IV. IDENTIFICATION OF PRIORITY ISSUES

A summary of the current thought regarding priority issues as derived from the thematic papers concentrating on various ecosystems (Steppe, Forest, and Wetland), and the biodiversity workshop which proposed measures for conserving biodiversity are highlighted below:

High rates of population increase in Turkey starting in the 1920s, sometimes as high as 2.7% per annum, has resulted in an almost 5-fold increase over sixty years, from 13 million to approx. 62 million in 1997. This has put tremendous pressure on land, water resources, and environment. The further combined effects of rapid urbanization and industrialization and associated economic activities has put resulted in levels of utilization above sustainable levels of natural resources use to meet growing needs.

Economic pressures due to population increases in rural areas and lack of legislation preventing the fragmentation of farms into less than optimal units has resulted in decrease of farmers' already low income. This forces the small farmer to illegal forest clearing, heavy grazing, ploughing of rangelands, as well as large scale uncontrolled gathering of plants leading to destruction of biodiversity.

Natural habitat loss has occurred in approximately 40% of the steppe ecosystem in the past fifty years. The destruction of plant cover on forest, grazing and cultivated lands through unsustainable farming and grazing practices, as well as fires has promoted erosion in different intensities, affecting almost 80% of usable lands.

As conditions in the past required some, the interventions made to the natural water regime and over-use of water resources adversely affected the ecologically significant wetlands. Drainage of wetlands, pollution, and unconscious water use, lack of use of appropriate irrigation methods has promoted salination of large tracts of land and resulting in drying of some lakes. The water table has been dramatically lowered in these areas.

Among traditional and unsustainable agricultural practices, ploughing-under of grazing land to gain arable land is one of the most important threats to biodiversity in the steppes. Major losses of natural habitat, has been observed on over 15 million hectares of grazing lands that have been ploughed. Common stubble burning practised to facilitate the next planting is a threat to soil microorganisms, many small animals and insects, reducing the organic content and fertility of soil.

Lack of government policies for land utilization has also adversely affected biodiversity. Agricultural practices are carried on 5.1 million hectares of land belonging to Class V and VI. Much of this land has been gained through ploughing of marginal rangelands and illegal forest clearing. Uncontrolled and communal over-grazing is still destroying the fragile steppe ecosystems as well as putting economic pressure on the rural communities dependent on livestock. Degraded forest areas are generally considered to be "land banks" which small rural farmers readily convert to marginal farms, in many cases with official consent. There has been an irreversible loss of about 460,000 hectares of fertile agricultural land due to a lack of "zoning" regulations or practices in and around urban and metropolitan areas. This coupled with the pressures resulting from illegal housing by

migration from rural areas, as well as the expansion of the industrial and domestic construction, has a major effect on the destruction of natural habitats.

Land speculation on or near coastal regions, specifically the Aegean and Mediterranean, has led to development booms in "secondary housing" sector. The lack of effective institutional and legislative support mechanisms to prevent environmental degradation leading to potential massive losses of natural habitat is a significant threat to biodiversity. Habitat destruction in many coastal areas has led to reduction, or in some cases, extinction of animal and plant species in terrestrial and aquatic ecosystems.

Insufficient control and monitoring of hunting and gathering of wild animals and birds, fishing, as well as uncontrolled digging and selling of medicinal, spice and ornamental plant species are a major threat to the survival of several species. Significant amounts of fauna species are also collected and exported. Lack of adequate control mechanisms to regulate fishing periods and duration in inland and marine habitats have caused significant reductions of biodiversity. Although presently banned, fishing with dynamite is still a threat to fresh water and marine habitats. This widely practiced method has caused significant reductions in the fish population of all seas around Turkey between 1950 and 1980s. In the 1980s incentives provided to fishmeal producers resulted in large-scale overfishing of the Black Sea.

Incentives provided to the agricultural sector without regard to environmental issues have resulted in excessive use of chemicals and fertilizers in some locations, and have occasionally led to improper irrigation practices. As Turkish agriculture moves from predominantly self-subsistence to intensive and irrigated agriculture, the relatively low level and local effects of pesticides and chemical use will become important future threat factors.

Low or non-existent tariffs for water use leads to inefficient irrigation practices causing salination in agricultural lands thus resulting in biodiversity loss. Marine, coastal and wetland ecosystems have been particularly affected by industrial and agricultural pollution, domestic waste and agricultural desiccation.

Imported varieties of crops and modern cultivars of plants as well as exotic livestock breeds have been made widely available since the 1980s. This has increased vulnerability of the native breeds to epidemic diseases. Incentives provided to farmers to switch from native to improved, imported varieties also brought the risk of stress factors towards adversities. Special attention should be paid to provide conservation of native varietal diversity.

The Marmara Region was the first marine and coastal area available for tourism and recreational purposes to be developed and exploited in Turkey. Very rapid and large scale urbanization and industrialization, especially in and around Istanbul, and the Marmara region in general, has resulted in substantial losses of biodiversity due to large scale incentives where, until quite recently to all development including heavy industries without parallel and effective pollution control and monitoring measures. Industrial pollution has severely destroyed suitable habitat and diminished wild life in much of Izmit Gulf, and the Marmara Sea.

