.	Although there is no protected area status separately for steppes, steppe ecosystems are covered by some of the current protected areas. The inclusion of potential steppe areas in protected areas and the conservation of steppe species and habitats within existing protected areas is of great importance.
Agriculture Law (No. 5488 of 15.04.2006)	It covers the implementation procedures and principles regarding the determination of the policies necessary for the development and support of the agricultural sector and the rural areas, making regulations, determining the scope and subjects, creating and implementing programs, financing and administrative structures, priority research and development programs.	The law also includes the conservation and development of natural and biological resources within the objectives of agricultural policies. Most of the steppe areas are classified and managed as agricultural lands or rangelands. In the law, the issue of agricultural basins is included as an explicit provision in order to concentrate, support, organize, specialize, and conduct agricultural production in ecologically suitable areas. It contributes to the conservation of the steppes with agricultural support programs such as EFALP.
Regulation on Agricultural Basins (No. 27695 of 07.09.2010)	It regulates the principles and procedures for carrying out, supporting, organizing, specializing in agricultural activities in an integrated manner in the agricultural basins determined for the development of agricultural production in suitable ecologies, and doing agricultural inventories.	With these practices, it is possible to adapt to changing climatic conditions in effective use, protection and planning of soil and water resources.
Decision and Communiqué on Supporting Agricultural Investments within the Scope of Rural Development Supports (21.10.2016 and 13.09.2017)	Its purpose is to determine the principles and procedures for supporting small and medium-sized enterprises in order to ensure the integration of agricultural production and agriculture-based industry with a focus on conserving natural resources and the environment, developing the agricultural marketing infrastructure, strengthening food security, creating alternative income sources in rural areas, strengthening rural economic infrastructure, promoting new technologies developed for agricultural activities by the producers and supporting investments involving new technology.	Practices such as supporting livestock-oriented rural development, implementing conservation-oriented measures such as rangeland rehabilitation, popularizing new technologies such as efficient irrigation systems, increasing the value chain in animal products contribute to the conservation of steppes.

Legislation	Scope of the Legislation	Relevance to the Steppes
Communiqué on Implementation Principles Regarding Livestock Supports (No. 016/26 of 24.06.2016)	Its purpose is to develop animal husbandry in Turkey, to strengthen and sustain healthy production, to conserve genetic resources of domestic animals in situ and to develop them, to keep the records and system up-to-date, to increase the efficiency of livestock policies, and to support the breeders in animal disease control.	It determines the supports for all kinds of animal husbandry practices including apiculture. It provides for the necessary supports to handle livestock in a more efficient and sustainable way.
Soil Conservation and Land Use Law (No. 5403 of 19.07.2005)	It determines the procedures and principles that ensure planned land use in accordance with the principle of sustainable development and environmental priority by preventing the loss of soil and its qualities.	
Law of Amendment on Soil Conservation and Land Use Law (No. 6537 of 15.05.2014)	In this context, the law includes provisions on making land use plans, preparing land use plans and projects for agricultural purposes, preparing soil conservation projects, identifying and protecting large plains with high agricultural potential, determining and protecting areas susceptible to erosion, monitoring and preventing soil pollution, land consolidation and distribution, penalties for misuse of agricultural lands, and penalties for non-agricultural land uses. The smallest agricultural parcel size according to provinces and districts is defined in order to determine the minimum agricultural land and the agricultural land with sufficient income and to prevent their partition. Agricultural lands that reach the minimum size determined by this law become indivisible property.	Any intervention aimed at protecting agricultural lands, including agricultural lands with steppe ecosystems, particularly the introduction of natural steppes to agriculture, is covered by the Soil Conservation and Land Use Law. Studies on land size and management efficiency increase productivity and reduce the use and cultivation of marginal lands.
Regulation on Conservation, Use and Planning of Agricultural Land (09.12.2017)	It aims at the determination of the land and land assets foreseen in the Law on Soil Conservation and Land Use No. 5403 dated 3.7.2005, classification and development of agricultural lands, allowing for unintended use in case of necessity, determination and protection of the soil and large plains with high agricultural production potential, soil preservation plans, preparation and implementation of projects, determination of areas susceptible to erosion, the formation of the soil conservation boards, its duties, works and the planned use of lands in accordance with the environmental priority principle of sustainable development. Within the scope of the Regulation, Soil Conservation Boards established in each province have important duties for protection, development and utilization of agricultural lands efficiently, land use, improvement of land properties, conservation and recovery, and realization of soil preservation measures.	It is among the regulations that contribute to the sustainability of agricultural biodiversity.

Legislation	Scope of the Legislation	Relevance to the Steppes
Regulation on the Support of Farmers Using Environmentally-Friendly Agricultural Techniques and Providing Technical Assistance (No. 25994 of 15.11.2005)	It aims to support farmers who prefer to use agricultural production techniques that protect the environment, reduce the negative effects of agricultural practices on the environment, prevent erosion, maintain renewable energy resources, and protect the natural cover and soil and water quality in vulnerable areas.	Agriculture with reduced tillage is an important program for the protection of the soil and water structure, prevention of erosion, environmentally friendly agriculture techniques, and the conservation of the steppes.
Organic Farming Law (No. 5262 dated 03.12.2004) Regulation on the Principles of Organic Farming and Their Implementation (18.08.2010)	It determines the procedures and principles for taking the necessary measures to improve the production of organic products and inputs in order to provide safe and quality products to the consumer. It covers the performance of control and certification services related to the execution of organic farming activities and the inspection procedures and principles of the Ministry, as well as the issues regarding powers, duties and responsibilities. Preserving the ecological balance, conducting organic agricultural activities, regulating, developing and disseminating organic agricultural production and marketing is also covered.	It is one of the most powerful tools to control the use of fertilizers in agricultural production. Since it does not allow the use of chemicals, the practice of organic agriculture provides an important opportunity for the protection and improvement of soil and water resources.
Regulation on Good Agricultural Practices (No. 27778 of 07.12.2010)	It aims to ensure agricultural production that does not harm the environment, human and animal health, and provides for conservation of natural resources, traceability and sustainability in agriculture, and reliable product supply.	Good agricultural practices are important in terms of conserving soil and water resources and ensuring more sustainable use.
Protection of Waters Against Nitrate Pollution from Agricultural Sources (23.07.2016) Good Agricultural Practices Code for Protection of Waters Against Nitrate Pollution from Agricultural Sources (No. 2016/46 of 11.02.2017)	It aims to detect, reduce and prevent the pollution caused by agricultural nitrate in waters. The regulation covers the technical and administrative principles regarding the determination and control of nitrogen and nitrogen compounds that cause pollution in underground and surface waters and soils, and mitigation of pollution. It contains rules and implementation principles that must be followed by farmers in areas that are nitrate-sensitive and in those that are not.	The regulation supports steppe ecosystems by adopting good agricultural practices in the use of fertilizers (appropriate periods of fertilizer applications, amount of fertilizer to be used according to climate and soil conditions, crop rotation systems, irrigation, etc.).

Legislation	Scope of the Legislation	Relevance to the Steppes
Regulation on Organic, Mineral and Microbial Fertilizers Used in Agriculture (23.02.2018)	Its purpose is to determine the procedures and principles to improve the physical, chemical and biological structure of soils, to increase productivity in plant production, to protect human health and to mitigate environmental pollution, to promote the use of organic, mineral, and microbial fertilizers, to define and determine the analysis methods for these products and to import, export, produce, supply to the market and to record these products.	It supports steppe ecosystems with the use of organic, mineral and microbial fertilizers.
Biosafety Law (No. 5977 of 26.03.2010)	Its purpose is to determine, within the framework of scientific and technological developments, the procedures and principles to prevent the risks that may arise from genetically modified organisms and their products obtained by using modern biotechnology, to establish and implement a biosecurity system, to control, regulate and monitor these activities in order to protect and maintain human, animal and plant health, environment and biodiversity.	It is an important piece of law in terms of protecting natural ecosystems and gene resources. It also forms the basis for biological solutions that can be used to reduce greenhouse gases.
Law on Veterinary Services, Phytosanitation, Food and Feed (No. 5996 of 11.06.2010)	It aims to protect and ensure food and feed safety, public health, plant and animal health, animal breeding and welfare, taking into account consumer interests and the protection of the environment.	It is a legal instrument regulating the fight against harmful organisms in plants and plant products. It is important to protect water resources from agricultural pollutants.
Feed Law (No.1734 of 07.06.1973)	It sets out the procedures and principles for the preparation of feeds to be supplied to production, domestic markets, and import and export markets in order to ensure rational livestock nutrition and to improve animal production.	The law determines the qualities that forage crops should have and includes provisions on rangeland and forage crop production.
Seed Law (No. 5553 of 08.11.2006)	It aims to increase the yield and quality in crop production, to ensure quality assurance for seeds, to make regulations on seed production and trade, and to restructure and develop the seed sector.	It includes the sustainability of natural resources and the protection of agricultural ecosystems through certification in seeds and the use of proper seeds. It is especially important in terms of protecting the gene resources required for adaptation in the medium and long term.
Regulation on collection, production and marketing of natural flower bulbs (No. 30014 of 21.03.2017)	It regulates the procedures and principles for the collection, production, harvesting, storage and exportation of seeds, onions, tubers, rhizomes, corms or other parts for the protection of natural flower bulb species.	It is an important tool to be considered in the conservation of steppe plant diversity.

Legislation	Scope of the Legislation	Relevance to the Steppes
Regulation on the Collection, Preservation and Use of Plant Genetic Resources (No. 21316 of 15.08.1992)	It is designed to establish the principles of the survey, collection, storage, production, renewal, characterization, evaluation, documentation, and change of collected materials, with the aim of the preservation and development of plant genetic resources of Turkey.	It is related to the conservation of steppe plant diversity.
Regulation on Protection of Animal Genetic Resources (No. 25145 of 21.06.2003)	The aim of this regulation is to set forth the procedures and principles of the determination of the genotypic and phenotypic characteristics of animal genetic resources in Turkey, breeding with the purpose of protecting such properties, recording, and protecting them.	It is related to the conservation of steppe animal diversity
Agricultural Insurance Law (No. 5363 of 21.06.2005)	It regulates the rules for the establishment of agricultural insurance in order to compensate the losses of the farmer against agricultural risks.	It is an important tool in terms of ensuring the sustainability of production in agriculture. Addressing sustainable agriculture and livestock practices within the scope of insurance can reduce the risk factor associated with new ventures.
Law on the Assistance to Farmers Who Have Suffered Losses Due to Natural Disasters (No. 2090 of 05.07.1977)	It provides necessary assistance to farmers who suffer from natural disasters such as storm, flood, overflow, frost, hail, drought, pests and diseases.	It is important in terms of ensuring sustainability in agricultural production by supporting farmers who suffer economic losses due to natural disasters.
Law on land reform regarding rearrangement of land in irrigated areas (No. 3083 of 01.12.1984)	It aims to develop practices based on the efficient operation of irrigation areas and areas with high agricultural potential. It covers all measures such as land distribution and change, consolidation, in-field development services, and management of irrigation investments. For this purpose, it has strong powers, including the distribution of the lands in the hands of the State, expropriation, allocation of agricultural land for different purposes in line with the public interest.	The law specifically includes arguments suitable for the development of policies that take into account climate change in irrigation areas. Its guiding effect on the use of water resources is important.
Regulation on Land Consolidation and In-Field Development Services Implementation (07.02.2019)	It determines the principles and procedures regarding the consolidation of agricultural lands and in-field development services.	It is possible to lose habitat parts that are important as ecological corridors for steppe species through land consolidation works.

Legislation	Scope of the Legislation	Relevance to the Steppes
Regulation on Preparation of Protection of Water Basins and Preparation of Management Plans (28.10.2017)	It covers the principles and procedures for the protection of basins where surface and ground water resources, including coastal waters, excluding seas, and preparation of management plans.	It is an important tool for the integration of agricultural practices that support steppe ecosystems into basin management plans.
Communiqué on Prevention of Stubble Burning	Governorships issue Communiqués on Principles and Procedures for Prevention of Stubble Fires for provinces every year and their implementation is closely monitored.	The protection of steppe ecosystems and soil assets is important in terms of mitigation and preservation of soil carbon. Opportunities for the expansion of conservation agriculture (direct seeding) activities.
Communiqué on the Execution of Combine-Harvester Control Services	Governorships annually issue a Governor's Office Communiqué on the Execution of Combine-Harvester Control Services for provinces and monitor their implementation. It covers the procedures and principles regarding the operation and utilization of combine-harvesters, and the execution and inspection of control services, with a view to ensuring the public order and public trust by making sure that the field crops are harvested in a timely manner, with the least product loss, keeping the product losses and damages at the lowest level, and preventing uneducated and unequipped combine-harvester services.	It is to be born in mind for conservation agricultural practices and reduced pressure on natural resources due to faster and timely harvesting.

NATIONAL DEVELOPMENT PLANS

Top Policy Document	Policies, Priorities and Objectives Related to Steppe Ecosystems
Eleventh Development Plan (2019-2023)	**The term "steppe" (*"bozkır" or "step", in Turkish*) does not appear in the Eleventh Development Plan. However, there are related policies and measures that will contribute to the protection and sustainable management of steppe ecosystems under the headings of "Agriculture", "Urban Infrastructure", "Rural Development", "Protection of the Environment".** *"Agriculture" under "Competitive Production and Productivity"* - To ensure protection, effective use and management of agricultural lands (405) - To disseminate modern irrigation systems such as sprinkler and drip irrigation to ensure efficient use of water in agriculture. (406.3) - To support good agricultural practices, organic farming, contracted farming, clustering, research, marketing and branding, in order to increase product reliability, diversity and production, particularly for high value added medicinal and aromatic plants (407.2) - To accelerate the determination, restriction and registration processes for rangelands, summer pastures and winter pastures, to ensure that the rangelands are rehabilitated to boost the production of high-quality forage crops and to support forage crop production. (408.4) - To increase the inspection and training activities to combat uninformed pesticide use in plant production and to support and disseminate biological and biotechnical management practices alternative to chemical practices. (410.4) - **To ensure conservation and sustainability of biodiversity in the field of local animal breeds and seeds in agricultural production. (412)** - **To complete the biodiversity inventory, to monitor important species and specific areas, to establish a mechanism for sharing of benefits from genetic resources and related traditional information, to record traditional biodiversity-based information and to make them available for R&D purposes. (412.1)** - To make arrangements for the establishment of accredited nature farms in order to ensure sufficient quantity of local breed animal and seed assets. (412.2.) - Reproduction of local seeds of fruits, grains, medicinal and aromatic plants, especially winter vegetables, and local animal breeds in nature farms and transforming them into sustainable value-added products. (412.3.) - To make local products, geographically indicated agricultural products and medicinal and aromatic products subject to trade by increasing the product value through improvements in promotion, marketing, and branding. (414.1) - **To support the studies conducted in research institutes especially in the areas of animal and plant breeding, biotechnology, and biodiversity conservation within the framework of public institutions, university, and private sector cooperation. (416.2)** - To develop and support innovative and environmentally-friendly production techniques, especially smart agricultural technologies. (416.4) *"Urban Infrastructure", "Rural Development", and "Environmental Protection" Under "Livable Cities, Sustainable Environment"*

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	- Implementation of basin-based plans, strategies and action plans within the scope of protection, development and sustainable use of water resources (697) - To program rural development supports with a focus on farmers and the environment, to make arrangements to eliminate the existing multi-headedness in the execution of supports, to ensure complementarity and effectiveness in practice. (707) - To keep rural heritage alive and to protect natural and cultural assets in order to ensure the sustainability of rural production and lifestyles. (710) - To support initiatives and collaborative initiatives that will carry knowledge on traditional production and preservation in areas such as traditional crafts and handicrafts specific to villages, agro-tourism, geographically marked products, ornamental plants, viticulture, apiculture, fishing, poultry farming, cultivation of alternative agricultural products, agricultural products and food to future generations by ensuring that the production and lifestyles in the villages, as well as nature and cultural assets, are protected. (710.1) - **Detection, registration, protection, sustainable use, development, monitoring, and prevention of smuggling of biodiversity and genetic resources, forwarding the benefits of genetic resources and related traditional information to our country. (716)** - **Effective management of nature conservation areas by increasing the number of protected areas on land and sea for the protection, restoration, and sustainable use of ecosystems and ecosystem services. (717)**

NATIONAL STRATEGY and ACTION PLANS

Top Policy Document	Policies, Priorities and Objectives Related to Steppe Ecosystems
National Biodiversity Strategy and Action Plan – NBSAP (2007)	**With NBSAP, goals for 6 thematic areas, namely agricultural biodiversity, forest biodiversity, steppe biodiversity, mountain biodiversity, inland waters biodiversity, and coastal and marine biodiversity, and 4 common goals for all thematic areas have been determined. "Goal 5" in the strategy directly targets the steppe ecosystems, and the common goals include objectives and actions related to steppe ecosystems.** "To protect steppe biodiversity, to ensure the sustainable use of its components, as well as to ensure the fair and equitable sharing of the benefits from the utilization of genetic resources; and to combat the loss of steppe biodiversity and the socio-economic results of that" (Goal 5). This includes goals and actions directly related to steppe ecosystems. - To fill the information gaps concerning steppe biodiversity (Objective 5.1) - To identify ecological, physical and social processes such as grazing, drought, desertification, aridity, salinity, floods, fires, tourism, agricultural transformation or abandonment which have adverse effects on the biodiversity of steppe ecosystems and mainly on the ecosystem structure and function, and to take measures regarding the abovementioned (Objective 5.2) - To establish mechanisms and frameworks in order to support the fair and equitable sharing of the benefits from the utilization of the genetic resources of steppe areas (Objective 5.3)

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	Also, "To identify, protect and monitor biodiversity components which are important to Turkey (Goal 1)", "To use biodiversity components in a sustainable manner by applying the methods at a level fitting to their renewal capacity by taking the future generations' needs into account (Goal 2)" "To identify, protect and utilize the components of genetic diversity, including the traditional knowledge, which are important to Turkey (Goal 3)". This includes common goals and actions for all thematic areas also associated with steppe ecosystems. "The designation of special areas in the steppe ecosystems which are especially important for biodiversity and/or are specifically under threat and establishing protection status for these areas (Strategic Action 1.2.3)". This is specifically related to the steppe ecosystems. The Strategy offers information about identification and classification of steppe ecosystems in Turkey, the current state of steppe ecosystems, native animal breeds and plant species of steppes, threats to the steppes. It also emphasizes that the existing protected areas do not adequately represent the biodiversity components of our country, especially steppe and marine ecosystems.
National Biodiversity Action Plan – NBAP (2018-2028)	**NBAP national targets do not include objectives directly related to the "steppe". However, since the NBSAP Goals and Objectives are valid for 2018-2028 and are associated with NBAP, the national objectives specified in the NBAP also support steppe ecosystems**. - Determining the pressure and threats on biodiversity and ecosystems and reducing or eliminating them as much as possible - Developing species-specific and ecosystem-based conservation approaches (traditional and modern) by determining, monitoring, evaluating the biodiversity elements (ecosystem, species, and genetic diversity) - Ensuring sustainable management by preserving the biodiversity of areas exposed to agriculture, forestry, and fishing activities - Raising awareness of the public and administrators about ecosystem services, increasing the benefits arising from ecosystem services, and ensuring sustainable biodiversity management - Providing the rehabilitation and restoration of ecosystems damaged due to different reasons, developing measures to prevent damage to healthy ecosystems and eliminating legislative gaps in this regard - Establishing a public, university and private sector cooperation mechanism and preparing long-term plans and programs for the development of high value-added products based on knowledge and technology within the framework of conservation and sustainable use of biological resources - Preparing national legislation and establishing the necessary technical infrastructure, taking into account international conventions on access to genetic resources and the equal and fair sharing of benefits arising from their use.

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Ecosystem-Based Adaptation Strategy for Anatolian Steppe Ecosystems (2018)	**It aims to facilitate and encourage "Ecosystem-Based Adaptation" strategies and practices in steppe ecosystems for adaptation to climate change.** It includes 4 strategic objectives: Increasing the resilience of the affected and likely to be affected ecosystems to climate change, building a strong rural economy and a climate-resistant/resilient local society, integrating "Ecosystem-Based Adaptation" into policy, plan, and decision-making processes in a way that supports the climate change adaptation strategy, developing a management model by improving the management capacity of stakeholders. Under these strategic objectives, there are long-, medium-, and short-term goals and actions related to the conservation and management of steppes that support adaptation to climate change under the headings of agriculture and agriculture-related rangeland management, water management, and forestry management.
Turkey's National Climate Change Strategyi (2010-2023)	**The term "steppe" (*"bozkır" or "step", in Turkish*) is not mentioned in the Climate Change Strategy, but it contains long-, medium- and short-term targets within the scope of the "Land Use, Agriculture and Forestry" sector and "Adaptation to Climate Change" that will contribute to the conservation and sustainable management of steppe ecosystems.** - Under "Land Use, Agriculture and Forestry", there are goals related to rational use of fertilizers, certified seed production with organic farming and drought-tolerant plant species, use of in-farm modern pressurized irrigation systems, conservation, improvement and efficient use of soil and lands, and protection from soil erosion, effective implementation of Soil Conservation and Land Use Law and regulation of legislation, protection and improvement of meadows and rangelands, fertilization based on soil analysis results, and reducing urbanization pressure on rural and natural areas. - Under "Adaptation to Climate Change", there are goals related to agricultural drought, desertification and erosion, scientific studies on the sustainable use of natural resources, sustainable management of water resources, soil cultivation, drainage, irrigation techniques, mulching measures to prevent increased salinity in irrigated areas, and identification and vulnerability analysis of and combating the negative effects of climate change on sensitive ecosystems, urban biotopes and biodiversity.
Turkey's National Climate Change Action Plan – NCCAP (2011-2023)	**The Climate Change Action Plan includes purposes, objectives, and actions under 7 sectors. Among these, under the sector of "Land Use and Forestry", "Identifying the carbon sequestration potentials of scrublands and steppes, which spread across wide areas in Turkey (O1.1.1.3)" includes actions directly related to steppe ecosystems. It also includes related objectives and actions that will contribute to the conservation and sustainable management of steppe ecosystems under the "Agriculture" and "Land Use and Forestry" sectors.** - Under the "Agriculture" sector, dissemination of sustainable agricultural techniques such as direct planting, crop rotation, use of organic and green fertilizers, reduced tillage and no-till that will contribute to the conservation and sustainable management of the steppes, soil, crop production and rangeland management based on sustainable use of natural resources, improvement of irrigation infrastructure based on protection and effective use of water resources. - Under the "Land Use and Forestry" sector, consideration of biodiversity, wildlife, hydrology and carbon storage functions in rehabilitation and reclamation of in-forest rangelands.

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Turkey's National Climate Change Adaptation Strategy and Action Plan – NCCASAP (2011-2023)	**NCCAP and NCCASAP** focus on five areas, namely Water Resources Management, Agriculture and Food Security, Ecosystem Services, Biodiversity and Forestry, Natural Disaster Risk Management, and Human Health. The goals and actions associated with integrated management of water resources, sustainable planning of agricultural water use, protection of soil and agricultural biodiversity against the effects of climate change; integrating the adaptation to climate change approach into ecosystem services, biodiversity and forestry policies; identifying and monitoring the effects of climate change on biodiversity and ecosystem services **contribute to the conservation and sustainable management of steppe ecosystems.** **The action "Conducting R&D studies to identify and monitor the effects of climate change on steppe ecosystems (target species, sensitive ecosystems) (UO2.6.3)" under the objective of "Identifying and monitoring the effects of climate change on the mountain, steppe, inland water, and marine ecosystems and on the ecosystem services they provide and developing measures for adaptation to climate change (OBJECTIVE UO2.6)" involves actions directly related to steppe ecosystems.**
National Strategy and Action Plan to Combat Desertification – NSAPCD (2015-2023)	**NSAPCD includes outputs and actions directly related to improving steppe ecosystems, increasing management efficiency and ensuring their representation in the conservation network**. - Rehabilitation practices in forest, steppe, wetland, coastal zone and other natural habitats in line with natural ecosystem structure (Output 7.4) - Improved efficiency of steppe habitat conservation and management in protected steppe areas (Action 7.4.6) - Review and improvement of protected area definitions, ensuring the representation of different steppe types in the protected area network and making management plans in protected areas (Action 7.6.3) One of the strategic goals of NSAPCD is to create synergy between the three Rio Conventions, to protect biodiversity, and to contribute to the resolution of climate change through combating desertification/land degradation and sustainable land management. For this reason, it offers capacity building, coordination and cooperation, policy, science, technology, monitoring, and financing recommendations, which concern many sectors including agriculture, forestry, land use, rural development, nature conservation, and water management. Many of these recommendations include actions that contribute to the conservation and sustainable management of the steppes. In particular, under "Sustainable Land Management", climate change-oriented conservation measures and improvement practices that integrate the protection of biodiversity and ecosystem services are the basic ones.
National Rural Development Strategy (2014-2020)	**The term "steppe" (*"bozkır" or "step", in Turkish*) is not mentioned in the Strategic Plan. Environmentally-friendly agricultural production practices, sustainable natural resource management, and climate change issues are consideredy.** Within the scope of "Improving the Rural Environment and Ensuring the Sustainability of Natural Resources", which is one of the objectives of the Strategic Plan, use of environmentally-friendly production practices in agriculture, prevention of environmental pollution caused by animal waste, promotion of organic agriculture, dissemination of good agricultural practices, ensuring efficiency in agricultural irrigation and use of agricultural lands, keeping the protection and use balance in forest resources, alleviation of the development problems arising from the disadvantageous positions of the villages established in or around the protected areas, especially forest villages, strengthening sustainable livelihoods on the basis of participation, and protection of biodiversity and ecological wealth are targeted.

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National Basin Management Strategy and Action Plan (2014-2023)	**The National Basin Management Strategy and Action Plan does not mention the term "steppe" (*"bozkır" or "step", in Turkish*) and does not include a policy and measure directly related to steppe ecosystems. However, it is based on the sustainable management of water basins and the use of natural resources as a part of the ecosystem in the basins, within the framework of conservation and sustainability.** In this context, it includes goals, objectives and strategies including legal regulations, programs and plans on the sustainable management and use of water resources of the basins, efficiency and saving in water use, and efficiency in agricultural irrigation (Objective 2); sustainable use of agricultural lands, protection, rehabilitation and sustainable use of meadows and rangelands, and erosion control for prevention of destruction and erosion in basins and natural resources, rehabilitation and sustainable use of degraded basins (Objective 3); sustainable management of protected and sensitive areas in basins, and inventory and monitoring studies on biodiversity and ecosystem services to protect and manage the biodiversity of the basins, natural and cultural landscape resources and to ensure the sustainability of ecosystem services (Objective 4); large-scale integrated participatory basin rehabilitation projects to raise awareness of the people living in the basin, to increase their quality of life and welfare and to reduce the pressures on natural resources (Objective 5); incorporation of the possible effects of climate change and adaptation into basin management, and the development of adaptation and counter mechanisms (Objective 7).
National Drought Management Strategy Document and Action Plan (2017-2023)	**The National Drought Management Strategy Document and Action Plan does not mention the term "steppe" (*"bozkır" or "step", in Turkish*) and does not include a policy and measure directly related to steppe ecosystems.** However, it includes goals and strategies such as preparing legislation on basin-based sustainable drought management, preparation, implementation and monitoring of drought management plans for effective management of drought, establishing drought prediction and early warning systems, carrying out integrated-participatory rehabilitation and basin improvement projects, creation of drought databases, informing the public about droughts, determining the effects of climate change on droughts and preparing adaptation strategies.
Turkey Agricultural Drought Strategy and Action Plan (2018-2022)	**Turkey Agricultural Drought Strategy and Action Plan does not mention the term "steppe" (*"bozkır" or "step", in Turkish*) and does not contain policies and measures directly associated with steppe ecosystems.** However, it aims to keep the effects of drought at a minimum by ensuring all necessary measures for the future in periods when drought does not occur with environmentally sustainable agricultural water use planning and implementing an effective intervention program during crises. Besides, measures to be determined in agricultural lands and rangelands contain supporting elements in terms of conservation and sustainable management of steppes within the scope of basic development axes, such as Drought Risk Estimation and Crisis Management, Ensuring Sustainable Water Supply, Effective Management of Agricultural Water Demand, Accelerating R&D Supports and Increasing Training/ Extension Services and Developing Institutional Capacity.

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National Capacity Action Plan (2011)	**The National Capacity Action Plan includes cross-cutting issues and synergy areas for the effective implementation of three Rio Conventions (United Nations Framework Convention on Climate Change, Convention on Biological Diversity and Combat Desertification):** National and Sectoral Integration; Sustainable Land Management; Level of Vulnerability to Climate Change and Adaptation; Data Collection, Monitoring, Evaluation and Reporting; Research, Development, Education/Training and Technical Cooperation; Active Participation, Awareness Raising and Training of Stakeholders. Sustainable Land Management is presented as one of the most important tools for the sustainable management and rehabilitation of land resources, especially forest, agriculture, rangeland, wetland and steppe ecosystems, protection and development of soil and water resources, increased the carbon sequestration capacity of the soil, water and vegetation and the conservation of biodiversity. In this regard, developing a sustainable land management strategy and making legal arrangements, the realization of integrated and sustainable basin management, capacity building, and financing are prioritized.
Turkey's National Protected Areas and Climate Change Strategy (2011)	In this strategy, establishing a "protected area system" of Turkey in the context of protected areas and climate change, establishing policies regarding the planning and management of protected areas, increased research, awareness raising, and information sharing are included as priority issues. The strategy is handled in three main groups: forest, wetland and steppe, and coastal ecosystems.

INSTITUTIONAL PLANS and PROGRAMS

Top Policy Document	Policies, Priorities and Objectives Related to Steppe Ecosystems
Ministry of Agriculture and Forestry Strategic Plan (2019-2023)	**The term "steppe" (*"bozkır" or "step", in Turkish*) does not appear in the Strategic Plan. However, the strategic plan includes objectives and targets that contribute to the conservation and management of steppe ecosystems related to increasing welfare in rural areas, increasing productivity and quality in agricultural production (A1) sustainable management of soil and water resources (A4); combating climate change, desertification and erosion (A5); and sustainable management of biodiversity (A6).** In this context, the following strategies and actions can be associated with steppe ecosystems: supporting organic and good agricultural practices in crop production; increasing biological and biotechnical control methods; dissemination of rangeland rehabilitation and management projects; increasing forage crop production; establishing an agricultural support model aimed at protecting the agricultural environment and natural resources; increasing environmental support and incentives (especially for women farmers) towards improvement of the quality of life in rural areas, ensuring that the rural areas are protected, livable and productive; disseminating pressurized irrigation systems; producing basin-based drought management plans; scaling-up the national land cover monitoring system; combating desertification/ land degradation and erosion; climate change adaptation and agricultural drought projects; erosion detection and control in agricultural lands and rangelands; legal regulation and awareness raising for recording and protecting genetic resources; establishing an effective protected area management and monitoring system, developing nature tourism and carrying out income generating activities for the local people; conducting surveys in vulnerable areas and designating new protected areas; bio-smuggling risk map modeling; recording and producing a database of traditional biodiversity-based information; training and awareness raising activities on game and hunting; drafting and monitoring species action plans by means of planning, production, and wild animal inventory studies in wildlife reserves, and establishment of rescue and rehabilitation centers.
General Directorate of Forestry Strategic Plan (2019-2023)	**The term "steppe" (*"bozkır" or "step", in Turkish*) does not appear in the Strategic Plan.** However, Strategic Plan includes the strategic objectives of effective protection of forest and forest resources from biotic and abiotic factors (A1); forestry development, increase in their efficiency and forest expansion (A2); ensuring that the society gains optimum benefits from forestry products and services (A3); and improving institutional capacity (A5). Conducting and scaling-up erosion control and rehabilitation works in rangelands in forests, forest edges and at the forest lines, which are used as rangelands but cannot be transformed into forest areas, are also targeted to prevent soil erosion and to reduce the pressure of animal grazing on forests (Objective 2.5).
3rd Agriculture and Forestry Council (2019)	The topics covered by the 3. Agriculture and Forestry Council Conclusion Declaration include the establishment of a support system that improves the structure of the agricultural sector and protects natural resources and the environment; completion of rangeland determination and delimitation studies, allocation of these to producers and producer organizations, development of plant seeds to be used in rangeland rehabilitation; dissemination of Smart Agricultural Practices; conservation, development and commercialization of ancestral (local) seed varieties; sustainable management of soil and water resources; determination, protection, improvement and dissemination of native genetic resources and biodiversity in agriculture and forestry; the determination, protection, development and monitoring of natural resources and biodiversity; setting up farming vocational training institutions and encouraging young people to receive trainings; production and use of organic and organomineral fertilizers, dissemination of biological and biotechnical control; effective and efficient management of desertification and erosion control activities. These topics support the conservation and sustainable management of steppe ecosystems.