Broad incentives given the tourism industry in the 1980s has allowed large scale construction of touristic facilities on previously undisturbed stretches of Aegean and Mediterranean coast, putting pressure on all coastal habitats (e.g. of marine turtles and Mediterranean monk seals), dunes, lagoons, forests, and fertile agricultural land. These pressures pose a number of threats including unsustainable hunting, fishing, and harvesting methods to answer the demands of the tourism market, deforestation to clear land, uncontrolled domestic waste discharges into the sea and rivers, and seasonally variable population pressure.

V. STRATEGY

It is on a background of diminishing biodiversity that the National Biodiversity Strategy is outlined. It has been developed as a guide to implementing the Biodiversity Convention in Turkey by building on existing infrastructure. Many initiatives currently underway to support the obligations of the Convention but changes require greater harmonization efforts among governments and non-government agencies, as well as more integrated resource management approaches that integrate biodiversity conservation and sustainable use of biological resources with economic, social and cultural objectives. The Strategy is based on the following five assumptions.

1. Biodiversity is the Biological Foundation for Sustainable Development

Conserving biodiversity and using biological resources in a sustainable manner are essence of Turkey's effort to achieve sustainable development. This is vital to Turkey because biodiversity ecological sustainability, satisfies human needs and desires, supports local communities, and provides insurance for the future. Failing to conserve biodiversity puts future options, flexibility and economic opportunities at risk and passes enormous costs to future generations. Conserving biodiversity is an investment in the future and makes good business sense.

2. Biodiversity is in Jeopardy

The cumulative impacts of industry, farming, forestry, commercial fishing, expanding urban areas, developing transportation corridors, conflicting Laws, and relatively high per capita consumption of resources have led to the degradation of ecosystems and habitats and the reduction of species and genetic diversity throughout Turkey. Ecosystems and habitats have also been degraded by pollution, the introduction of alien species, and fragmentation resulting from various anthropogenic activities.

3. Conserving Biodiversity is a Shared Responsibility

There currently exists a wide range of policies and programs for the management of biological resources. These efforts provide the Strategy with a foundation, which will build on greater Cupertino and co-ordination. Partnerships involving governments, non-governmental conservation organizations and the private sector, as well as individual and community initiatives will be essential to achieving the goals of the Strategy. The active participation of all in the effort to conserve biodiversity and sustainable use biological resources is vital.

4. Biodiversity Links to Future Prosperity

If we fail to recognize the link between biodiversity loss and human well being, future generations will face significant ecological, economic, social and cultural costs. Degraded forest, agricultural and aquatic ecosystems are less productive and require greater inputs if they are to continue supporting the communities that depend on them. These costs can be avoided however, if we recognize that preventive action and more careful management are more cost-effective in the long-term than relying on rehabilitation programs after the

damage is done. Hopes for future prosperity require that our actions and decisions to reflect the value of biodiversity.

5. Turkey Contributes to Global Biodiversity Conservation

Turkey is at the juncture of three continents and possesses species of each of their flora and fauna. In addition, it is the region from which many of humanities food crops have evolved. Turkey is therefore, proprietor to unique ecological features that contribute to global ecological processes and food security. The Biodiversity Strategy recognizes our responsibility to continue the contribution of Turkey to the global conservation efforts to achieve sustainable development within this wider context.

GOAL 1   Conservation and Sustainable Use

To conserve biodiversity and use biological resources in a sustainable manner.

Ecological Planning and Management

This section outlines elements that are required to conserve biodiversity and use biological resources in a sustainable manner. To achieve Goal 1, an ecological management approach must be implemented based on the following:

A.   - the maintenance of viable populations of native wild flora and fauna;
B.   - the completion of networks of protected areas;
C.   - the restoration and rehabilitation of individual species and degraded ecosystems;
D.   - the development and implementation of integrated resource use policies, plans, legislation and programs for steppe, forested and aquatic areas that support the conservation of biodiversity and sustainable use of biological resources;
E.   - the development and implementation of measures to prevent alien and modified organisms from adversely affecting biodiversity;
F.   - the development and implementation of measures to reduce the adverse impacts of human population growth and settlement on ecosystems, species and genetic resources.

Each of these approaches is outlined below:

A.   Wild Flora and Fauna and Other Wild Organisms

The first element of the ecological management approach is to maintain populations of wild flora and fauna and other wild organisms, in their terrestrial and aquatic ecosystems. Results of conservation biology research indicate that the key to conserving species is to maintain viable populations across their natural geographic range. This is especially important for Turkey because of the numbers of wild species, which provide the basis for modern agriculture. Communities have relied on wild flora and fauna and other wild organisms for food, shelter, clothing, employment, income and spiritual purposes for centuries. In addition, uses of wild flora and fauna and other wild organisms make a significant contribution to economy

Strategic Actions:

1.1 Use ecological planning and management approaches to integrate economic and social objectives with biodiversity conservation objectives;

1.2 Conserve ecosystems and critical habitats to support populations of wild flora and fauna and other wild organisms;

1.3 Through research, increase our understanding of the status, genetic diversity and ecological relationships of species and populations to improve ecological planning and management;

1.4 Ensure that the harvest of wild flora and fauna and other wild organisms is sustainable and minimize adverse impacts of harvesting on non-target species;

1.5 Re-connect fragmented ecosystems where practical and necessary, providing corridors and protecting habitats for isolated species or populations;

1.6 Modify or eliminate elements of government policies and programs that create unintentional adverse impacts on wild flora and fauna and other wild organisms on private and public property;

1.7 Strengthen measures to reduce and eliminate the release of substances, or quantities of substances, that are harmful to ecosystem, species and genetic resources;