REGIONAL PLANS and PROGRAMS

Policies, Programs and Reports	Policies, Priorities and Objectives Related to Steppe Ecosystems
GAP Regional Development Administration Strategic Plan (2019-2023)	**GAP Regional Development Administration Strategic Plan neither mentions the term "steppe" (*"bozkır" or "step", in Turkish*) nor contains policies and measures directly associated with steppe ecosystems.** It covers making plans, monitoring and coordination for implementation of innovative models that are human-friendly and environmentally-sound by ensuring effective and efficient use of resources in order to increase the quality of life with sustainable and fair development in the Southeastern Anatolia Region. The main strategic objectives are the Development of Culture and Tourism, Ensuring Environmental and Physical Development, Ensuring Social Development, and Ensuring Economic Development. The objectives listed under these goals are as follows: - Promoting the region's touristic brand (Mezopotamya) and increasing awareness (H1.1) - Preparation of tourism management plans in tourism centers and tourism sub-regions by considering the balance between protection and use (H1.2) - Protection and promotion of intangible and tangible cultural assets (sustainability of natural resources and cultural assets and environmentally friendliness) (H1.3) - Conservation of the environment and natural texture and creation of recreational areas foreseen in the GAP Region Tourism Master Plan in order to increase the livability of cities (H2.1) - Dissemination of recycling practices in a district to protect natural resources (H2.2) - Diversifying the economic activities of rural women and increasing their participation in social life through innovative approaches (H3.2) - Spreading innovative practices for the development of agricultural production (H4.1) - Improving resource efficiency in agricultural and industrial enterprises (H4.2) - Supporting good rural development projects aimed at reducing intra-regional development disparities, improving the socio-economic living conditions of the population living in rural areas with limited land resources suitable for cultivation (agriculture and non-agricultural, animal husbandry, non-irrigation areas) (H4.4) - Dissemination of precision farming system in the region, increasing the competitiveness and productivity of agricultural production enterprises in the region (H4.5)
GAP Action Plan (2014-2018)	**GAP Action Plan neither mentions the term "steppe" (*"bozkır" or "step", in Turkish*) nor contains policies and measures directly associated with steppe ecosystems.** The GAP Action Plan includes innovative and sustainable projects and programs that target people, eliminate income inequality, prioritize disadvantaged areas and groups, and create livable spaces. These are projects and programs that accelerate regional development, rely on educated and qualified manpower, increase employment, protect natural resources, cultural heritage and environment, prioritize technological developments, and aim to complete irrigation, transportation and industrial infrastructure. Prominent actions under 5 developmental axes are as follows: increasing productivity in agricultural production and increasing efficiency in the use of agricultural resources; disseminating climate-friendly agricultural production systems based on organic farming and good agricultural practices and value chain principles; development of cattle and sheep farming; completion of OIZ (Organized Industrial Zone) projects; conservation and tourism-oriented utilization of cultural heritage; regular and healthy development of urban settlements, increasing the quality of the urban environment and supporting urban infrastructure services; increasing forest assets and protecting dams from erosion, rangeland rehabilitation; empowering women and young people in particular to strengthen social development; land consolidation, in-farm development services and reclamation of stony lands coupled with irrigation investments.

Policies, Programs and Reports	Policies, Priorities and Objectives Related to Steppe Ecosystems
GAP Current Situation Report 2018 (GAP RDA, 2019) **GAP Administration 2018 Annual Report**	**These reports neither mention the term "steppe" (*"bozkır" or "step", in Turkish*) nor contain actions directly associated with steppe ecosystems. Practices that can contribute to the conservation and sustainable management of steppe ecosystems and set an example under the strategic objectives of Improving Culture and Tourism, Ensuring Environmental and Physical Development, Ensuring Social Development, Ensuring Economic Development are:** - Projects for Increasing the Income Level of the People in Non-Irrigated Areas (Şanlıurfa greenhouses) (H.4.4) - Increasing the income levels of landless farmers and smallholders, generating income in line with their potential, "Diversification of Agricultural and Non-Agricultural Activities Project" to identify new agricultural and non-agricultural activities (H4.4) - Organic Agriculture Cluster Development (OTK) Project and Organic Agriculture Value Chain Pilot Practices Financial Support Program (H4.1) - Operation, Maintenance and Management of GAP Irrigation Systems (İBY) Project, disseminating modern agricultural techniques and technologies and strengthening the institutional capacities of irrigation unions in pilot areas - "Development of Livestock Infrastructure Project" to revitalize the livestock sector, increase the income level of landless farmers and smallholders, and to implement the participatory and sustainable animal husbandry models under farmers' conditions. (H4.4) - "GAP Agricultural Training and Extension Project" to strengthen the capacities of farmer organizations, chambers of agriculture, producers, and irrigation unions (GAP TEYAP)" (H4.1) - "Afforestation and Erosion Control Project" to protect, improve and expand forest resources, to operate these resources efficiently and continuously in a versatile way, to protect and rehabilitate rangelands, and to prevent shortening of the economic life of dams. (H4.4) - Project for Dissemination of Precision Agriculture and Sustainable Practices (H4.1) - "Integrated Rural Development Project" to improve socio-economic conditions of the population living in rural areas with limited lands suitable for tillage and to prepare Sub-Regional Rural Development Plans (H4.4) - "Integrated Resource Efficiency in Agriculture and Agro-based Industry Project" for modeling and disseminating the most efficient use of resources, especially water and energy, in agricultural production and processing of agricultural products and increasing efficiency in primary production and processing processes (ecosystem services approach and ecosystem-based adaptation) (H4.2) - Increasing the Use of Renewable Energy Resources and Energy Efficiency (H4.3) - Social, Cultural and Economic Development Support Program - Multi-Purpose Community Centers where social, cultural and income generating/skill-building programs have been implemented since 1995 to improve the conditions of girls and women and ensure their participation in community development. (ÇATOM) - GAP Youth Houses Project - Studies for Children (Kids Reading Rooms/Kids Playrooms and GAP-Cheetos Child Development Centers) - In line with the Resolutions of the GAP Region Tourism Master Plan, to evaluate the region with a holistic approach, considering the protection-use balance and focusing on tourism, to increase employment and tourism revenues, to ensure the continuity of touristic movements in a healthier and sustainable manner. "GAP Regional Tourism Oriented Promotion and Branding Project" (H1.1)

Policies, Programs and Reports	Policies, Priorities and Objectives Related to Steppe Ecosystems
TRC2 Region (Diyarbakır-Şanlıurfa) 2014-2023 Current Situation Report, Regional Plan, Analysis and General Evaluation	**TRC2 Regional Plan neither mentions the term "steppe" *("bozkır" or "step", in Turkish*) nor contains policies and measures directly associated with steppe ecosystems. However, the Current Situation Report contains information on steppe ecosystems, plant and animal species, and protected areas.** TRC2 Regional Plan includes 4 axes: "Urban Economies and Economic Growth", "Human Development and Social Capital", "Quality of Life and Spatial Organization", "Sustainable Development and Green Growth" followed by aims, targets and strategies under these axes. The plan emphasizes that the high population growth and the rate of urbanization and the large investments due to the ongoing use of natural resources in the region put increased pressure on natural resources, and especially the protection of water and land resources is of strategic importance for the economy of the region. Following objectives are included under the "Sustainable Development and Green Growth" axis for the protection of natural resources and environment: - Soil database for the Protection of Soil Resources by Effective Management, protection of the quality of soil resources, effective combat against stubble burning, use of inputs, environmentally-friendly agricultural techniques and strategies related to good agricultural practices, - Effective management of water resources and ensuring efficiency in water use, water basins, and protection of water resources in order to ensure the sustainable use of water resources, - Strategies related to recording of biological resources, environmentally-friendly agricultural techniques and good agricultural practices, pesticide and fertilizer use, stubble burning, risk maps for the Protection of the Environment and Biodiversity, - It includes the objective of creating the image of the "Green Energy Zone" of the Region by encouraging and disseminating the use of renewable energy for the Use of Renewable Energy Resources and Dissemination of Environmentally-Friendly Technologies in the Region. In addition, within the scope of the "Urban Economies and Economic Growth" axis and under the aim of "Increased Competitiveness in Agricultural Production", there are objectives related to realizing a transformation in the agricultural sector by using modern agricultural methods, increasing the added value in agricultural production and ensuring product diversity, taking measures to reduce agricultural input costs, restructuring the competitiveness of agricultural enterprises and ensuring food security. Under the "Urban Economies and Economic Growth" axis, within the scope of the aim of "Improving Tourism and Increasing Its Share in the Regional Economy", diversifying tourism opportunities by improving the tourism infrastructure and unleashing the touristic potential are targeted. Strategies and maps for alternative tourism types such as ecotourism and nature tourism are created with the strategy of " Preserving Natural, Historical and Cultural Heritage and Exposing Their Touristic Potential, Rehabilitation of Tourism Areas and Developing Destinations".

Policies, Programs and Reports	Policies, Priorities and Objectives Related to Steppe Ecosystems
	The strategies included under the axis of "Quality of Life and Spatial Organization" include increasing agricultural production and incomes in the settlements in the region, activities for processing agricultural products, developing tourism in centers with potential, disseminating activities such as organic agriculture, fruit growing, aquaculture; disseminating projects based on the aggregation of services in order to create healthy rural settlements in order to diversify agricultural and non-agricultural activities in non-irrigated areas with a view to diversifying the income sources of the rural people and increase the quality of life.
GAP Regional Tourism Master Plan (2010)	Making a general evaluation of the planning studies for the tourism of the GAP Region, updating them according to the new tourism policies, ensuring the sustainability and use within a certain plan by considering the balance of protection and use, rather than addressing the cultural and tourism potential of the region separately, creating attractive and strong alternative destinations, attractions, new tourism types, tourism development regions/corridors, and routes, strengthening provinces that are weak in terms of tourism with a holistic approach, and revealing corporate responsibility and management plans.
GAP Regional Development Plan (2002-2010) **GAP Master Plan (1989)**	The objectives of the GAP Regional Development Plan include "Establishment of development infrastructures and protection of the environment", "Development of human resources" and "Reduction of intra-regional development gaps". The GAP Master Plan sets a timetable for the development of especially water and soil resources, taking into account the financial and technical capacities; determines the development this change will stimulate in the economic and social sectors, the employment it will create, the population size it will bring, and the possible distribution of this population in cities and rural areas; determines the needs for education and health services, housing and urban infrastructure at a macro level and reveals the financial needs over the years. Considering the goals and predictions of the GAP Master Plan, the goal of "protecting water, soil, air and associated ecosystems as priority areas" is adopted in the context of "sustainability" for the developmental process.

ANNEX 2. Survey Results

NO	TITLE	GDPP			NCNP			GDL			GDF			GDARP		
		1.*	2.**	3.***	1.*	2.**	3.***	1.*	2.**	3.***	1.*	2.**	3.***	1.*	2.**	3.***
1	Conservation of important species	15	27	21	69	8	1	13	16	13	15	34	10	28	27	9
2	Conservation of plant genetic resources	41	27	9	35	20	9	2	14	30	11	35	7	46	24	2
3	Conservation of animal genetic resources	2	10	29	23	26	10	67	14	1	3	19	22	23	25	11
4	Conservation of vegetation	42	26	7	47	21	6	3	9	32	31	28	9	19	18	13
5	Conservation of rangelands/steppes in the forests or on forest edges	25	26	13	24	28	9	9	12	27	63	14	2	8	20	18
6	Conservation of plant species composition – Forage diversity	65	13	1	13	22	22	12	16	19	7	20	21	33	26	5
7	Conservation of plant species composition – Species diversity	47	21	8	37	13	11	2	12	25	18	26	13	26	28	9
8	Conservation of soil	31	24	10	16	29	13	2	9	26	52	15	8	25	18	5
9	Grazing planning	54	13	7	8	23	16	40	17	7	22	32	14	14	25	14
10	Determining the carrying capacity of rangelands	57	14	5	8	23	22	34	18	10	21	25	19	18	27	10
11	Determining the number and type of animals to graze	38	21	11	3	12	28	58	13	7	11	28	22	16	24	19
12	Allocation of rangelands (in forest regime, with important species)	58	11	9	8	19	24	20	18	11	31	31	12	13	20	13
13	Prevention of misuse (quarry, solar power plant, afforestation, etc.)	47	10	10	33	18	11	9	15	18	36	34	7	11	20	13
14	Research on improvement and rehabilitation of steppes or rangelands	45	25	7	22	24	14	14	21	15	21	32	16	47	16	5
15	Improvement and rehabilitation of steppes or rangelands	66	8	3	21	24	16	16	21	14	22	29	15	17	34	13

** In the assessment, the experts scored and prioritized the responsibilities of different institutions for different headings (1st priority, 2nd priority, and 3rd priority). In the table, total scores for all experts participating in the assessment are given.*

ANNEX 3. Important Biodiversity Areas of Şanlıurfa Province

Important Biodiversity Area	Features*	Area (ha)	Scale within provincial borders (%)
Halfeti Prime Butterfly Area (PBA)	It is home to 3 priority butterfly species that are listed as Endangered (EN) in the Red List of Turkey. These are *Archon apollinus*, *Apharitis cilissa* and *Spialia osthelderi*.	10,000	99
Karacadağ Key Biodiversity Area (KBA)	In this KBA with vast *Astragalus microcephalus* steppes, milkvetch, wild wheat steppes, oak communities and wetlands are significant habitat types. Of 600 plant species recorded in the area, 32 are endemic to Turkey. Besides, the spectacled warbler (*Sylvia conspicillata*) is known to breed only in this area of Turkey. The western part of this KBA falls within the provincial borders of Şanlıurfa.	135,455	24
Ceylanpınar KBA	There are 3 endangered and endemic mullein (*Verbascum* sp.) species in the area that stand out in terms of steppe species. Of these, *Verbascum stepporum* only exists in Ceylanpınar KBA. Sociable lapwing (*Vanellus gregarius*), great bustard (*Otis tarda*), gazelle (*Gazella marica*), black kite (*Milvus migrans*), black-bellied sandgrouse (*Pterocles orientalis*), pin-tailed sandgrouse (*Pterocles alchata*) and Eurasian stone-curlew (*Burhinus oedicnemus*) are important species of the area.	384,884	100
Nemrut Mountain KBA	Mountain steppes, kermes oak communities, rocky slopes, and alpine meadows are predominant in the area. The area is home to globally threatened plant species and stands out as the richest area in the region in terms of bird species. *Allium nemrutdagense*, *Arenaria commagene* and *Colchicum paschei* are the species only recorded here in the world. It is one of the last habitats of the globally endangered Saker falcon *(Falco cherrug*) in our country. Kurdish wheatear (*Oenanthe xanthoprymna*) and cinereous bunting (*Emberiza cineracea*) are other rare bird species of the area. Also, globally endangered species, such as wild goat (*Capra aegagrus*), Geoffroy's bat (*Myotis emarginatus*) and Euphrates softshell turtle (*Rafetus euphraticus*), are observed in the area. The southeastern part of this KBA falls within the provincial borders of Şanlıurfa.	108,331	11
Harran Ruins KBA	Flat and rocky steppes are predominant in the area, and the predominant plant species is harmel (*Potamogeton* sp.). The most important species in the area is the Harran fringe-toed lizard (*Acanthodactylus harranensis*), which was discovered in 2001 and named after the region. Other significant species are Meriones tristrami bodenheimeri, which is a subspecies of Turkey's gerbils, black francolin (Francolinus francolinus), European roller (*Coracias garrulus*) and black-headed bunting (*Emberiza melanocephala*).	364	100
Akçakale Steppes KBA	The area is very important as it hosts rich steppe ecosystems of Turkey that have not been damaged. It is a rare site where desert monitor (*Varanus griseus*) and pin-tailed sandgrouse (*Pterocles alchata*) exist. It is also an important wintering ground for the great bustard (*Otis tarda*) in Turkey.	108,703	100

Important Biodiversity Area	Features*	Area (ha)	Scale within provincial borders (%)
Bozova KBA	The area is home to plant species with a narrow distribution. The endemic plant species Astragalus scabrifolius holds the EN status at a global scale. The Euphrates softshell turtle (*Rafetus euphraticus*), which is globally threatened, and the dark-winged groundling (*Brachythemis fuscopalliata*) are among the species that granted the area the KBA status. Also, the biggest colony of the blue-cheeked bee-eater (*Merops persicus*) known in Turkey exists within the boundaries of Bozova KBA.	164,743	98
Southern Euphrates Valley and Birecik Steppes KBA	The area that stands out in terms of semi-desert biome species is also the richest KBA in the Southeast in terms of bird, reptilian and mammalian species. Euphrates River, reservoirs, steppe and semi-desert areas and gallery forests are important habitats in the area. The area hosts the best-preserved communities of the Euphrates poplar (*Populus euphratica*) and stands out in terms of rare species. The naked-rumped tomb bat (*Taphozous nudiventris*), *Cousinia biraecikensis* plant and long-nosed worm snake (*Rhinotyphlops episcopusun*) have been recorded only in this KBA. The Euphrates softshell turtle (*Rafetus euphraticus*), which is globally threatened, and the desert monitor (*Varanus griseus*), which is rare in Turkey, are significant species of the KBA. As the only known breeding ground for the cream-colored courser (*Cursorius cursor*) in Turkey, it hosts a semi natural breeding colony of northern bald ibis (*Geronticus eremita*), and it is home to pallid scops owl (*Otus brucei*), desert lark (*Ammomanes deserti*), pin-tailed sandgrouse (*Pterocles alchata*) and Bonelli's eagle (*Hieraaetus fasciatus*); the bird species richness of the area is apparent. In addition, the striped hyaena (*Hyaena hyaena*) is also observed in this area. A large part of this KBA falls within the borders of Şanlıurfa province.	210,110	71
Karkamış KBA	This KBA contains the best-preserved river ecosystem of the Euphrates. While floodplain tree communities, reeds, Euphrates poplar communities (*Populus euphratica*) are dominant in some parts of the area, semi-desert and steppe ecosystem is predominant in the east of the Euphrates River. The Euphrates softshell turtle (*Rafetus euphraticus*), which is globally threatened, and Iranian fat-tailed gecko (*Eublepharis angramainyu*) are important species. An outstanding area in terms of bird richness, Karkamış has the highest number of water birds in Turkey according to the midwinter waterfowl counts. In addition to hosting one of the largest breeding colonies of the pygmy cormorant, it is home to species such as marbled duck (*Marmaronetta angustirostris*), pallid scops owl (Otus brucei), desert lark (*Ammomanes deserti*) and pied kingfisher (*Ceryle rudis*). A large part of this KBA falls within the borders of the province of Şanlıurfa.	16,061	80