1.8 Ensure that both economic and ecological factors are considered in designating pests and in implementing pest management strategies;

1.9 Develop indicators to monitor trends and support the management of wild populations, species, habitats and ecosystems;

1.10 Maintain or improve measures that prevent *in-situ* conserved populations from becoming jeopardized by specimen collecting for *ex-situ* conservation and other purposes;

1.11 Improve the participation of non-government *ex-situ* conservation experts and institutions *in-situ* conservation efforts, and the participation of government agencies in non-government *ex-situ* conservation efforts;

1.12 Development of mechanisms to conserve and use in a sustainable manner trans-boundary wild populations and species, as well as habitats and ecosystems in Cupertino with other countries and organizations;

B. Protected Areas

The establishment and management of protected areas, is the second element of the ecological management approach. Protected areas are important in contributing to the conservation of biodiversity. The definition of a protected area according to the Convention is "a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives". Within that definition, protected areas may be established and managed to achieve one or more diverse objectives. Just as the functions of protected areas vary, so do the levels of protection afforded them. In some, human activities and access are strictly limited, while in others multiple land-use objectives are pursued. Some protected areas fulfill more than one function and are zoned for different levels of protection. Site-specific analysis and establishment of management objectives is required to determine appropriate and compatible uses.

Despite the efforts of governments and non-government organizations, networks of ecological reserves, national parks, managed wildlife areas, protected landscapes and internationally designated sites are not yet complete and not all of our ecological regions are represented in existing protected areas networks.

Strategic Actions:

1.13 Complete Turkey's networks of protected areas representative of terrestrial and aquatic areas;

1.14 Use open and meaningful public and stakeholder participation processes and sound scientific information and traditional knowledge to ensure that social, economic, cultural and ecological factors are considered in the establishment of protected areas;

1.15 Use interim protection measures to ensure that candidate protected areas are not compromised by development;

1.16 Develop comprehensive criteria for determining priority sites, for designation as protected areas, considering criteria such as: the habitat requirements for species-at-risk, endemic species and other critical wildlife habitat; areas supporting high biodiversity; migratory species or representative or unique species; and genetic resources that are of scientific or economic importance;

1.17 Prepare and implement, in consultation with interested stakeholders, legislation and policies, inventories, plans, guidelines, monitoring programs and other measures to support the establishment and management of protected areas;

1.18 Manage, in consultation with landowners, regional and urban governments, local communities, and interested stakeholders, human activities in and around protected areas to minimize adverse impacts on protected area biodiversity and to maintain integrity, using mechanisms such as United Nations Educational, Scientific and Cultural Organization Biosphere Reserve Program;

1.19 Support and promote the development of agreements between governments and local communities, property-owners and/or private corporations for the voluntary allocation of land for conservation purposes;

1.20 Use a variety of mechanisms, including easements and covenants, to secure relatively intact ecosystems within intensively developed areas, and restore or rehabilitate them;

C. Restoration and Rehabilitation

The third element of the ecological approach is restoration and rehabilitation of species and ecosystems.

Species Rehabilitation

Where species are threatened, endangered or extirpated, recovery efforts are undertaken to enhance or re-introduce species, subspecies and populations. These recovery efforts are designed to improve the viability of threatened and endangered species through such actions as: the protection, enhancement, rehabilitation or restoration of habitat; captive-breeding and the transplanting of wild or captive-bred individuals; and the enhancement of public awareness and support.

Strategic Actions:

1.21 Review current legislation to determine if improvements are required in order to protect species-at-risk and their habitats, determine the benefits and costs of a more harmonized legislative approach and pursue harmonization where appropriate and practical;

1.22 Work towards harmonizing methodologies to designate species-at-risk;

1.23 Determine the ecological requirements of species-at-risk and develop, implement and evaluate the success of rehabilitation programs for species that are defined as endangered or threatened, where practical and necessary;

1.24 Consider multi-species/habitat rehabilitation programs for areas that contain more than one species-at-risk.;

1.25 Encourage the involvement of *ex-situ* conservation programs and expertise in the rehabilitation of species-at-risk;

1.26 Continue to participate and support the process to designate endangered and threatened species in Turkey;

1.27 Enhance participation of governments, local communities and landowners in species rehabilitation projects from early planning phases through implementation;

Ecosystem Restoration and Rehabilitation

Ecosystem restoration and rehabilitation can be extremely expensive and is not always successful in fully restoring ecosystems. Preventing ecosystem degradation is, therefore, critical. The cost and scientific and technical implications of each proposed restoration or rehabilitation program must be critically evaluated to determine the program's long-term value in conserving biodiversity.

Strategic Actions:

1.28 Using objective criteria to select sites for restoration and rehabilitation, such as the habitat requirements of species-at-risk, develop and implement restoration or rehabilitation plans for degraded ecosystems, where practical and necessary;

1.29 Develop improved approaches and technologies for ecosystem restoration and rehabilitation, evaluating the potential impacts of programs on ecosystems and species to ensure that desired outcomes are achievable without causing negative impacts;

D. Sustainable Use of Biological Resources

The fourth element of the ecological management approach is the development and implementation of sector-specific policies, plans and programs. The sustainable use of biological resources and ecosystems is essential to the well being of society and is necessary to conserve biodiversity. There are numerous policies, laws and programs in effect in Turkey to support the sustainable use of biological resources.

In the following section on potential strategic actions apply to all renewable resource sectors.

Strategic Actions:

1.30 Modify, develop and implement government policies and programs to ensure that they support the sustainable use of biological resources, the conservation of soil,

water, air and other essential resources, and the long-term integrity of supporting ecosystems;

1.31 Improve methods and technologies that support the sustainable use of biological resources and eliminate or minimize adverse impacts on biodiversity resulting from resource use;

1. 32 Develop and implement education and training programs for policy-makers, property owners, lease operators, resource managers, and others involved in the management, development and use of biological resources, to ensure that they have access to the best available information, methods and technologies;

1.33 Develop and improve methods of monitoring ecosystems and biological resources to support the sustainable use of these resources;

1.34 As possible, provide information to assist consumers in understanding the impacts and implications of their decisions and to promote the sustainable use of biological resources and ecosystems;

1.35 Improve the effectiveness of public participation in developing policies for the use of biological resources using a variety of measures, such as integrated decision-making processes and conflict resolution mechanisms;

1.36 Develop linkages and ensure co-ordination between the implementation processes for the Turkish Biodiversity Strategy and other related national initiatives such as agricultural strategies or national development plans;

Agricultural Areas

The agriculture and agri-food industry is a major contributor to the Turkish economy. Agriculture depends upon biological resources and ecosystems that provide the raw materials to produce new and better food plants, breeds of animals, and other products. International access to diverse genetic resources is necessary for us because many crops and domestic animals originated in other parts of the world. Also, wild varieties of many food crops are endemic to Turkey. We must continue to be involved in global co-operative efforts in conservation and exchange of genetic material in order to maintain a broad genetic base that will ensure our competitive position in the international market place. Genetic resources can be preserved in specialized facilities, on farms or in the wild. Efforts are underway in Turkey to preserve rare breeds of domesticated plants and animals in on-farm condition. Optimizing the use of agricultural lands is an essential element of agricultural sustainability, which can also significantly contribute to the conservation of biodiversity by maintaining or enhancing crop production without expanding or polluting the agricultural land base.

The world's soil resources are constantly being removed mainly by unconscious agricultural purposes. In this process, the lack of educated management of resources in noteworthy. Most of the soil resources have been exhausted as the general public, are unaware of correct agricultural practices throughout the world. Therefore, we must consider the new agricultural techniques and ecological agriculture becomes quite a new concept for Turkey.

Ecological agricultural practices have been developed as an alternative to other agricultural methods that require a high input of fertilizers. Artificial agricultural techniques destroy plant products as well as the micro fauna and flora in the soil. This in turn produces side effects for human and animals. Therefore, we should improve the

ecological agricultural system and moreover, we should integrate the principles of this system into the present farming system.

High agricultural yield is generally associated with intensive use of inputs. Therefore the soil and water resources are highly polluted around the intensive agricultural areas, especially with climates suitable to get more than one crop a year, giving limited chance to other organisms to survive. Some of the highly productive agricultural areas such as Çukurova and Menemen area are now prone to salination problem. Not only the natural resources, but also the agricultural products are highly polluted by heavy utilization of chemicals, fertilizers and hormones.

Ecological agriculture, which simply means utilizing only natural inputs during agricultural operations is a environment friendly alternative to intensive agriculture. Ecologically produced products are becoming more and more popular among the European countries. This system should be one of the major research subjects in Turkey for environmental, biological and economical considerations.

It is essential that individual landowners, local communities responsible for communal grazing lands and agricultural producers continue to be involved in the development and implementation of environmentally sustainable agricultural policies and programs.

Strategic Actions:

1.37 Assess current and proposed major government agricultural policies and programs to ensure that ecological, economic, social and cultural objectives are considered;

1.38 Maintain, adjust or develop economic incentives that promote the conservation of biodiversity and sustainable use of biological resources on agricultural lands;

1.39 Inventory and evaluate genes, populations, species and ecosystems to ensure the conservation of natural control systems and the identification of species for use as bio indicator agents;

1.40 Develop and use agricultural pest-control products and integrated pest management approaches to minimize negative impacts on non-target ecosystems and those species approaching or already at risk;

1.41 Conserve biological resources that are essential to agriculture, including domesticated animals, plants and microbial biota, and their wild relatives, with priority given to genetic material that is most at risk;

1.42 Develop and implement programs that promote and facilitate the co-existence of wild flora and fauna and other wild organisms and their habitats in agricultural landscapes;

1.43 Through research, training and technology transfer, facilitate the further adoption of environmentally sustainable farm practices, including those that:
   ♦ reduce soil erosion, surface and ground water contamination and air pollution; and
   ♦ lead to the identification of productive soil types in relation to specific crop requirements.

1.44 Encourage agricultural producers to develop farm management plans that support the conservation of biodiversity and the sustainable use of biological resources;

1.45 Facilitate the sharing of experiences and expertise among farmers to promote management practices that favor the conservation of biodiversity and the sustainable use of biological resources;

1.46 Maintain or develop policies or programs that conserve biodiversity by supporting the sustainable use of steppes;

1.47 Identify and conserve areas that support native species and communities or could contribute to systems of protected areas, especially in intensively developed areas in accordance to the directions provided in the section on protected areas of the Strategy;

1.48 Maintain or develop *in-situ* and *ex-situ* conservation mechanisms to support the conservation and sustainable use of biological resources essential to agriculture by:

- ◆ determining and acting upon regional, national and international priorities for the conservation of biological resources, research and training, and the establishment of facilities; and

- ◆ continuing to support existing national, regional and international *ex-situ* conservation institutions.