Important Biodiversity Area	Features*	Area (ha)	Scale within provincial borders (%)
Conservation Priority Area between Karkamış - Birecik Dams (Systematic Conservation Planning; SCP)	The Priority Area covers parts of the Middle East Dry Plain (treeless) Steppe sub-ecoregion and riverside habitats. It contains a rare mix of riparian and dry steppe fauna communities. Pygmy cormorant (*Phalacrocorax pygmeus*), desert lark (*Ammomanes deserti*), pallid scops owl (*Otus brucei*), Euphrates softshell turtle (*Rafetus euphraticus*), striped hyaena (*Hyaena hyaena*) and northern bald ibis (*Geronticus eremita*) that is listed as Critically Endangered (CR) are priority species. It is the only place in Turkey that Iranian fat-tailed gecko (*Eublepharis angramainyu*) is known to exist.	18,372	53
Conservation Priority Area between Birecik-Atatürk Dams (Systematic Conservation Planning; SCP)	It stands out with its landscape values and historical importance. Zeugma and Rumkale cities' historical ruins are located in this area. Of birds of prey, Egyptian vulture (*Neophron percnopterus*) and Bonelli's eagle (*Hieraaetus fasciatus*), and Euphrates softshell turtle (*Rafetus euphraticus*) are priority species of the area.	43,615	40
Birecik Steppe Conservation Priority Area (SCP)	The area that is significant in terms of bird communities is also close to the Euphrates, which makes the region unique. The area is very important as it represents steppe meadow ecosystems. Also, two important butterfly species, namely large salmon Arab (*Colotis fausta fausta*) and zephyr blue (*Plebeius pylaon*); lesser kestrel (*Falco naumanni*), black-bellied sandgrouse (*Pterocles orientalis*), striped hyaena (*Hyaena hyaena*) and *Cousiania birecikensis*, which is a rare endemic plant, are priority species of the area.	175,234	100
Southeast of Atatürk Dam Reservoir and Coastal Steppe Conservation Priority Area (SCP)	The limestone steppes in the coastal parts of the area and their shallow, muddy water edges constitute important transitional habitats for aquatic plants, invertebrates and fish spawning here. The Euphrates softshell turtle (*Rafetus euphraticus*) nests in this area. In addition, the nesting potential of the cream-colored courser (*Cursorius cursor*), the biggest nesting colony of blue-cheeked bee-eaters (*Merops persicus*) in Turkey and the waterfowl richness makes the area outstanding. The rocky slopes above the Euphrates, which are potential nesting sites for the birds of prey, and the bath white butterfly (*Pontia daplidice*) that exists only in Southeastern Anatolia of Turkey explain why the site is a priority area.	87,777	100
Akçakale Steppe Conservation Priority Area (SCP)	The priority area covers the pristine Middle East Lowland Steppe Meadow communities. The priority species in the area are the pin-tailed sandgrouse (*Pterocles alchata*) and the gazelle (*Gazella subgutturosa*).	55,314	98
Urfa Steppe Conservation Priority Area (SCP)	The priority area includes large and partially pristine Middle East Lowland Steppe Meadows.	53,660	100

Important Biodiversity Area	Features*	Area (ha)	Scale within provincial borders (%)
Western Ceylanpınar Conservation Priority Area (SCP)	Large and pristine Middle East Lowland Steppe Meadows are in this area.	78,914	100
Eastern Ceylanpınar Conservation Priority Area (Ceylanpınar State Production Farm) (SCP)	The Eastern Ceylanpınar Priority Area, which is an Important Plant Area and Important Bird Area at the same time, is a site that belongs to the Middle East Lowland Steppe Meadow communities and is fully owned and managed by the state. For this reason, it has the potential to be an international model implementation area for the sustainable use of steppe meadows. Of the 482 plant taxa recorded in this area, 55 are rare on a national scale and constitute a striking part of the wild ancestors of the cultivated plants. The great bustard (*Otis tarda*) and gazelle (*Gazella subgutturosa*) species, which are dependent on the steppes, exist in this area.	156,741	100
Harran Conservation Priority Area (SCP)	The priority area is distinguished by Harran's international historical and archaeological importance and the fact that *Acanthodactylus harranensis*, an endemic lizard, exists here.	5,603	100
Western Karacadağ Conservation Priority Area (SCP)	Unique plant communities linked to the volcanic steppes are found in this area.	101,513	23
Eastern Karacadağ Conservation Priority Area (SCP)	It is an area that hosts eight rare plant taxa on a national scale and is also an Important Plant Area. It is the breeding ground for the spectacled warbler (*Sylvia conspicillata*). In this area of unique plant communities, *Astragalus microcephalus* steppes found at high altitudes with endemic species form the nesting habitat for the spectacled warbler (*Sylvia conspicillata*).	60,000	11

** Information on Prime Butterfly Areas was compiled from: Karaçetin, E., Welch, H.J., Turak, A., Balkız, Ö., Welch, G. 2011. Türkiye'deki Kelebeklerin Koruma Stratejisi. Ankara: Doğa Koruma Merkezi. Access: [www.dkm.org.tr]*

Information on Key Biodiversity Areas was compiled from: Eken, G., Bozdoğan, M., İsfendiyaroğlu, S., Kılıç, D. T., Lise, Y. (editors) 2006. Türkiye'nin Önemli Doğa Alanları. Doğa Derneği. Ankara.

Information on Systematic Conservation Planning (SCP) Conservation Priority Areas was compiled from: Welch, H.J. (editor) 2004. GAP Biyolojik Çeşitlilik Araştırma Projesi 2001-2003 – Sonuç Raporu. DHKD (Türkiye Doğal Hayatı Koruma Derneği), İstanbul.

ANNEX 4. Experts Who Contributed to the Strategy Preparation

no	Name	Institution / Unit	Province
1	Mustafa Bulut	General Directorate of Nature Conservation and National Parks Deputy Director General	Ankara
2	Suat Yılmaz	General Directorate of Plant Production Deputy Director General	Ankara
3	Ahmet Dallı	General Directorate of Plant Production Deputy Director General	Ankara
4	Mehmet Çelik	General Directorate of Forestry Deputy Director General	Ankara
5	İsrafil Erdoğan	Ministry of Forestry and Water Affairs 3. Regional Director	Şanlıurfa
6	Murat Akgün	Ministry of Forestry and Water Affairs 3. Regional Deputy Director	Şanlıurfa
7	Hüseyin İnce	3. Regional Directorate Wetlands Branch Manager	Şanlıurfa
8	Adil Uztemur	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
9	Ahmet İlker Eken	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
10	Ahmet Kahraman	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
11	Burak Aynur	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
12	Ecrin Kapucu	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
13	Fatime Şelale	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
14	Fecir Örnek	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
15	Gülcihan Karaca Aynur	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
16	Halil Haspolat	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
17	Hasan Basri Kıraç	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
18	İbrahim Polat	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
19	Mehmet Ekinci	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa

no	Name	Institution / Unit	Province
20	Mehmet Emin Saygan	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
21	Mehmet Gürkaynak	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
22	Ömer Pamuk	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
23	Reşat Ektiren	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
24	Samed Aksungur	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
25	Suat Tekin	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
26	Ziya Aygün	3. Regional Directorate Şanlıurfa Provincial Branch	Şanlıurfa
27	Şevket Tepe	Şanlıurfa Regional Directorate of Forestry	Şanlıurfa
28	Ömür Aybike Yıldırım	Locally based Project Assistant - FAO Şanlıurfa Office	Şanlıurfa
29	Adnan Yetkin	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
30	Aziz Aktacir	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
31	Bilal Bebe	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
32	Cabir Mızraklı	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
33	Fırat Akagündüz	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
34	Halil Şıtıl	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
35	İbrahim Halil Satıcı	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
36	İbrahim Nimetoğlu	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
37	Kadir Yayla	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
38	Mahmut Küçükoğlu	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
39	Mehmet Gözoğlu	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
40	Melda Akıl	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
41	Nuri Pakır	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
42	Ramazan Bozdağ	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
43	Süleyman Şeker	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
44	Süleyman Tüzün	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
45	Zehra Akgünlü	Şanlıurfa Provincial Directorate of Agriculture and Forestry	Şanlıurfa
46	Mustafa Kemal Tüfeksever	Akçakale District Directorate of Agriculture and Forestry	Şanlıurfa
47	Mahmut Al	Haliliye District Directorate of Agriculture and Forestry	Şanlıurfa
48	Suat Ayata	Haliliye District Directorate of Agriculture and Forestry	Şanlıurfa
49	Yakup Yıldırım	Haliliye District Directorate of Agriculture and Forestry	Şanlıurfa
50	Mustafa Sarıgül	Ceylanpınar TİGEM	Şanlıurfa
51	Yunus Aktağ	Ceylanpınar TİGEM	Şanlıurfa
52	Ali İlkhan	Şanlıurfa GAP Agricultural Research Institute	Şanlıurfa
53	Gülçin Baytur	Şanlıurfa Metropolitan Municipality – Parks and Gardens Department	Şanlıurfa

no	Name	Institution / Unit	Province
54	Kudret Rat	Şanlıurfa Metropolitan Municipality – Parks and Gardens Department	Şanlıurfa
55	Mehmet Işık	Şanlıurfa Metropolitan Municipality – Parks and Gardens Department	Şanlıurfa
56	Özlem Kendirci	Şanlıurfa Metropolitan Municipality – Parks and Gardens Department	Şanlıurfa
57	Sevda Samak	Şanlıurfa Metropolitan Municipality – Parks and Gardens Department	Şanlıurfa
58	Sümeyye Kırıkçı	Şanlıurfa Metropolitan Municipality – Parks and Gardens Department	Şanlıurfa
59	Didem Ertekin	Şanlıurfa Metropolitan Municipality	Şanlıurfa
60	Mahmut Kaytan	Şanlıurfa Metropolitan Municipality	Şanlıurfa
61	Ömer Kılıç	Şanlıurfa Metropolitan Municipality	Şanlıurfa
62	Ayşe Kader Polat	Provincial Directorate of Environment and Urbanization	Şanlıurfa
63	Aykut Hakan Kutluhan	Provincial Directorate of Culture and Tourism	Şanlıurfa
64	Eyyüp Bulut	Karacadağ Development Agency	Şanlıurfa
65	Mehmet Oğul	Karacadağ Development Agency	Şanlıurfa
66	Zuhal Çelebi Deniz	Karacadağ Development Agency	Şanlıurfa
67	Adalet Atmak	Şanlıurfa Cattle Breeders' Union	Şanlıurfa
68	Sultan Al	Şanlıurfa Cattle Breeders' Union	Şanlıurfa
69	Hakkı Çiftçi	Biologist	Şanlıurfa
70	Salih Bozancı	Biologist	Şanlıurfa
71	Ahmet Muhtar Özaslan	Şanlıurfa Harran Özkent Middle School	Şanlıurfa
72	Aynur Demir	Şanlıurfa Eyyübiye Güzelkuyu Primary School	Şanlıurfa
73	Gülşah Uysal	Şanlıurfa Eyyübiye Altınbaşak Primary School	Şanlıurfa
74	Hacı Ahmet Duran	Şanlıurfa Akçakale İkizce Primary School	Şanlıurfa
75	Refik Mansuroğlu	Birecik Böğürtlen Middle School	Şanlıurfa
76	Sümeyye Tutal	Şanlıurfa Haliliye Küçük Senemağara School	Şanlıurfa
77	Ali Rıza Öztürkmen	Harran University Independent Experts Group	Şanlıurfa
78	Ali Volkan Bilgili	Harran University	Şanlıurfa
79	Emrah Ramazanoğlu	Harran University	Şanlıurfa
80	Mahmut Kaya	Harran University	Şanlıurfa
81	Mehmet Ali Çullu	Harran University Independent Experts Group	Şanlıurfa
82	Mehmet Reşit Sevinç	Harran University	Şanlıurfa
83	Ömer Faruk Kaya	Harran University Independent Experts Group	Şanlıurfa
84	Tahir Polat	Harran University Independent Experts Group	Şanlıurfa
85	Turan Binici	Harran University	Şanlıurfa
86	Abdurrahman Eren	Private Sector	Şanlıurfa
87	Ahmet Yavuz	Cennet Arboriculture	Şanlıurfa
88	Sabri Yavuz	Cennet Arboriculture	Şanlıurfa

no	Name	Institution / Unit	Province
89	Aydın Cesur	Adana Provincial Directorate of Agriculture and Forestry	Adana
90	Alptekin Karagöz	Aksaray University	Aksaray
91	Özgün Talan	Antalya Provincial Directorate of Agriculture and Forestry	Antalya
92	Sinan Aykan	Antalya Provincial Directorate of Agriculture and Forestry	Antalya
93	Mehmet Adnan Aksoy	Karacadağ Development Agency	Diyarbakır
94	Oral Özgen	Diyarbakır Provincial Directorate of Agriculture and Forestry	Diyarbakır
95	Recep Karakaş	Dicle University	Diyarbakır
96	Didem Ambarlı	Düzce University	Düzce
97	Hakan Gür	Ahi Evran University	Kırşehir
98	Evrim Karaçetin	Erciyes University	Kayseri
99	Zeki Acar	Ondokuz Mayıs University	Samsun
100	Fethi Akman	Erzurum Provincial Directorate of Agriculture and Forestry	Erzurum
101	Yılmaz Türk	İstanbul Provincial Directorate of Agriculture and Forestry	İstanbul
102	Ergun Yılmaz	Kayseri Provincial Directorate of Agriculture and Forestry	Kayseri
103	Üzeyir Tombul	Konya Provincial Directorate of Agriculture and Forestry	Konya
104	Erol Çiftçi	Sivas Provincial Directorate of Agriculture and Forestry	Sivas
105	Suat Safran	Van Provincial Directorate of Agriculture and Forestry	Van
106	Zafer Çelik	Ankara Provincial Directorate of Agriculture and Forestry	Ankara
107	Tuncay Gürsoy Yüce	General Directorate of Plant Production Head of Department	Ankara
108	Kürşat Kağan Yeşil	General Directorate of Plant Production	Ankara
109	Davut Özgür	General Directorate of Plant Production National Project Implementation Unit	Ankara
110	Esra Esina	General Directorate of Plant Production Project Focal Point	Ankara
111	Gültekin Öçalan	General Directorate of Plant Production National Project Implementation Unit	Ankara
112	Tuğba Usta	General Directorate of Nature Conservation and National Parks Head of Working Group - Project Focal Point	Ankara
113	Abdulsamet Haçat	General Directorate of Nature Conservation and National Parks National Project Implementation Unit	Ankara
114	Burak Tatar	General Directorate of Nature Conservation and National Parks National Project Implementation Unit	Ankara
115	Fatih Köylüoğlu	General Directorate of Nature Conservation and National Parks National Project Implementation Unit	Ankara
116	Osman Uğur Akınç	General Directorate of Nature Conservation and National Parks	Ankara
117	Ömer Faruk Aslan	General Directorate of Nature Conservation and National Parks National Project Implementation Unit	Ankara
118	Serhat Erbaş	General Directorate of Nature Conservation and National Parks National Project Implementation Unit	Ankara

no	Name	Institution / Unit	Province
119	Ümit Bolat	General Directorate of Nature Conservation and National Parks National Project Implementation Unit	Ankara
120	Aysun Özkan	General Directorate of Nature Conservation and National Parks Department of National Parks	Ankara
121	Erdoğan Ertürk	General Directorate of Nature Conservation and National Parks Department of Sensitive Areas	Ankara
122	Erol Kuru	General Directorate of Nature Conservation and National Parks Department of National Parks	Ankara
123	Neşe Ersöz	General Directorate of Nature Conservation and National Parks Department of National Parks	Ankara
124	Nurcihan Mercan Erdoğan	General Directorate of Nature Conservation and National Parks Department of Biodiversity	Ankara
125	Mehmet Koç	General Directorate of Forestry Head of Department of Foreign Relations Training and Research	Ankara
126	Ramazan Balı	General Directorate of Forestry Department of Foreign Relations Training and Research	Ankara
127	Kıymet Keleş	General Directorate of Forestry Department of Foreign Relations Training and Research	Ankara
128	Nuran Karaçorlu	General Directorate of Forestry Department of Afforestation	Ankara
129	Türkan Özdemir	General Directorate of Forestry Department of Foreign Relations Training and Research	Ankara
130	Cezmi Keleş	General Directorate of Forestry	Ankara
131	Yaşar Sönmez	General Directorate of Forestry	Ankara
132	Oktay Şenol Keten	General Directorate of Forestry Department of Soil Conservation and Basin Rehabilitation	Ankara
133	Uğur Tüfekçioğlu	General Directorate of Forestry Department of Soil Conservation and Basin Rehabilitation	Ankara
134	Şenay Boyraz Topaloğlu	General Directorate of Agricultural Research and Policy	Ankara
135	Arzu Özer	General Directorate of Agrarian Reform Department of Agri-Environment and Conservation of Natural Resources	Ankara
136	N. Cem Aktuz	General Directorate of Agrarian Reform Department of Agri-Environment and Conservation of Natural Resources	Ankara
137	Hatice Özlem Gürbüz	General Directorate of Agricultural Researches Department of Agricultural Economy and Project Management	Ankara
138	Esra Akçelik	General Directorate of Agricultural Researches Department of Field Crops Research	Ankara
139	İhsan Çetin	General Directorate of Agricultural Researches Department of Field Crops Research	Ankara
140	Mecit Vural	Gazi University	Ankara