1.49 Develop programs that involve the participation of the private sector in sustainable use of biological resources;

Aquatic Ecosystems

Aquatic areas include marine and wetland ecosystems. For centuries humans have used these ecosystems for food, recreation, sewage treatment, transportation, irrigation, cultural and spiritual purposes. Surface and underground waters are used as sources of potable water, and access to water has been a determining factor in the location of towns, cities, farms and other settlements. Globally, aquatic ecosystems produce the largest single source of animal protein for human consumption. Aquatic resources are also used for medicines and as raw material for manufacturing industries. Marine ecosystems play significant ecological roles, exerting influence over global processes such as the absorption of atmospheric carbon dioxide. While humans have benefited enormously from aquatic ecosystems, they have seldom used these resources in a sustainable manner. Some aquatic ecosystems have been stressed by commercial exploitation, long-range transport of contaminants, loss of habitat and by both local and regional developments.

Significant reductions in population size and distribution can erode genetic diversity and ultimately lead to the extinction of species. In communities that depend upon biological resources, significant reduction in aquatic resource harvesting levels can devastate local economies and social well being. Turkey continues to work with other countries, regional and global agencies to address international aquatic resource issues.

Strategic Actions:

1.50 Assess current and proposed, major government aquatic-resource policies and programs to ensure that ecological, economic, social and cultural objectives are considered;

1.51 Use objective criteria to select sites for restoration and rehabilitation, and restore or rehabilitate degraded aquatic ecosystems if and where practical. Enable a scientific infrastructure towards restoration practices with benefiting from international

experience of other countries on analysis, assessment and development of an effective monitoring system for sites that require restoration and rehabilitation;

1.52 Implement biological and ecological inventory, monitoring programs and classification systems to determine appropriate biodiversity conservation measures and provide a framework for managing aquatic resources on a sustainable basis;

1.53 Increase our understanding of the structure, function and composition of aquatic ecosystems to enhance conservation and management practices;

1.54 Enhance efforts to conserve aquatic biodiversity by protecting species and ecosystems at risk, endemic species, vulnerable spawning areas and unique and representative ecosystems;

1.55 Establish reserves to conserve aquatic biodiversity and contribute to networks of national and international protected areas in accordance with the strategic directions provided in the section on protected areas of this Strategy;

1.56 Develop training programs to promote the use of equipment and harvesting procedures that eliminate, or reduce to acceptable levels, the adverse impacts on populations, species, habitats and ecosystems, including the capture of undersized fish, incidental catch, and habitat destruction;

1.57 Reduce to acceptable levels, or eliminate, adverse impacts of alien species introductions on aquatic biodiversity resulting from aquaculture projects, fisheries enhancement programs and interbasin transfers of water and organisms;

1.58 Investigate and use alternative aquatic resource-management mechanisms to enhance the integration of social, cultural, economic and ecological objectives;

1.59 Participate in international fisheries conservation efforts to develop and encourage the implementation of ecological management approaches, and to develop sustainable use agreements;

1.60 Conserve ocean-based fisheries resources by:
- ♦ taking effective action to address overfishing;
- ♦ improving the enforcement of existing rules; and
- ♦ enhancing international collaboration in the development of conservation/sustainable use policies.

1.61 Support the development of international agreements to encourage the development of biological reference points in fisheries co-operatives that provide a basis for the conservation and sustainable use of harvested species;

1.62 Enhance communication with those who possess traditional knowledge to improve information sharing, and to promote the conservation of biodiversity in aquatic ecosystems and the sustainable use of aquatic biological resources;

1.63 Maintain or develop *in-situ* and *ex-situ* mechanisms to support the conservation of biodiversity and the sustainable use of biological resources in aquatic ecosystems by:
- ♦ determining and acting upon priorities for the conservation of biological resources in aquatic ecosystems, research and training, and the establishment of new facilities; and
- ♦ determining national and international priorities for alien species, research and training.

Forest Ecosystems

Forest cover is still decreasing in Turkey and is essential to the survival of many species. As well as being ecologically significant on a global scale, forests are important

contributors to our economic and social well being. Being able to access and enjoy forested areas greatly improves our quality of life. While it is difficult to assign a monetary value to the social and cultural benefits of forests, these extremely important values must be considered in determining appropriate forest uses. Given the importance of forests to Turkey and the diverse uses that occur in these areas, it is essential that integrated management practices are developed and implemented. Management decisions must be based on our best understanding of forest ecosystems and the implications of various forest uses. A variety of mechanisms, such as land-use planning, forest management plans and guidelines are needed to solve conflicts between stakeholders.