no	Name	Institution / Unit	Province
141	Selçuk Tuğrul Körüklü	Ankara University	Ankara
142	Can Bilgin	Middle East Technical University	Ankara
143	Hayrettin Kendir	Ankara University	Ankara
144	Nilgül Karadeniz	Ankara University	Ankara
145	Bülent Gülçubuk	Ankara University	Ankara
146	Burcu Tarıkahya Hacıoğlu	Hacettepe University	Ankara
147	F. Güler Ekmekçi	Hacettepe University Faculty of Science	Ankara
148	S. Serhat Arda	ANÇEO	Ankara
149	Aydan Özkil	BThe Food and Agriculture Organization of the United Nations (FAO)	Ankara
150	Burak Avcıoğlu	The Food and Agriculture Organization of the United Nations (FAO)	Ankara
151	Fatma Güngör	The Food and Agriculture Organization of the United Nations Sustainable Land Management (FAO- SLM) National Project Coordinator	Ankara
152	İbrahim Yamaç	The Food and Agriculture Organization of the United Nations (FAO)	Ankara
153	Nihan Yenilmez Arpa	The Food and Agriculture Organization of the United Nations (FAO) Steppe Project National Project Coordinator	Ankara
154	Nilüfer Gündüz	The Food and Agriculture Organization of the United Nations (FAO)	Ankara
155	Peter Pechacek	The Food and Agriculture Organization of the United Nations (FAO)	Ankara
156	Sibel Nihal Tekin	The Food and Agriculture Organization of the United Nations (FAO)	Ankara
157	Şafak Toros	The Food and Agriculture Organization of the United Nations (FAO)	Ankara
158	Fethiye Arslantaş	Doğa Koruma Merkezi	Ankara
159	Gelincik Deniz Bilgin	Doğa Koruma Merkezi	Ankara
160	Gülden Atkın Gençoğlu	Doğa Koruma Merkezi	Ankara
161	Hakan Eligül	Doğa Koruma Merkezi	Ankara
162	Mustafa Durmuş	Doğa Koruma Merkezi	Ankara
163	Özge Balkız	Doğa Koruma Merkezi	Ankara
164	Semiha Demirbaş Çağlayan	Doğa Koruma Merkezi	Ankara
165	Tuba Bucak	Doğa Koruma Merkezi	Ankara
166	Tuğba Can	Doğa Koruma Merkezi	Ankara
167	Uğur Zeydanlı	Doğa Koruma Merkezi	Ankara
168	Yıldıray Lise	Doğa Koruma Merkezi	Ankara
169	Zeynep Deniz Yalçın	Doğa Koruma Merkezi	Ankara
170	Melike Kuş	Doğa Koruma Merkezi	Ankara
171	Volkan Büyükgüngör	Anadolu Meraları – Savory Institute	Çanakkale
172	Durukan Dudu	Anadolu Meraları – Savory Institute	Çanakkale

ANNEX 5. Assessment of Alternative Income Sources

Alternative Income Sources in Şanlıurfa Steppes and Rangelands for the Conservation and Sustainable Use of Steppes and Rangelands

Ceylanpınar steppes, Akçakale steppes and Karacadağ steppes with largest steppe ecosystems in the province were selected as major study sites among the designated Special Areas in terms of Biodiversity as an outcome of Şanlıurfa Land and Inland Water Ecosystems Biodiversity Inventory and Monitoring Project aiming at a rapid appraisal of alternative income sources in Sanlıurfa steppes and rangelands. For the purpose of the study, a working group consisting of Prof. Dr. Mehmet Ali Çullu, Prof. Dr. Turan Binici and Dr. Mehmet Reşit Sevinç, who know the region well and are experienced in the given matters, was formed as a result of the assessments in these areas to ensure formulation of recommendations for alternative income sources that contribute to the conservation of the steppes of Şanlıurfa as well as identification of stakeholders and adoption of these recommendations. Face-to-face interviews were held by this team with the Ministry of Agriculture and Forestry 3rd Regional Directorate, Şanlıurfa Provincial Directorate of Agriculture and Forestry, District Directors of Agriculture and Forestry in the region, Provincial Pasture Commission members, Şanlıurfa Cattle Breeders Union, Şanlıurfa Sheep and Goat Breeders Union, Karacadağ Turkmen Society, ovine breeders in the Karacadağ region and the pistachio and olive farmers in the region. This report was prepared in the light of the results of these interviews and the experiences of the experts in the region.

1. Sociological Structure

In the Southeastern Anatolia Region, traditional, social and cultural structure still maintains its uniqueness. Semi-feudalism in agriculture, traditionalism in animal husbandry, semi-nomadism and even nomadism form the socio-economic pattern of the region. As a natural consequence of this pattern, which dates centuries back, traditional institutions such as squirearchy, sheikhdom and tribe chiefdom still wield an influence in the region, albeit at a decreasing rate (Gökçe, 2007).

Concepts such as “ağalık” (agaluk), “beylik” (small principality), “şeyhlik” (sheikhdom), “seyitlik” (sayyidism), and “tarikatçılık” (sectarianism) constitute the focal patterns in social structure of the region. The network of roles, positions (status) and powers built around these concepts can significantly affect adoption of many innovations and social change processes in the society (Türkdoğan, 2009).

The socio-cultural structure in the southeastern society brings about a need for crowded populations in order to survive and grow stronger. This need has a serious impact on early marriages and fertility rates in the region. The province with the highest fertility rate in our country is Şanlıurfa with an average of 4.13 children in 2016 (TÜİK, 2019a).

Factors such as early marriages and high fertility rates seriously affect the family structure in Şanlıurfa. According to the results of the Address-Based Civil Registration System (ABCRS), the average size of a household, which was 3.6 people in 2014, showed a decreasing trend and came down to 3.4 in 2018. Of all provinces, Şanlıurfa province is ranked second in terms of average household size. The average number of households in Şanlıurfa province was 5.6 in 2018 (TÜİK, 2019b).

The pressure of tribal and feudal structures on social relations is felt at every level of life in the province of Şanlıurfa. Steps taken towards a positive change in social structure, especially in rural areas, are challenged by these structures. On the other hand, tribal and feudal structures have the ability to create a strong network of relationships that connect individuals. This is why individuals submit to and obey the power of the tribal or feudal structures that emerge from their own dynamics, instead of legislative and protective public institutions in maintaining the social order.

2. Rural Life

After 1950s, when the socio-economic and technological development accelerated in Turkey, the rural areas started to lose their basic production function, especially as a result of migration from rural to urban areas. This situation, an inevitable result of socio-economic development, affected not only the agricultural production, but also the family structure and relations.

In Turkey, 7.11% of the disposable income of rural households consisted of agricultural enterprise income in 2006. In 2010 6.34% and in 2018 only 4.3% of the disposable income of the rural households consisted of agricultural enterprise income (TÜİK, 2020a). The increase in migration from rural to urban areas due to reasons, including increased costs in agricultural production, inability to turn agricultural products to account, marketing problems, lack of organized work in agricultural production, unattractive sides of the countryside and attractive power of the cities, was behind these figures. Individuals in rural areas are still moving away from agriculture.

The causes of rural-to-urban migration in Turkey could be considered under the "push and pull factors" approach. The introduction of new technologies into agriculture, inadequacy of land and the fragmentation of lands through inheritance, the transition into intensive agriculture, population growth, unpermissive geographical and natural conditions, inadequacy of infrastructure in rural areas, terrorism, blood feuds, sectarian conflicts, and extended family structures can be listed as the push factors. The urban pull factors include diversity of employment opportunities, proximity to public services (education, health, social services, etc.), social and cultural mobility of urban life, the unconventionality of cities, and social life opportunities. The leading reasons that facilitate rural-to-urban migration are the development of communication and transportation facilities, the economic well-being of the relatives who migrated before, and the technological developments (Sevinç, Davran & Sevinç, 2018).

In Turkey, the share of the rural population in the total population remained stable between 1927-1950. While 75.8% of the population lived in rural areas in 1927, the ratio was observed to be 75% in 1950. Since the 1950s, rural-to-urban migration has intensified, and the share of the rural population, which was 75% of the total population, decreased down to 68.1% in 1960, to 61.5% in 1970, to 56.1% in 1980 and finally to 34.9% in 1997. Apparently, while three-fourths of the population lived in rural areas in the 1950s, this rate decreased to one-third in about 50 years (Dinler, 2008). According to ABCRS data compiled by the Turkish Statistical Institute since 2007, the share of the rural population in the total population decreased from 25.0% in 2008 to 22.7% in 2012 (TÜİK, 2020b).

According to the 2013 and 2014 data, the percentage of the rural population was approximately 8% (TÜİK, 2020b). However, this serious decrease in the rural population percentage from 2012 to 2013 (from 22.7% to 8%) is not realistic. It is a situation that emerged with the law numbered 6360 (Metropolitan Law) published in the Official Gazette on 6.12.2012. With this law, many residential areas that actually had rural characteristics were changed into neighborhoods of districts. With the Metropolitan Law, the legal personality of approximately 16,000 villages was lifted.

According to the Address Based Civil Registry System (ABCRS), the population of Şanlıurfa, which was 1,523,099 people in 2007, increased by 36.18% and reached 2,073,614 (TÜİK, 2020b). This population growth is an outcome of the total fertility rate. In 2017, the total fertility rate was 2.07 children in Turkey as opposed to 4.29 children in Şanlıurfa. Şanlıurfa is the province with the highest total fertility rate in Turkey (TÜİK, 2018). According to the ABCRS data, by the end of 2019, the total population of Turkey was 83,154,997 and the children accounted for 22,876,798 of the total. The child population between 0-17 years of age accounted for 48.5% of the total population of Turkey in 1970; however, this percentage decreased to %41.8 in 1990, and reached 27,5% in 2019. Furthermore, the province with the highest percentage of child population in 2019 was Şanlıurfa with 45.8% (TÜİK, 2020e). In addition, 55.14% of the population of Şanlıurfa province lived in the city and 44.86% in the villages (Şanlıurfa Büyükşehir Belediyesi, 2017). However, there is still a risk of migration from the rural areas of Şanlıurfa to the city.

3. Migration

The main reasons for rural-urban migration are rural poverty and low welfare. Poverty measurement is scrutinized with an extreme emphasis on the economic aspect, often neglecting the social, political, and other aspects. No matter which criterion is chosen, according to TÜİK data, poverty is higher in rural areas and decreases more slowly than in cities. Rural areas meet the food needs of the world. In Turkey, which is a country with such a potential for agricultural production, the fact that the people of the rural areas are in a disadvantaged position in terms of poverty creates a paradoxical situation as social solidarity and cohesion is high in the rural areas (Alemdar, Demirdöğen & Ören, 2012). Where the poverty is concentrated is as important as the severity of poverty. In many underdeveloped countries around the world, poverty seems to be prevalent among landless villagers, agricultural workers, and small landowners in rural areas (Öztürk, 2008).

In the rural areas of Şanlıurfa, agricultural income in areas within the reach of water tends to increase; on the other hand, migration seems to be inevitable especially in steppes and unproductive rural lands outside the reach of water. Migration negatively affects both the dynamics of the city and the family members who migrate. Negative effects present themselves in rural and urban areas not only economically but also socially and culturally.

In a field research on child laborers working in the city center of Şanlıurfa, it was shown that families of 51% of these children had migrated Şanlıurfa. As to the direction of migration, 79.2% of the migration took place from Şanlıurfa rural areas to Şanlıurfa city center. Additionally, 44.2% of the immigrant families owned lands in rural areas. However, these lands cannot be cultivated because they are infertile and outside the reach of water. Children in the study reported poverty (50.9%) and blood feuds (30.2%) as the most influential factors on the migration of their families (Sevinç et al., 2015).

Migration to cities due to poverty in rural areas, especially in barren lands and steppes, will have serious economic, social and cultural ramifications. Prevention of these problems is only possible with on-site development, that is to say, development in rural areas.

4. Use of Steppes and Rangelands

Meadows and rangelands are the cheapest feed sources for sheep and goats, and due to their species characteristics, the feed requirements of sheep and goats are largely met from meadows and rangelands in our country just as in the whole world. Southeastern rangelands display 10-15% vegetation cover. In these rangelands, plants are generally sparse, short, and long-lived, with broad leaves and thorny structures. Bottomlands of southeastern rangelands are suitable for grazing cattle, and other parts for sheep and goats (Kaymakçı et al, 2005).

Small ruminants are among the first animal species domesticated by humans. It is estimated that sheep were domesticated in northern Iraq 10,750 years ago and goats in Anatolia 9,000 years ago. These small ruminants are adapted well to Anatolia's rangelands and degraded lands. In addition, they contribute to the livelihood of poor farmers living in the semi-arid regions and plateaus of our country. These species turn natural vegetation into valuable products such as meat, milk, wool hair (mohair), leather, and manure (Kaya & Yurtseven, 2019).

In mid 20th century, with the influence of large companies processing animal products, animal-based production started to break away from plant production. Animal production was severed from rangelands and turned into concentrated feed consumption, and animals were fed in closed and crowded facilities. This is called industrial/factory agriculture. Industrial agrochemical pesticides are used to describe the farming system using chemical fertilizers. In livestock farming, animals are generally kept inside a facility and a production system away from rangelands is usually applied. For this reason, industrial agriculture is called factory agriculture because of its similarities to the conditions of a factory. However, the main issue here is to

raise big numbers of animals in a narrow area with more concentrated feed rather than the size of the closure (Özkaya & Özden, 2014).

According to TÜİK data, the total number of small ruminants (sheep and goats), which was 32.2 million in 2004, increased by 43.7% in 2018 and reached 46.1 million. In the same period, the number of sheep and goats, which was 1.5 million in the province of Şanlıurfa, increased by 37% to 2.1 million. Şanlıurfa province had approximately 4.5% of the total number of small ruminants in Turkey in the year of 2018 (TÜİK, 2020c). Turkey's semi-arid regions, namely the Eastern and Southeastern Anatolia Regions, are more suitable for sheep and goat breeding than cattle breeding due to the natural rangelands. Sheep breeding contributes significantly to the economy of Şanlıurfa province, which is located in Southeastern Turkey.

There are 279,694 hectares of registered rangelands in the province of Şanlıurfa. Siverek, Viranşehir, and Haliliye are the districts with the largest rangeland area throughout the province. The rangelands in Şanlıurfa, which is under the influence of a semi-arid climate, have been weakened due to disorganized and excessive grazing (Çalık & Polat, 2018). Generally, a form of animal husbandry that relies on grazing is carried out in the region. Rangelands are under the control of large herd owners or regarded as the common property of the village. Destruction caused by overgrazing has led to a significantly reduced yield in natural rangelands (Avcıoğlu & Soya, 1992). Continuous and disorganized grazing has caused severe degradation in rangelands, and green grass yields have decreased to 68 kg/ha and dry hay yields to 20 kg/decares (Şanlıurfa Çevre ve Şehircilik İl Müdürlüğü, 2018; Çalık & Polat, 2019). Controlled grazing and rangeland rehabilitation should be carried out in order to increase the quality of rangelands that has been deteriorating more and more every year due to overgrazing.

5. Problems Regarding Şanlıurfa Steppes and Rangelands

There is a delicate balance between natural resources and the natural environment in which they are located. Misuse and overexploitation that cause the disruption of the climate, soil, water, and the balance of life, that is the ecological balance, eliminate this balance and gradually narrow the habitats of all living things, including humans (Güler & Çobanoğlu, 1997).

The biggest size change occurred in meadows and rangelands, of all basic land assets of Turkey, and the change was never in favor of these lands. In the last 70 years, there has been a 61.5% decrease in natural meadows and rangelands (Gökkuş, 2018).

"Pasture Law" numbered 4342 was enacted in 1998 for the protection of rangelands. The purpose of the law is: "determination of rangelands, summer pastures, winter pastures, and public rangelands and meadows, allocating them to the legal entities of the village or municipalities, utilizing them in line with the rules to be determined, their maintenance and rehabilitation, increasing and sustaining their productivity, supervising their use regularly, protecting them and changing the purpose of use when necessary".

This law put serious responsibilities especially on village people, village headmen, and elders as to the protection of rangelands. Therefore, an auto-control mechanism was developed for the protection of rangelands and steppes in rural areas. However, with the Metropolitan Law in 2012, most of the authorities for the control, protection, and planning of rangelands and steppes were transferred to the municipalities (Mevzuat, 2014). With this law, the auto-control mechanism that had power in the protection of rangelands and steppes also disappeared. Although the establishment of departments of meadows/rangelands and forage plants under the Provincial Directorates of Agriculture and Forestry was a significant initiative in 2018, it was not enough for the solution of the problems.

The first step towards the conservation of rangelands and steppes is to reveal how much of the inventory, that is to say, how much of the land preserves its rangeland and steppic character. In the study conducted when

the Rural Services Institution was active, it was reported that rangelands spanned 2.1 million ha in 1970 in the Southeastern Anatolia Region. According to TÜİK data, rangelands spanned approximately 700 thousand hectares between 1991 and 2019 (Tarım ve Orman Bakanlığı, 2020; TÜİK, 2020d). These official records on rangelands reveal the necessity of taking an inventory.