Strategic Actions:

1.64 Assess current and proposed major government forest plans, policies and programs to ensure that ecological, economic, social and cultural objectives have been considered;

1.65 Increase our understanding of forest biodiversity by enhancing ecological site classification systems and the inventory and monitoring of commercial and non-commercial species, soil, soil biota, climate and other biophysical characteristics;

1.66 Improve our understanding of forest ecological functions by determining the benefits of ecological services provided by forest ecosystems, monitoring the ecological responses of forests to resource management practices, and by carrying out other activities;

1.67 Eliminate or reduce to acceptable levels, the adverse impacts of forest management practices on watersheds, soils, adjacent ecosystems and species;

1.68 Continue to develop and implement revised forest management practices that provide for the sustainable use of forests while maintaining the regional forest mosaic. Use practices that are as consistent as is practical, with natural disturbance regimes, patterns and processes;

1.69 Provide improved training opportunities for forest scientists, managers and operators to increase their understanding of forest ecosystems;

1.70 Use integrated pest management approaches that eliminate or reduce to acceptable levels, adverse impacts on non-target species and ecosystems;

1.71 Inventory and evaluate forest ecosystems and species to ensure the conservation of natural biological control systems, and to identify species for use as bio indicator agents;

1.72 Develop and implement programs to conserve the genetic diversity of tree species *in-situ* conditions;

1.73 Establish and maintain forest seed and clonal gene banks to conserve the genetic diversity of tree species;

1.74 Allow fire, disease, succession and natural forest regeneration to maintain biodiversity, if and where compatible with forestry and other land use objectives and where natural regeneration can be effective;

1.75 In consultation with national and regional governments, landowners and other stakeholders identify and correct policies that discourage the conservation of biodiversity and the sustainable use of forest biological resources on private lands and common lands;

1.76 If and where practical, restore or rehabilitate degraded forest ecosystems that will make a significant contribution to conserving biodiversity;

1.77 Establish protected areas to conserve representative and critical forest ecosystems as part of an overall network of protected areas in accordance with the strategic actions provided in the section on protected areas in this Strategy;

1.78 Develop and implement forest management plans and codes of practice to promote the sustainable use of forest ecosystems and the conservation of biodiversity;

1.79 Support research, management and policies that assess and promote new uses of timber and non-timber products from forests to increase the economic return from forest ecosystems, while conserving biodiversity;

E. Biosafety: Alien Organisms and Modified Organisms

Alien Organisms

Alien organisms are species that enter ecosystems beyond their natural range through deliberate or inadvertent introduction by humans. Organisms that have extended their natural range without human help are not considered alien. The term "alien" is not meant to imply positive or negative impacts on biodiversity. Many alien organisms have been intentionally introduced into Turkey and have provided important economic and social benefits.

Other alien organisms that have been introduced have caused harmful effects to biodiversity. Harmful alien organisms may affect biodiversity through species displacement, disease, parasitism, hybridization, predation or habitat destruction. This results in the decline or extinction of native or endemic populations and the transformation or degradation of ecosystems. Control or elimination of harmful alien organisms is necessary to conserve biodiversity and prevent the further destruction of ecosystems.

Strategic Actions:

1.80 Take all necessary steps to prevent the introduction of harmful alien organisms and eliminate or reduce the adverse effects of those already introduced to acceptable levels by:

♦ developing and implementing effective means to identify and monitor alien organisms;

♦ determining priorities for allocating resources for the control of harmful alien organisms based on their impact on biodiversity and economic resources, and implementing effective control or, where possible, eradication measures;

♦ identifying and eliminating common sources of unintentional introductions;

♦ developing national and international databases that support the identification and anticipation of the introduction of potentially harmful alien organisms in order to develop control and prevention measures;

♦ ensuring that there is adequate legislation and enforcement to control introductions of alien organisms, and improving preventative mechanisms such as screening standards and risk assessment procedures; and

♦ enhancing public education and awareness of the impacts of alien organisms and the steps that can be taken to prevent their introduction;

◆ reviewing the existing legal regulations regarding the introduction of alien species to ecosystems;

1.81 Promote research into methods and approaches that improve the ability to assess whether or not alien organisms will have an adverse impact on biodiversity;

Modified Organisms

Modified organisms resulting from biotechnology offer the potential for important economic and social benefits as well as means to address existing ecological problems affecting biodiversity. However, these organisms also have the potential to adversely affect populations, species and ecosystems.

Strategic Actions:

1.82 Prevent the introduction of potentially harmful modified organisms by:
◆ ensuring that there is adequate legislation and enforcement to control introductions or escapes of modified organisms, and improving preventative mechanisms such as screening standards and risk assessment procedures;
◆ developing national and international database capacities that enable Turkey to identify and anticipate the introduction of modified organisms;
1.83 Promote research into methods and approaches that improve our ability to assess possible adverse impacts of modified organisms on biodiversity;

F. Population and Settlement

The people of Turkey are becoming increasingly aware of the adverse impacts of man activities and resource consumption patterns on ecological, economic, social and cultural systems. Thus, population policies must be developed to reflect societal objectives and ecological carrying capacity.

In addition to population growth, high consumption rates particularly in developed countries are stressing global ecosystems, influencing them negatively.

In Turkey, human settlement has had a significant adverse impact on ecosystems, species and genetic diversity. Agriculture, forestry, commercial fishing, urban development, mining, oil and gas use, the development of transportation infrastructure and other anthropogenic activities have each had varying degrees of impact on our resources.

Ecosystem degradation has resulted from either from pollution and the introduction of alien organisms, or through habitat fragmentation caused by activities such as forest and agricultural developments, highways and urban sprawl. Fisheries are all under ecological stress resulting directly and indirectly from human activities.

Strategic Actions:

1.84 Use a variety of planning and approval mechanisms that provide for effective public and stakeholder participation to reduce negative impacts on biodiversity that may arise from human settlement activities;

1.85 Develop and implement educational and incentive programs to encourage biodiversity conservation on private and common lands;

1.86 Promote the acceptance of the requirements of the Convention within the urban development sector through the voluntary establishment of environmental management codes and the provision of relevant biodiversity education material;

1.87 Determine and mitigate, where practical, cumulative impacts of anthropogenic activities on ecosystems and biological resources;

1.88 Support research on ecological carrying capacity and the way that changes in biodiversity, population density, land and resource development and resource consumption patterns and rates affect one another;

1.89 Reduce resource consumption by promoting initiatives based on the "Three R's" Reduce, Reuse and Recycle and by increasing awareness of the value of biodiversity and the lifestyle choices that cause its decline;

1.90 Work through appropriate national and international organizations to improve dialogue and communication and to encourage research on the linkages among population, social issues, consumption and production of resources and ecological carrying capacity in order to formulate sustainable development policies;

GOAL 2   Ecological Management

To improve understanding of ecosystems and increase our resource management capability.

The focus of Goal 2 is to identify methods for enhancing our ecological management capacity by emphasizing management and planning at the terrestrial and aquatic ecosystems. In order to conserve biodiversity and use biological resources in a sustainable manner, there must be continuous improvement of understanding of ecosystems and planning and management capabilities.

A.   Improving Ecological Management

Research

In order to develop an ecological approach to the management of natural resources, it is necessary to understand ecosystems better and to raise the awareness of the public, on the impacts of anthropogenic unsustainable use of natural resources on biodiversity. An effective research program for biodiversity conservation must be coordinated and prioritized.

Research can lead to alternative uses of biological resources, identify new opportunities for conservation incentives, and provide the basis for further economic diversification and investment.

Strategic Actions:

2.1 Focus research to improve policy development and to integrate multiple land and resource-use objectives, with emphasis on:

- increasing our understanding of the impacts of anthropogenic use on ecosystems and biological resources;
- providing support for multi-disciplinary research that improves the integration of social, economic and environmental policies;
- developing methodologies that permit an improved evaluation of biodiversity;
- developing problem-identification measures and adaptive management techniques to enhance management performance;
- developing "Conflict Resolution Models" to resolve conflicts between various stakeholders;

2.2 Focus research to increase understanding of ecosystems and capacity to manage anthropogenic use of ecosystems and natural resources by:
- examining the function and composition of ecosystems and the ecological benefits they provide;
- developing cost-effective biodiversity inventory and monitoring methods and programs, including rapid assessment procedures and biodiversity indicators, to detect and monitor changes to ecosystems, species and genetic diversity;
- evaluating and improving methodologies currently in use to determine sustainable natural resource use levels;
- improving *in-situ* and *ex-situ* conservation methods, especially to enhance the restoration or rehabilitation of populations, species or ecosystems at risk;
- exploring new and sustainable uses of biological resources for economic applications;

Traditional Knowledge

Many communities, families and individuals have accumulated traditional knowledge that is relevant to the conservation of biodiversity and the sustainable use of biological resources. This knowledge may relate to harvesting resources, planting crops, using natural herbs and other material for medicinal purposes, and understanding changes that have occurred to local biological features and landscapes. Traditional knowledge can provide an excellent basis for developing conservation and sustainable use of biological resources as well as developing policies and programs.

Strategic Action:

2.3 Identify mechanisms to use traditional knowledge, innovations and practices with the involvement of the holders of such knowledge and practices, and encourage the equitable sharing of benefits;

Inventories: Landscape, Species and Genetic Levels

Comprehensive and reliable biological inventories are a fundamental requirement for the conservation of biodiversity and the sustainable use of biological resources. They provide the foundation for:
- determining the status of ecosystems, species and genetic resources;
- setting sustainable harvest rates for biological resources;
- conducting research;
- developing resource- and land-use plans;

• assessing the impacts of resource management practices on ecosystems.

Most of Turkey's trees, flowering plants, mammals, birds, fish, reptiles and amphibians are relatively easy to observe and have, therefore, been discovered, named and classified, but more needs to be done. Some institutions have well-developed inventories, especially for species that are subject to anthropogenic use. However there are large gaps in our knowledge of organisms that are more difficult to observe and classify, such as viruses, bacteria, fungi, protistae and insects. Terrestrial- and aquatic-level inventories will be effective in supporting the development of land-use and natural resource management policies and plans, while more detailed inventories will be required to support more refined planning and site-specific developments. Inventories must be designed to achieve specified objectives during their construction phases.

Strategic Actions:

2.4 Improve biophysical inventories at ecosystem, species and genetic levels by:
- ♦ developing and applying regionally integrated classification systems for terrestrial, freshwater and marine areas to provide a framework for the collection of information and the management of natural resources;
- ♦ linking biological inventories and soil, climate and other surveys;
- ♦ conducting biological inventories, based upon jurisdictional priorities, that take into consideration vulnerable, threatened and endangered species and ecosystems, critical habitats, little-studied taxonomic groups, taxonomic groups of economic importance, areas of high diversity and areas where rural and urban development and anthropogenic disturbance are the most significant;
- ♦ encouraging the use of innovative and traditional methods to increase knowledge about the diversity of micro-organisms, their functional roles in ecosystems, and their potential economic uses;

2.5 Enable institutions to conduct biological and biophysical inventories by:
- ♦ developing ways to collectively identify funding sources and determine priorities for inventories;
- ♦ ensuring that there is sufficient expertise available to conduct inventory work, including taxonomists, ecologists, geneticists and other experts;