Encroachment of rangelands and steppes should be prevented. While a strong auto-control mechanism was established in rural areas with the Pasture Law No. 1998, it was unfortunately dissolved with the Metropolitan Law No. 6360. In Şanlıurfa, rangelands and steppes are now encroached by pistachio and olive groves that do not require water and can adapt to barren and nonproductive lands.

In the focus group meetings held in rural areas with dense rangelands and steppes in Şanlıurfa, this situation was expressed extensively by rural residents. The pistachio plantations, which covered 770,690 decares in Şanlıurfa in 2004, grew by 13.6% in 2012 and reached 875,527 decares. With the introduction of the Metropolitan Law, the pistachio plantations grew by 83.1% compared to 2007 and spanned 1,411,482 decares in 2019. Considering the numbers of 2012, the growth rate stood at 61.2%. The olive groves, which spanned 3,350 decares in 2004, grew by 105.5% and covered 68,849 decares in 2019 (TÜİK, 2020d).

6. Alternative Income Sources to Support Conservation of Steppes and Rangelands

Development of the local communities is one of the priority issues in the conservation of steppe ecosystems and biodiversity in Ceylanpınar and Akçakale steppes, which contain protected areas such as Karacadağ steppes, Kızılkuyu Wildlife Reserve, and Tek Tek Mountains National Park in Şanlıurfa. Since these three priority areas represent the entirety of steppes and rangelands throughout Şanlıurfa, recommendations for the alternative income sources were made for the entire province, especially considering these areas in detail.

The main approach for the conservation of steppe ecosystems used as rangelands is to ensure the ecological integrity of ecosystems such as agriculture, forests, and rangelands, and to develop alternative sources of income to increase the welfare of the local people in a way to support the sustainability of the steppes. Since the diversity of the steppes is directly related to climatic factors, soil, geology, topography and social structure of the area, different alternative income sources were suggested for different steppe ecosystems in Şanlıurfa.

6.1. Alternative Income Sources for Karacadağ Steppes

Karacadağ steppes harbor habitats on geological formations of volcanic origin. A significant part of the area is covered with large rocks with a scattered topographic structure. These rocks protect and preserve many endemic plants and other living species. Picking of stones and rocks for agricultural purposes significantly damages the steppe diversity of the region. For this reason, the idea of putting idle agricultural lands back in economic activity, as required by the policies of the Ministry, should exclude natural steppe habitats. Conducting studies on the subjects presented below to diversify the income sources of the people living in Karacadağ steppes will contribute to the sustainability of the steppe ecosystems. Potential and promising income sources in Karacadağ steppes are as follows:

- Supporting Apiculture
- Cultivating Ornamental and Medicinal-Aromatic Plants
- Development of Rural Tourism
- Supporting Family Farming and Local Products
- Supporting Good Agricultural Practices
- Sericulture

6.1.1. Supporting Apiculture

Karacadağ steppes have large areas significant portions of which are not cultivated, and these steppes have potential for successful beekeeping. The absence of pesticide use in the area and the abundance of naturally growing plant species should be considered as a very important opportunity in terms of quality of honey to be produced. In order for the beekeeping activities to be successful and widespread, it is necessary to train the farmers in the region and to create the necessary promotional and marketing environments for the marketing of the honey. Honey and bee products, which will be produced following the trainings to be delivered after examining the areas with apiculture potential and determining the farmers who are willing to practice beekeeping, will contribute to the local development and also serve to conserve the steppe ecosystems.

6.1.2. Cultivating Ornamental and Medicinal-Aromatic Plants

There are many plant species that grow naturally in Karacadağ and have the potential to be marketed and exported as ornamental and medicinal-aromatic plants when cultivated. The Reverse Tulip (also locally called as the weeping bride), which is cultivated in the region and is also a wild plant of the region, is an example that has the potential to be used in the pharmaceutical and cosmetic industry. The production and marketing of bulbs of this plant, which is endemic to volcanic lands at 900 m altitude, can be considered as an important economic output that will increase the income of the local people. Since these are endemic plants, this issue should be evaluated within the framework of the legislation to produce varieties and protect the species and legal arrangements to avoid any damages to the natural populations should be made.

In addition to various nature conservation activities, Turkey also actively promotes conservation of agricultural diversity on-site and under the farmer's circumstances. Thanks to these works, it has been possible to utilize and safeguard the local varieties of plant species and cultivated plants in selected ecosystems, taking into account the threat factors (Tan, 2010).

With a detailed study in the region, the existing ornamental and medicinal aromatic plant species can be determined, and significant contribution can be made to the local development by taking those with economic value into the field. When the ornamental and medicinal aromatic plants are reproduced, this will also support the conservation of the relevant species in the field.

6.1.3. Development of Rural Tourism

Due to the volcanic origin of Karacadağ, the presence of dense stones and rocks on the surface of the land, the chestnut-colored appearance of the soils formed on the land surface, and the presence of different steppe plants that grow depending on the land characteristics present an attractive topographic feature. In addition, as the spatial presence of industry and settlements is very low in Karacadağ steppes, it is an attractive clean region for potential visitors.

A Rural Tourism project can be developed to increase the local income by using these features of the area. Organizing non-motorized vehicle tours and hiking activities in regions with a distinct appearance for rural tourism and marketing local products produced by local farmers in selected stopovers will constitute an important source of income

6.1.4. Supporting Family Farming and Local Products

The basic income of the citizens living in Karacadağ steppes is agriculture, and a very important part of it comes from livestock. Animal husbandry is an important source of income for farmers in this area, which generally does not have electricity and water. Since traditional products such as milk, cheese, and butter produced through animal husbandry cannot be marketed through cooperatives, they generally cannot effectively contribute to

the farmers' economy. Branding, promotion, and marketing support for animal products will be an important initiative in terms of strengthening the local economy. Considering that the Food and Agriculture Organization of the United Nations (FAO) declared 2014 as the "International Year of Family Farming", this system approved by the Ministry of Agriculture and Forestry can be implemented in the region. With family farming projects about branding and marketing of traditional local products, safe food will be produced for the citizens and the income of the local communities will be increased.

6.1.5. Supporting Good Agricultural Practices

Although not so extensively, fields are cleared of stones and rocks in the steppes of Karacadağ for agricultural purposes. Karacadağ rice and tomatoes are the major products of the region. Other extensively grown crops are wheat, barley, lentil, and chickpeas. Within the scope of good agricultural practices, Karacadağ rice and tomatoes can be transformed into safe food products. Another potential product is the mid and late-maturing grape varieties that can adapt to the high elevations of Karacadağ. Grape varieties to be produced within the scope of good agricultural practices can be marketed as fresh, or dried fruits, molasses, soudjouk, crushed table varieties and industrial viticulture products.

In addition to plant products, good agricultural practices can also be applied to animal products and create a safe food production environment desired by both the producer and the consumer and strengthen the local economy.

6.1.6. Sericulture

High-income silkworm breeding in small spaces is an exemplary practice for family businesses. The cultivation of silkworms in steppes using mulberry leaves grown in clean and pollution-free areas will provide an additional source of income for farmers. There is no market problem for cocoons produced from silkworms, which will be fed with mulberry trees that will be grown especially in areas where there is a water source. Sericulture, which will provide an additional income, can be done by means of family labor under appropriate conditions.

6.2. Alternative Income Sources in Ceylanpınar and Akçakale Steppes

In Akçakale and Ceylanpınar districts of Şanlıurfa province, the areas that are not suitable for agriculture, are topographically sloped and have very poor soil resources are used as rangelands, and predominantly animal husbandry is carried out in these areas. Ceylanpınar and Akçakale steppes, which contain protected areas, namely Tek Tek Mountains National Park and Kızılkuyu Wildlife Reserve, are topographically flatter but weaker in terms of soil characteristics and productivity compared to Karacadağ steppes. In addition to weakness of the soil resources in the region where Ceylanpınar and Akçakale steppes are situated, lack of rainfall also affects the yield and diversity of the steppes. Another disadvantage of Ceylanpınar and Akçakale steppes is the large number of neighborhood settlements and overgrazing that damages the steppe ecosystems. Conservation of the steppes in this region depends on controlled grazing. Potential income-generating areas for the Ceylanpınar and Akçakale steppes, which can contribute to the economy of the local people by conserving the steppes, are as follows:

- Development of Rural Tourism
- Supporting Family Farming and Local Products
- Supporting Good Agricultural Practices

6.2.1. Development of Rural Tourism

Besides the white color appearance consisting entirely of limestone formations, different topographic folds give Ceylanpınar and Akçakale steppes a different feature. In addition to the natural and clean soil in the area, the existence of a steppe ecosystem for kilometers is seen as an important attraction area for rural tourism with motorized and non-motorized vehicles. Also, the presence of Bazda Caves in the area in addition to the city of Şuayp and Nemrut ruins adds value to rural tourism. Tek Tek Mountains National Park and Kızılkuyu Wildlife Reserve are prominent protected areas in terms of their natural beauty. Due to the weakness of steppe rangelands in this region, the protection of some parts and controlled grazing in other areas are important in terms of rangeland persistence. Within the framework of steppe conservation, integration of the local farmers into the project will contribute to the local development.

6.2.2. Supporting Family Farming and Local Products

Applying the family farming program of the Ministry of Agriculture and Forestry to the villages in the region, and especially supporting local products, will contribute to local economic growth. Animal husbandry and fruit production in Ceylanpınar and Akçakale steppes are potential practices that can increase the income of the people living in the region. Economic contribution can be made by offering safe foods, which can be achieved through training and guidance after examining animal/plant production potential of the region, to the people visiting the area for rural tourism and other markets. In Ceylanpınar and Akçakale steppes, the plant products that have the potential to be produced and marketed as safe foods are grape, fig, pistachio and olive products.

6.2.3. Supporting Good Agricultural Practices

Livestock breeding and fruit growing are carried out in parts of the large steppes covering most of the region. Areas with no pesticide use or industrial facilities can be considered within the scope of good agricultural practices because they are natural and clean. Growing crops such as peanuts, figs, olives, and grapes in the fields without damaging the steppes can generate income and can be successfully adopted as a good agricultural practice. In addition, the potential of local animal products to be branded and marketed for the visitors of rural tourism is very high. Supports to be given to alternative income-generating products will partially prevent overgrazing by local people.

Biological/agricultural conservation is unlikely to succeed unless rural residents get a share of the benefits and take a greater role in managing their own resources and understanding the impact of these resources on local biological/agricultural diversity (Tan, 2010). The participation of farmers in conservation efforts for steppe diversity is an important element that will support the conservation and maintenance of biodiversity.

7. Supports

The main practices recommended for creating alternative income sources for the people living in the steppe ecosystems of Şanlıurfa province are as follows:

- Apiculture
- Ornamental and Medicinal-Aromatic Plants
- Rural Tourism
- Family Farming and Local Products
- Good Agricultural Practices
- Sericulture

Currently available supports for animal husbandry are given below:

Female Sheep and Goat Support: For female animals aged between 15-90 months (15-90 months), 25 TL is paid per animal.

Shepherd (Herd Manager) Employment Support: Herd manager employment support is granted as 5000 TL/enterprise for herds with 200 and over females (sheep-goat).

Milk Premium: As determined by the Ministry.

Sheep/Goat Waste (after insemination): 150 TL/animal.

Sheep/Goat Protection: 90 TL/animal.

Public Sheep/Goat Breeding Elite Pedigree Support: 70 TL/animal.

Public Sheep/Goat Breeding Basic Offspring Support: 40 TL/animal.

Male Material for Breeding (Ram and Goat) Support: 200 TL/animal.

Utilization of Raw Milk: As determined by the Ministry.

In order to support the local people in areas other than animal husbandry, the adaptation and implementation of alternative income sources should be considered institutionally. To achieve this, public and local non-governmental organizations related to steppe ecosystems can identify potential income-generating practices and take them up with development agencies, the GAP Regional Development Administration, the organizations of the Ministry of Agriculture and Forestry, and international organizations. Following the implementation of the projects for a certain period of time, local people who benefited from the economic contribution will personally own the matter. Respectively, local cooperatives and associations will be established for the marketing of the produced safe food.

8. Constraints

Economic constraints: As mentioned before, there is a serious problem of rural-to-urban migration in the region. This causes a negative structural change for both rural life and the city. The main driving force of migration is absolute and relative poverty in the countryside. Therefore, in the scope of the steps to be taken for the conservation of rangelands and steppes, individuals who live and need to stay in the countryside should be supported financially.

Social constraints: The ability to organize and act together in rural areas depends on individuals' rational thinking and participation, as a democratic right, in the decisions to be taken. However, there is a serious pressure of the feudal structures on the social life in the region. This is the biggest obstacle to participatory organization models and plans.

The studies carried out on Southeast Turkey gained importance especially with the establishment of the State Planning Organization (DPT) in 1961. As a foreign expert in DPT who conducted studies, Frederick W. Frey scanned more than 6,000 people, who were aged over 14 and lived in 458 villages in 1962 by using the nine zonal classes of Turkey formerly used by the agronomists. This review is the most systematic one among all interregional studies in our country today. According to Frey's report, East and Southeast Turkey has five basic

elements in general, which explain the closed communitarian structure of this region. These are respectively as follows (Türkdoğan, 2013):

- Poverty,
- The rural areas are partially disconnected from the outside world, and they are left alone,
- Social inactivity,
- Low literacy rate,
- Domination of a fatalistic worldview based on submission.

Although nearly sixty years have passed since Frey's finding of the fivefold differential qualities, they are still valid for Şanlıurfa. Therefore, any developmental approach to be applied should be planned by considering these elements of the region.

9. Stakeholders

Local people, associations, relevant public and research institutions should work together to conserve steppes and rangelands and ensure sustainability. The list of institutions and organizations that can cooperate in the protection of steppe ecosystems in Şanlıurfa is given below:

- Şanlıurfa Governorship and District Governorships
- GAP Regional Development Administration
- Ministry of Agriculture and Forestry 3rd Regional Directorate
- Şanlıurfa Provincial Directorate of Agriculture of Forestry
- Agriculture and Forestry District Directorates
- Harran University
- Karacadağ Development Agency
- ARDSI Şanlıurfa Provincial Coordinator
- Şanlıurfa Agriculture and Rural Development Support Institution
- Local Governments (Municipalities)
- Şanlıurfa Goat and Sheep Breeders Union
- Siverek Nomads Association
- Ceylanpınar Nomads Assistance and Solidarity Association
- District Chambers of Agriculture

10. Results and Recommendations

The conservation and sustainability of the steppe ecosystems in Karacadağ, Ceylanpınar, and Akçakale steppes of Şanlıurfa depend on the education of the people of the region and the strengthening of their economies.

In the province of Şanlıurfa, low-intensity agriculture is carried out, and there are large habitats for wildlife. Development and implementation of programs for the wild flora, fauna, and other wild organisms and the continuity of habitats should also be the main goal of developmental efforts.

For this purpose, the steppe presence and their distribution should be mapped, and area management strategies should be established accordingly. Another important issue to bear in mind is the preparation of

legislation for the sustainable management of these areas and the institutional ownership and continuous monitoring of the area management.

Considering the topography of Karacadağ, it is necessary to prevent the removal of stones and rocks, which form habitats and serve as protective environments for the steppe flora and fauna. Removal of stones and rocks for agricultural purposes by farmers and in some cases with the support of the State, may damage the ecological balance in the environment.

Protecting the areas that are at risk of overgrazing and destruction and allowing only controlled grazing at a very short time of the year, if necessary, are appropriate measures to be taken. Preferring animals that are less damaging to rangelands instead of those that cause excessive damage and adopting marketing habits by branding the local alternative income-generating products can reduce environmental degradation.

In addition, providing education on steppe conservation starting from primary school level and ensuring the appreciation of the area by the local people will contribute to the conservation of the steppes.

It is a must to support the form of sheep and goat breeding that relies on the ranging system, which has been practiced for centuries, in order to increase the income level in rural areas, to include steppes and rangelands in natural circulation, and above all, to keep the natural balance. Sheep and goat breeding is very suitable for the local lifestyle, steppe and rangeland qualities of the region, and the climatic conditions. In addition, considering the consumption culture of the people of the region (meat, milk, yoghurt, butter, wool, etc.), it can be stated that the marketing risk of animal products by small family businesses may be quite low.

Solving the settlement and education problems of the nomadic families living in the steppes and adapting the nomads to income-generating practices other than grazing will contribute to the conservation of steppes.

The most important step in the development of the rural areas should be the ownership of the matter by local governments, local administrations, politicians and the people living in the region so that the potential issues of steppe conservation and income generation can be put on the agendas. Steppes should not be viewed as idle lands, high accuracy land surveys should be done and legislation that will not disrupt the steppes should be enacted and put into practice.

The following actions should be implemented after creating an enabling environment for effective participation of stakeholders:

1. Institutional ownership of the steppe management.
2. Reviewing and implementing the legislation on steppe conservation.
3. Creating updated maps of rangelands and steppes and monitoring continuously.
4. Determining the number of animals, the number of breeders and feeding-breeding methods in the area.
5. Education of rangeland users and their families, raising awareness.
6. Establishing supports for additional income sources to be created in the area.
7. Processing, packaging, branding and marketing environments under the roof of the associations or cooperatives for local production.
8. Additional payments for animal products produced in these areas in order to limit the number of animals in the steppes.
9. Making legal arrangements on plant products collected from the steppes to control the collection and to encourage processing and packaging on site.
10. Planting forage crops and providing concentrated feed support to livestock owners in order to reduce animal pressure on the steppes

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ANNEX 6. Draft Protocol

THE PROTOCOL FOR THE IMPLEMENTATION AND MONITORING OF "ŞANLIURFA STEPPE CONSERVATION STRATEGY AND ACTION PLAN"

1. PARTIES

This Protocol has been endorsed by Şanlıurfa Governorship, Ministry of Agriculture and Forestry 3rd Regional Directorate of Nature Conservation and National Parks, Şanlıurfa Provincial Directorate of Agriculture and Forestry, and General Directorate of Forestry Şanlıurfa Regional Directorate of Forestry, the address and contact information of which are provided below, within the framework of the conditions stated below.

ŞANLIURFA GOVERNORSHIP

Address : Paşabağı, Cumhuriyet Cd. No:77, 63100 Haliliye/Şanlıurfa
Contact : (0414) 313 18 43

REPUBLIC OF TURKEY MINISTRY OF AGRICULTURE AND FORESTRY 3rd REGIONAL DIRECTORATE OF NATURE CONSERVATION AND NATIONAL PARKS

Address : Doğukent Mah. Fatih Sultan Mehmet Bulvarı No:1 Karaköprü/ Şanlıurfa
Contact : (0414) 313 55 39

ŞANLIURFA PROVINCIAL DIRECTORATE OF AGRICULTURE AND FORESTRY

Address : İmambakır Mahallesi Veteriner Caddesi No: 19 Haliliye/Şanlıurfa
Contact : (0414) 313 27 11

REPUBLIC OF TURKEY MINISTRY OF AGRICULTURE AND FORESTRY ŞANLIURFA REGIONAL DIRECTORATE OF FORESTRY

Address : Doğukent Mah. Fatih Sultan Mehmet Bulvarı No:1 Karaköprü/ Şanlıurfa
Contact : (0414) 347 93 29

2. ABBREVIATIONS AND DEFINITIONS

Hereinafter,
Şanlıurfa Governorship will be referred to as the "**Governorate**",
Ministry of Agriculture and Forestry 3rd Regional Directorate of Nature Conservation and National Parks as the "**3rd Regional Directorate**",
Şanlıurfa Regional Directorate of Forestry as the "**Regional Directorate of Forestry**",
Şanlıurfa Provincial Directorate of Agriculture and Forestry as the "**Provincial Directorate**",
Şanlıurfa Steppe Conservation Strategy and Action Plan as the "**Plan**", and
Şanlıurfa Steppe Conservation Strategy and Action Plan Coordination Board as the "**Coordination Board**" in the text of this protocol.

Şanlıurfa Steppes; refers to the ecosystem covering 39% of the surface area of the province of Şanlıurfa, which predominantly hosts grasses, with scattered trees and bushes and little rainfall, that is of great importance for the nature, culture, and economy of the province with its rich animal and plant diversity,

Plan; refers to the **Şanlıurfa Steppe Conservation Strategy and Action Plan** prepared with a participatory approach to conserve and manage the steppe ecosystems of Şanlıurfa in a sustainable and cooperative manner,

Coordination Board; refers to **Şanlıurfa Steppe Conservation Strategy and Action Plan Coordination Board**, w which will be formed upon the approval of the Governorate, under the chairmanship of the Governor or Deputy Governor, with the participation of representatives from Şanlıurfa Provincial Directorate of Agriculture and Forestry, 3rd Regional Directorate of Nature Conservation and National Parks, Şanlıurfa Regional Directorate of Forestry, Şanlıurfa Provincial Police Department, Şanlıurfa Provincial Command of Gendarmerie, Şanlıurfa Provincial Directorate of Environment and Urbanization National Real Estate Directorate, Provincial Directorate of Coordination and Planning, GAP Agricultural Research Institute Directorate, Şanlıurfa Metropolitan Municipality, GAP Regional Development Administration, Karacadağ Development Agency, Şanlıurfa Sheep and Goat Breeders Union, Provincial Pasture Commission, Provincial Soil Conservation Board, representative of Independent Experts Group and at least two representatives from local NGOs selected from among the

applicants. The Provincial Directorate of Coordination and Planning performs the secretariat services of the Coordination Board.

Technical Implementation Unit; refers to **Şanlıurfa Steppe Conservation Strategy and Action Plan Technical Implementation Unit**, which will carry out the technical studies of the Coordination Board and the implementation of the strategy and will be formed by representatives from the Ministry of Agriculture and Forestry 3rd Regional Directorate of Nature Conservation and National Parks, Ministry of Agriculture and Forestry Şanlıurfa Provincial Directorate of Agriculture and Forestry, General Directorate of Forestry Şanlıurfa Regional Directorate of Forestry, and Şanlıurfa Provincial Directorate of Environment and Urbanization National Real Estate Directorate.

3. SUBJECT

The subject of this Protocol is the establishment of the Coordination Board for the effective implementation of the Plan, and the determination of the principles regarding the implementation and monitoring processes of the Plan in coordination among the Parties whose names are given above.

4. AIM

With this Protocol, it is aimed at developing the governance and cooperation infrastructure for the effective management of the Şanlıurfa steppes, conserving the Şanlıurfa steppe biological diversity (at the ecosystem, species, genetic and ecological diversity levels), improving the use of resources in the Şanlıurfa steppes within the framework of the sustainability principle and improving the livelihoods of the local people who benefit from Şanlıurfa steppes with the effective implementation of the Plan.

5. SCOPE

This Protocol covers the duties and responsibilities of the parties to achieve implementation of the Plan in coordination and cooperation between the institutions and organizations that are parties to this Protocol.

6. LIABILITIES

6.1. Joint Obligations of the Parties:

6.1.1 To ensure the allocation of technical support needed for the implementation of the Plan.

6.1.2. To prioritize and coordinate the Plan in the plans and programs of the relevant institutions.

6.1.3. Ensuring that the priorities of the Plan are included in regional development plans, institutional and sectoral plans and programs and ensuring that they are monitored.

6.1.4. To encourage the development of projects by the relevant institutions within the scope of the Plan.

6.1.5. To cooperate in sharing the information, documents and data for the effective implementation and monitoring of the Plan.

6.1.6. To act together in order to secure the support and participation of other institutions and organizations and to cooperate with them in order to attain the targets of the Plan.

6.1.7. Within the scope of the Plan, to carry out communication activities that concern external parties as well as awareness raising activities for the public upon consensus of the Parties.

6.1.8. To decide on the amendments to be made in the projects in order to solve the issues not included in the Protocol and the problems encountered in practice, by taking the opinions of the parties.

6.2. Duties and Responsibilities of the Governorate:

6.2.1. To establish the Coordination Board under the chairmanship of the Governorate in a way that will ensure the active participation of all interest groups in decision-making processes regarding the steppes in order to implement, monitor and evaluate the Plan.

6.2.2. To fulfill the administrative requirements regarding the duties, working procedures and principles and functioning of the Coordination Board.

6.2.3. To make the necessary arrangements for the effective functioning of the Coordination Board.

6.2.4. To assign the Provincial Coordination and Planning Directorate to the secretarial services of the Coordination Board.

6.3. Duties and Responsibilities of the 3rd Regional Directorate:

6.3.1. To carry out activities and to support other practitioners to achieve the objective of "Conserving the steppe biological diversity of Şanlıurfa" in the Plan.

6.3.2. To assign the necessary personnel for effective management of the Plan, timely organization of activities and strengthened cooperation, and to ensure that the personnel work effectively.

6.3.3. To carry out tasks and procedures related to the protected areas within the framework of the relevant legislation in order to conserve the Şanlıurfa steppe biological diversity and protect wild flora and fauna and priority natural ecosystems outside protected areas.

6.4. Duties and Responsibilities of the Regional Directorate of Forestry:

6.4.1. To carry out activities and to support other practitioners to achieve the objective of "Conserving the steppe biological diversity of Şanlıurfa" within the framework of the responsibilities included in the Plan.

6.4.2. To assign the necessary personnel for the effective management of the Plan, timely organization of activities and strengthened cooperation within the framework of the responsibilities included in the Plan and to ensure that the relevant personnel works effectively.

6.5. Duties and Responsibilities of the Provincial Directorate:

6.5.1. To carry out and report activities to achieve the objectives of "Improving the use of resources in the Şanlıurfa steppes within the framework of the sustainability principle" and "Improving the livelihoods of the local people who benefit from the Şanlıurfa steppes" included in the Plan.

6.5.2. To assign the necessary personnel for the effective management of the Plan, timely organization of activities and strengthened cooperation, and to ensure that the relevant personnel works effectively.

6.5.3. To make decisions regarding the implementation of the relevant sections in the plan, provided that it complies with the framework determined in the plan process.

7. DURATION

This Protocol enters into force on the date it is signed by the parties and is valid for the duration of the Plan (10 years) or until the request of one of the parties to terminate the Protocol is notified to the other parties in writing. In case the plan expires, it ends automatically, or it expires on the date of written notification upon the request of one of the parties.

8. AMENDMENT AND REVIEW

If a party wishes to make changes in all or parts of the provisions of this Protocol, the said request is notified to the other parties in writing in advance and the requested amendments are made by the Governorate, 3rd Regional Directorate, Regional Directorate of Forestry and Provincial Directorate through mutual agreement.

9. RESOLUTION OF DISPUTES

Any disputes arising from the interpretation or implementation of the provisions of this Protocol are resolved through mutual negotiations. For situations that cannot be resolved through mutual negotiation, an "Arbitration Board" to be determined by the parties is formed, and the final decisions of the Arbitration Board are respected.

10. EXECUTION AND ENFORCEMENT

The provisions of this Protocol are executed jointly by the Parties, this protocol, consisting of 10 (ten) articles and …… (..) pages, was signed in 4 (four) copies on…. /… ../… ….

ANNEX: Şanlıurfa Steppe Conservation Strategy and Action Plan

Şanlıurfa Governor	**Ministry of Agriculture and Forestry 3rd Regional Director of Nature Conservation and National Parks**	**Ministry of Agriculture and Forestry Şanlıurfa Provincial Director of Agriculture and Forestry**

Ministry of Agriculture and Forestry
General Directorate of Forestry
Şanlıurfa Regional Director of Forestry

ANNEX 7. List of Villages

List of villages within priority areas determined as a result of Şanlıurfa provincial inventory study

no	District Name	Neighborhood Name
1	Akçakale	Akçaköy
2	Akçakale	Akçalı
3	Akçakale	Akdiken
4	Akçakale	Aksahrınç
5	Akçakale	Aydınlı
6	Akçakale	Ayranlı
7	Akçakale	Ayyıldız
8	Akçakale	Boybeyi
9	Akçakale	Bulutlu
10	Akçakale	Büyüknaneli
11	Akçakale	Büyüktaş
12	Akçakale	Büyüktokaç
13	Akçakale	Çakırlar
14	Akçakale	Cevher
15	Akçakale	Deniz
16	Akçakale	Düzce
17	Akçakale	Edebey
18	Akçakale	Erecek
19	Akçakale	Gölbaşı
20	Akçakale	Güvenç
21	Akçakale	İncedere
22	Akçakale	Kepezli
23	Akçakale	Kılıçlı
24	Akçakale	Mavitaş
25	Akçakale	Mil
26	Akçakale	Narlıova
27	Akçakale	Nimet
28	Akçakale	Ohali
29	Akçakale	Pekmezli
30	Akçakale	Şanlı
31	Akçakale	Şehitnusretbey B.m
32	Akçakale	Seyrantepe
33	Akçakale	Uğurtaş
34	Akçakale	Yağmuralan
35	Akçakale	Yediyol
36	Akçakale	Yeşiltepe Mahallesi
37	Akçakale	Yusufbey
38	Akçakale	Zenginova
39	Birecik	Abdallı
40	Birecik	Adalar Mah.
41	Birecik	Akarçay
42	Birecik	Akpınar
43	Birecik	Almaşar
44	Birecik	Altınova
45	Birecik	Arslanlı
46	Birecik	Aşağı Fatmacık
47	Birecik	Aşağı Habip
48	Birecik	Aşağı Kuyucak
49	Birecik	Aşağıalmaşar
50	Birecik	Aşağıeşme
51	Birecik	Ayran
52	Birecik	Bağlarbaşı
53	Birecik	Bahçeönü
54	Birecik	Bentbahçesi
55	Birecik	Birecik
56	Birecik	Böğürtlen
57	Birecik	Bozdere
58	Birecik	Boztepe
59	Birecik	Çiçekalan
60	Birecik	Çiftlik
61	Birecik	Çoğan
62	Birecik	Cumhuriyet
63	Birecik	Cumhuriyet Mah.
64	Birecik	Dalocak
65	Birecik	Diktepe
66	Birecik	Divriği
67	Birecik	Dorucak
68	Birecik	Duyduk
69	Birecik	Düzlüce
70	Birecik	Fatih Mah.
71	Birecik	Geçittepe
72	Birecik	Günışığı
73	Birecik	Güvenir
74	Birecik	Hocaşerif Mah.
75	Birecik	İnnaplı
76	Birecik	Karababa
77	Birecik	Keskince
78	Birecik	Kömağıl
79	Birecik	Kurtuluş Mah.
80	Birecik	Kurucahöyük
81	Birecik	Melik Zahir Mah.
82	Birecik	Mengelli
83	Birecik	Merkez
84	Birecik	Meteler
85	Birecik	Meyanca
86	Birecik	Meydan Mah.
87	Birecik	Mezra
88	Birecik	Orta Fatmacık
89	Birecik	Özveren
90	Birecik	Pınarbaşı
91	Birecik	Saha
92	Birecik	Sancak Mah.
93	Birecik	Sekili
94	Birecik	Surtepe
95	Birecik	Tüten
96	Birecik	Uğurcuk
97	Birecik	Ünsal
98	Birecik	Yaylacık
99	Birecik	Yeniakpınar
100	Birecik	Yılmaz
101	Birecik	Yukarı Karabaş
102	Birecik	Yukarıhabib
103	Birecik	Yukarıincirli
104	Birecik	Ziyaret
105	Bozova	Altınlı
106	Bozova	Arıkök
107	Bozova	Bağlıca
108	Bozova	Bozova
109	Bozova	Bozova Merkez
110	Bozova	Çakmaklı
111	Bozova	Çatak Mah
112	Bozova	Deliler
113	Bozova	Dutluca
114	Bozova	Dutluk
115	Bozova	Eskin
116	Bozova	Fevzi çakmak Mah.
117	Bozova	Gölbaşı Mah.
118	Bozova	Gözenek
119	Bozova	Hacıköy
120	Bozova	Hacılar
121	Bozova	Irmakboyu

no	District Name	Neighborhood Name
122	Bozova	Kabacık
123	Bozova	Kaçarsaluca
124	Bozova	Karaca
125	Bozova	Karacaören
126	Bozova	Karapınar
127	Bozova	Kargılı
128	Bozova	Kepirce
129	Bozova	Killik
130	Bozova	Kırağılı
131	Bozova	Kırmızıpınar Mah.
132	Bozova	Koçhisar
133	Bozova	Koçveran
134	Bozova	Konuksever
135	Bozova	Küpeli
136	Bozova	Maşuk
137	Bozova	Mülkören
138	Bozova	Örgülü
139	Bozova	Ortatepe
140	Bozova	Özgören
141	Bozova	Söğütlü
142	Bozova	Tatarhüyük
143	Bozova	Türkmenören
144	Bozova	Ürünlü
145	Bozova	Yalıntaş
146	Bozova	Yaslıca
147	Bozova	Yavuz Selim Mah.
148	Bozova	Yaylak B.m.
149	Bozova	Yeşilova Mah.
150	Ceylanpınar	Akbulut
151	Ceylanpınar	Akrepliişletmesi
152	Ceylanpınar	Aşağıkarataş
153	Ceylanpınar	Aydınlık Mah.
154	Ceylanpınar	Aydınlık Mah.
155	Ceylanpınar	Bahçelievler Mah.
156	Ceylanpınar	Barış Mah.
157	Ceylanpınar	Barış Mah.
158	Ceylanpınar	Birlik Mah.
159	Ceylanpınar	Ceylan
160	Ceylanpınar	Ceylanpınar
161	Ceylanpınar	Damlacık
162	Ceylanpınar	Demirel Mah.
163	Ceylanpınar	Evrenpaşa
164	Ceylanpınar	Gümüş
165	Ceylanpınar	Gümüşsuişletmesi
166	Ceylanpınar	İnkılap Mah.
167	Ceylanpınar	Kepez Mah.
168	Ceylanpınar	Maden
169	Ceylanpınar	Mehmet Akif Ersoy Mah.
170	Ceylanpınar	Merkez
171	Ceylanpınar	Mevlana Mah.
172	Ceylanpınar	Ulucami Mah.
173	Ceylanpınar	Yeni Mah.
174	Ceylanpınar	Yenişehir Mah.
175	Ceylanpınar	Yukarıkarataş
176	Ceylanpınar	Yukarıtaşlıdere
177	Halfeti	Altınova
178	Halfeti	Argaç Mah.
179	Halfeti	Argıl
180	Halfeti	Aşağı Göklü
181	Halfeti	Balaban
182	Halfeti	Bozyazı
183	Halfeti	Bulaklı
184	Halfeti	Çakallı
185	Halfeti	Çebekoğlu
186	Halfeti	Çekem Mah.
187	Halfeti	Cumhuriyet Mah.
188	Halfeti	Dergili
189	Halfeti	Durak
190	Halfeti	Dutluca Mah.
191	Halfeti	Erikli
192	Halfeti	Fırat Mah.
193	Halfeti	Fıstıközü
194	Halfeti	Gözeli
195	Halfeti	Gülaçan
196	Halfeti	Günece
197	Halfeti	Gürkuyu
198	Halfeti	Gürlüce
199	Halfeti	Halfeti
200	Halfeti	Halfeti Merkez
201	Halfeti	Hilalli
202	Halfeti	Kalkan
203	Halfeti	Karaotlak Mah.
204	Halfeti	Kavaklıca
205	Halfeti	Kayalar
206	Halfeti	Kurugöl
207	Halfeti	Narlık Mah.
208	Halfeti	Ömerli
209	Halfeti	Ortayol
210	Halfeti	Özmüş
211	Halfeti	Rüştiye Mah.
212	Halfeti	Salmanlı
213	Halfeti	Savaşan
214	Halfeti	Saylakkaya
215	Halfeti	Seldek Mah.
216	Halfeti	Şen Mah.
217	Halfeti	Şimaliye Mah.
218	Halfeti	Siyahgül Mah.
219	Halfeti	Sırataşlar
220	Halfeti	Sütveren
221	Halfeti	Tavşanören
222	Halfeti	Yeni Mah.
223	Halfeti	Yeşilözen Mah.
224	Halfeti	Yukarıgöklü
225	Harran	Aşağıkesmekaya
226	Harran	Aslanlı
227	Harran	Aydıncık
228	Harran	Başkaragöz
229	Harran	Bilgili
230	Harran	Binekli
231	Harran	Büyüktaşlıca
232	Harran	Büyüktürbe
233	Harran	Büyükyıldız
234	Harran	Çaltılı
235	Harran	Ceylangözü
236	Harran	Çiçek
237	Harran	Cumhuriyet Mah.
238	Harran	Damlasu
239	Harran	Demirli
240	Harran	Doğukesmekaya
241	Harran	Emekli
242	Harran	Gögeç
243	Harran	Göktaş
244	Harran	Gözcü
245	Harran	Harran
246	Harran	Harran Merkez
247	Harran	Hz.yakup
248	Harran	İbniteymiye
249	Harran	Karataş
250	Harran	Kaymaklı
251	Harran	Koyunluca
252	Harran	Küçükyıldız
253	Harran	Özlüce
254	Harran	Saide
255	Harran	Şeyhhayatiharrani
256	Harran	Şuayipşehri
257	Harran	Süleymandemirel
258	Harran	Tanınmış
259	Harran	Taylıca
260	Harran	Türkoğlu
261	Harran	Yenice
262	Harran	Yenidoğan
263	Hilvan	Ağveren
264	Hilvan	Akçaören
265	Hilvan	Angaç

no	District Name	Neighborhood Name
266	Hilvan	Arıca
267	Hilvan	Aşağıekece
268	Hilvan	Atamer
269	Hilvan	Aydınlı
270	Hilvan	Bahçecik
271	Hilvan	Barğaç
272	Hilvan	Çakmak
273	Hilvan	Çat
274	Hilvan	Çimdeli Mah.
275	Hilvan	Faik
276	Hilvan	Gelenek
277	Hilvan	Gülaldı
278	Hilvan	Gürgür
279	Hilvan	Hanmağara
280	Hilvan	Hayrat
281	Hilvan	Kadıkent
282	Hilvan	Karaburç
283	Hilvan	Kavalık
284	Hilvan	Kepirhisar
285	Hilvan	Korgun
286	Hilvan	Kovancı
287	Hilvan	Nasrettin
288	Hilvan	Ömerli
289	Hilvan	Ovacık
290	Hilvan	Oymaağaç
291	Hilvan	Saluca
292	Hilvan	Söğütlü
293	Hilvan	Uluyazı
294	Hilvan	Yakınyurt
295	Hilvan	Yeşerdi
296	Merkez	Açıkyazı
297	Merkez	Açmalı
298	Merkez	Ahmet Yesevi
299	Merkez	Akabe
300	Merkez	Akbayır Mah.
301	Merkez	Akmağara
302	Merkez	Akşemsettin
303	Merkez	Altın
304	Merkez	Altınbaşak
305	Merkez	Altıntepe
306	Merkez	Apaydın
307	Merkez	Aşağıhemedan
308	Merkez	Aşağıkoçlu
309	Merkez	Aşağıyazıcı
310	Merkez	Aşıkköy
311	Merkez	Aslanlı
312	Merkez	Atlıkonak
313	Merkez	Ayrancı
314	Merkez	Bağlarbaşı Mah.
315	Merkez	Bahçeli
316	Merkez	Bahçelievler
317	Merkez	Bildim
318	Merkez	Boncuk
319	Merkez	Buğdayhüyük
320	Merkez	Buhara
321	Merkez	Büyükçaylı
322	Merkez	Büyükkargılı
323	Merkez	Büyükmirdesi
324	Merkez	Büyükördek
325	Merkez	Büyükotluca
326	Merkez	Çakmak
327	Merkez	Çalışkanlar
328	Merkez	Çankaya Mah.
329	Merkez	Cavsak Mah.
330	Merkez	Cengiz Topel
331	Merkez	Çiçekli
332	Merkez	Dağyanı
333	Merkez	Dedeosman
334	Merkez	Denizci
335	Merkez	Dernek
336	Merkez	Devteyşti
337	Merkez	Dikme
338	Merkez	Diktaş
339	Merkez	Dilimli
340	Merkez	Dolunay
341	Merkez	Doyumlu
342	Merkez	Düğer
343	Merkez	Ernebi
344	Merkez	Ertuğrul Gazi
345	Merkez	Esentepe
346	Merkez	Estağfurullah
347	Merkez	Eyüpkent
348	Merkez	Eyyübiye
349	Merkez	Eyyüp Nebi
350	Merkez	Gazibey
351	Merkez	Göl
352	Merkez	Gölbaşı Mah.
353	Merkez	Göldere
354	Merkez	Güllübağlar Mah.
355	Merkez	Günışık
356	Merkez	Güvenli
357	Merkez	Güzelkuyu
358	Merkez	Hacıbayram
359	Merkez	Hakimdede
360	Merkez	Haleplibahçe
361	Merkez	Halime
362	Merkez	Hamidiye
363	Merkez	Hamzababa
364	Merkez	Horzum
365	Merkez	Hüyüklü
366	Merkez	İkizce
367	Merkez	İlhan
368	Merkez	İnci
369	Merkez	İncirağacı
370	Merkez	Kadıkendi
371	Merkez	Kaleboynu Mah.
372	Merkez	Kanatlı
373	Merkez	Kaplanköy
374	Merkez	Karahisar
375	Merkez	Karakoyunlu Mah.
376	Merkez	Kargalı
377	Merkez	Karşıyaka Mah.
378	Merkez	Kasımkuyu
379	Merkez	Kayalı
380	Merkez	Keberli
381	Merkez	Keskin
382	Merkez	Kırçiçeği
383	Merkez	Kızılkuyu
384	Merkez	Kızlar
385	Merkez	Koçören
386	Merkez	Köksüren
387	Merkez	Konak
388	Merkez	Korukezen
389	Merkez	Kösecik
390	Merkez	Küçükhan
391	Merkez	Küçükler
392	Merkez	Küçüksenemağara
393	Merkez	Kurtuluş Mah.
394	Merkez	Mance Mah.
395	Merkez	Maşuk
396	Merkez	Mehmetçik
397	Merkez	Merkez
398	Merkez	Millisaray
399	Merkez	Mimar Sinan
400	Merkez	Muradiye
401	Merkez	Öğütçü
402	Merkez	Olukyanı
403	Merkez	Onikiler
404	Merkez	Örenli
405	Merkez	Ortahemedan
406	Merkez	Osmangazi
407	Merkez	Osmanlı
408	Merkez	Parmakkapı
409	Merkez	Refahiye

no	District Name	Neighborhood Name
410	Merkez	Şahin
411	Merkez	Şahinler
412	Merkez	Şair Şevket
413	Merkez	Sancak
414	Merkez	Sarıtaş
415	Merkez	Sarpdere
416	Merkez	Selçuklu
417	Merkez	Sendebelen
418	Merkez	Şenevler
419	Merkez	Seyyit Ahmet Mah.
420	Merkez	Şıh Maksut
421	Merkez	Su Meydanı Mah.
422	Merkez	Tarlabaşı
423	Merkez	Tekyamaç
424	Merkez	Tepe
425	Merkez	Terzi
426	Merkez	Topdağı
427	Merkez	Uğurlu
428	Merkez	Uğurlu
429	Merkez	Ulak
430	Merkez	Ulubatlı
431	Merkez	Uluhan
432	Merkez	Veysel Karani
433	Merkez	Yağmurlu
434	Merkez	Yakubiye
435	Merkez	Yanıkçöğür
436	Merkez	Yarımtepe
437	Merkez	Yavuz Selim
438	Merkez	Yaykılıç
439	Merkez	Yaylacık
440	Merkez	Yemişli
441	Merkez	Yenice Mah.
442	Merkez	Yeşilköy
443	Merkez	Yığınak
444	Merkez	Yolbaşı
445	Merkez	Yolbilir
446	Merkez	Yolyazı
447	Merkez	Yukarıçaykuyu
448	Merkez	Yukarıhemedan
449	Merkez	Yukarıkoçlu
450	Merkez	Yukarıyazıcı
451	Siverek	Altaylı
452	Siverek	Aşağıkarabahçe
453	Siverek	Aşlıca
454	Siverek	Avurtepe
455	Siverek	Azıklı
456	Siverek	Bağlık Mah.
457	Siverek	Bahçe
458	Siverek	Baki
459	Siverek	Bardakçı
460	Siverek	Benek
461	Siverek	Beşyamaç Mah.
462	Siverek	Beybaba
463	Siverek	Böğürtlen
464	Siverek	Bozlak
465	Siverek	Bucak
466	Siverek	Büyükgöl
467	Siverek	Büyükoba
468	Siverek	Çağa
469	Siverek	Çatlı
470	Siverek	Çavuşlu
471	Siverek	Çaylarbaşı
472	Siverek	Çevirme
473	Siverek	Cinhisar
474	Siverek	Damlıca
475	Siverek	Divan
476	Siverek	Dönemeç
477	Siverek	Düğerin
478	Siverek	Eğriçay
479	Siverek	Endarlı
480	Siverek	Erbey
481	Siverek	Ergen
482	Siverek	Erkonağı
483	Siverek	Gaziköy
484	Siverek	Gedik
485	Siverek	Gerçek
486	Siverek	Göğerçin
487	Siverek	Gözcek
488	Siverek	Güllice
489	Siverek	İleri
490	Siverek	İnanlı
491	Siverek	Kalemli
492	Siverek	Kamışlı
493	Siverek	Karabahçe
494	Siverek	Karacadağ
495	Siverek	Karahisar
496	Siverek	Karkaşı
497	Siverek	Karpuzcu
498	Siverek	Kayalı
499	Siverek	Keçikıran
500	Siverek	Konurtepe
501	Siverek	Küçükgöl
502	Siverek	Küptepe
503	Siverek	Kuşlugöl
504	Siverek	Mezra
505	Siverek	Örgülü
506	Siverek	Savucak
507	Siverek	Siverek
508	Siverek	Siverek Merkez
509	Siverek	Soydan
510	Siverek	Sumaklı
511	Siverek	Taşağıl
512	Siverek	Taşhan
513	Siverek	Taşıkara
514	Siverek	Yeniceli
515	Siverek	Yoğunca
516	Siverek	Yumrutepe
517	Siverek	Yuvar
518	Siverek	Zincirliçay
519	Suruç	Bozyokuş
520	Viranşehir	Alakonak
521	Viranşehir	Aslanbaba
522	Viranşehir	Başaran
523	Viranşehir	Binekli
524	Viranşehir	Büyükbardacık
525	Viranşehir	Büyükmutlu
526	Viranşehir	Dedeköy
527	Viranşehir	Defterdar
528	Viranşehir	Engelli
529	Viranşehir	Eskikale
530	Viranşehir	Evcimen
531	Viranşehir	Göktepe
532	Viranşehir	Gömülü
533	Viranşehir	Gürpınar
534	Viranşehir	Kavurga
535	Viranşehir	Kolağası
536	Viranşehir	Küçükdikme
537	Viranşehir	Küçükmutlu
538	Viranşehir	Malta
539	Viranşehir	Sağırtaş
540	Viranşehir	Samanlı
541	Viranşehir	Sepetli
542	Viranşehir	Sözeri
543	Viranşehir	Süleymaniye
544	Viranşehir	Ulaklı
545	Viranşehir	Yağızlar
546	Viranşehir	Yazgüneşi
547	Viranşehir	Yıldız

List of villages around priority areas determined as a result of Şanlıurfa provincial inventory study

no	District Name	Neighborhood Name
1	Akçakale	Aşağıçinpolat
2	Akçakale	Dibek
3	Akçakale	Dorumali
4	Akçakale	Ekinyazı
5	Akçakale	Köseören
6	Akçakale	Mermer
7	Akçakale	Ortaören
8	Akçakale	Sınırgören
9	Akçakale	Uğurhan
10	Akçakale	Yukarıçinpolat
11	Birecik	Aşağı Karkutlu
12	Birecik	Ekenek
13	Birecik	Göktepe
14	Birecik	Güzelyurt
15	Birecik	Karşıyaka Mah.
16	Birecik	Kocaali
17	Birecik	Sumaklı
18	Birecik	Yuvacık
19	Bozova	Argıncık
20	Bozova	Avlak
21	Bozova	İncirli
22	Bozova	Kılıçören
23	Bozova	Kındırali
24	Bozova	Köseşahin
25	Bozova	Küçüktülmen
26	Bozova	Sığırcık
27	Bozova	Soğukkuyu
28	Bozova	Taşlıdere
29	Ceylanpınar	Alaca
30	Ceylanpınar	Aşağıdoruklu
31	Ceylanpınar	Aydın
32	Ceylanpınar	Cumhuriyet Mah.
33	Ceylanpınar	Dikili
34	Ceylanpınar	Menderes Mah
35	Ceylanpınar	Yalçınkaya
36	Harran	Balkat
37	Harran	Buğdaytepe
38	Harran	Bükdere
39	Harran	İmambakır
40	Harran	Tantana
41	Hilvan	Aşağıkülünçe
42	Hilvan	Bağlar Mah.
43	Hilvan	Bahçelievler Mah.
44	Hilvan	Hilvan
45	Hilvan	Hilvan Merkez
46	Hilvan	Karacurun Mah.
47	Hilvan	Malören
48	Hilvan	Yeni Mah.
49	Merkez	Abdurrahmandede
50	Merkez	Akçahisar
51	Merkez	Akpınar
52	Merkez	Aşağıçiftlik
53	Merkez	Asri
54	Merkez	Bakırtaş
55	Merkez	Beyşakası Mah.
56	Merkez	Bezirci
57	Merkez	Bölücek
58	Merkez	Büyükhan
59	Merkez	Çatallı
60	Merkez	Çıralı
61	Merkez	Duruca
62	Merkez	Esemkulu
63	Merkez	Gelibolu
64	Merkez	Gelincik
65	Merkez	Göbekli
66	Merkez	Gölpınar
67	Merkez	Güzelyurt
68	Merkez	Hacılar
69	Merkez	Hancığaz
70	Merkez	Kapaklı
71	Merkez	Karaköprü
72	Merkez	Küçükalanlı
73	Merkez	Külünçe
74	Merkez	Kuşluca
75	Merkez	Lüleci
76	Merkez	Mustafacık
77	Merkez	Ovabeyli
78	Merkez	Payamlı
79	Merkez	Sakça
80	Merkez	Sefalı
81	Merkez	Şeker
82	Merkez	Sumaklı
83	Merkez	Yenice
84	Siverek	Aşağıyalankoz
85	Siverek	Bayırözü
86	Siverek	Canpolat
87	Siverek	Direkli
88	Siverek	Gözelek
89	Siverek	Hamamören
90	Siverek	Narlıkaya
91	Siverek	Oyman
92	Siverek	Peynirci
93	Siverek	Uzunziyaret
94	Siverek	Yücelen
95	Suruç	Aşağıoylum
96	Suruç	Büyükağacı
97	Viranşehir	Ayaklı
98	Viranşehir	Ekinciler
99	Viranşehir	Elgün
100	Viranşehir	Göğerli
101	Viranşehir	Kemerli
102	Viranşehir	Tekneli
103	Viranşehir	Toklu
104	Viranşehir	Uğurlu

Conservation and Sustainable Management of Turkey's Steppe Ecosystems Project

GCP/TUR/061/GFF

For detailed information

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https://www.tarimorman.gov.tr/DKMP

General Directorate of Plant Production
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