2.6 Support efforts to improve the reliability and cost-effectiveness of biological inventory methodologies and technologies;

2.7 Maintain the capacity of arboretum and other institutions to scientifically describe, classify and store collected specimens, as well as maintain their ability to effectively disseminate data and information;

2.8 Continue to establish networks to develop databases for the conservation of vulnerable, threatened and endangered species and ecosystems;

2.9 Improve inventories to determine the genetic diversity of domesticated and non-domesticated biological resources to maximize the conservation and economic use of genetic resources;

2.10 Collaborate with other countries to inventory populations and habitats of trans-boundary species, particularly those that are at risk;

B. Increasing Resource Management Capability

Data and Information Management

Many governmental and non-governmental institutions collect data and information necessary for the conservation of biodiversity and the sustainable use of biological resources. However, collected data and information are often not available because of exchange problems between management systems or because individuals are not aware of potentially useful sources. Also, the full range of data including biological, physical, chemical, social, cultural and economic data, required by natural resource planners and managers is often unavailable. Effective management systems are required to ensure that data and information are available, to those who need them. Enhanced co-ordination among agencies and individuals could solve many data and information communications problems, although access to some information may need to be restricted in order to protect certain populations, species or ecosystems.

Strategic Actions:

2.11 Investigate and implement means to enhance the collection, sharing, analysis, scope and dissemination of data and information required to conserve biodiversity and sustainable use biological resources;

2.12 Promote the continuing development of information management systems such as Geographic Information Systems (GIS) and other technologies that facilitate the rapid analysis and dissemination of biological and biophysical data and information;

2.13 Work towards ensuring that data and information generated by public-funded studies are made available to potential users through appropriate sharing arrangements;

2.14 Participate in the development and maintenance of harmonized international databases;

2.15 Ensure the training of governmental staff that takes part in decision-making process; and enable them with the knowledge to analyse scientific data and ensure its integration with the plans and policies developed;

Integrated Planning and Ecological Management

Ecological planning especially at terrestrial and aquatic habitat levels, are essential for implementing an ecological management approach. Such planning processes should integrate ecological, social, cultural and economic objectives. They should also provide for public and stakeholder participation to prevent and resolve conflicts among various stakeholder groups. Integrated planning and ecological management enhances the effectiveness of environmental assessments.

Ecological planning and management efforts have been successfully implemented in many regions of the country. For example, land use planning and ecological management has been effective in determining appropriate land uses in urban areas, and has led to the establishment of protected areas. However, biodiversity conservation considerations are not yet fully integrated into these activities. Enhanced collaboration between all

institutions responsible for planning is required to achieve the conservation of biodiversity and the sustainable use of biological resources.

Strategic Actions:

2.16 Design and implement improved ecological planning and management at the terrestrial and aquatic habitat levels to conserve biodiversity and use biological resources in a sustainable manner;

2.17 Improve ecological planning to assist in the conservation of biodiversity and the sustainable use of biological resources, especially in or near sensitive aquatic habitats, in areas that support populations of endemic, threatened or endangered species, and in areas that are undergoing significant changes resulting from anthropogenic activity and development;

2.18 Use ecological or land-use planning to help identify and establish protected areas and to ensure that the ecological integrity of established protected areas is maintained;

2.19 Strengthen planning processes to work toward the conservation of biodiversity and the sustainable use of biological resources of international importance ecosystems and trans-boundary rivers and aquatic ecosystems, such as large lakes and rivers;

2.20 Strengthen international planning efforts and other processes to eliminate or reduce adverse impacts on biodiversity and the sustainable use of biological resources, resulting from activities in other countries, with special consideration placed on migratory species, aquatic ecosystems and airborne pollutants;

Environmental Impact Assessments and Emergency Planning

Effective mechanisms must be implemented to provide for mitigation of the adverse impacts on biodiversity through adequate assessment that could result from proposed projects. Environmental impact assessments are used to determine the effects of projects that have the potential to significantly affect the environment. In addition to implementing environmental impact assessments, the Convention requires all contracting parties to promote arrangements for emergency responses to events, such as coastal oil spills, that present a grave and imminent danger to biodiversity beyond national jurisdictions.

Strategic Actions:

2.21 Use environmental impact assessments to determine potential impacts of development on ecosystem, species and genetic resources and to recommend appropriate ways to avoid or reduce them to acceptable levels;

2.22 Continue to examine and develop ways to harmonize environmental impact assessments nationally and internationally, if and where appropriate;

2.23 Enhance efforts to determine and eliminate or reduce to acceptable levels, cumulative environmental effects that result from human activities on ecosystems, species and genetic diversity. (This includes developing early-warning indicators and working towards incorporating cumulative environmental impacts into relevant national and international agreements);

2.24 In cupertino with other countries, maintain or develop environmental disaster prevention plans, procedures and other measures, and respond to events that pose grave and imminent risk to national, international and trans-boundary biodiversity;

2.25 Maintain or develop arrangements to notify and respond with appropriate action to events originating in Turkey that could significantly affect the biodiversity of other countries;

Training

"Ecological Planning and Management" training programs, tailored to the needs of policy-makers and natural resource managers are required. Training will also help policy-makers understand the implications of policies and programs before they are implemented.

Training and information programs are also important to keep personnel informed of improved management practices, new technologies, and the appropriate use and application of traditional knowledge. Highly trained, professional staff will be required in order to implement certain provisions of this Strategy. Taking advantage of existing facilities and expertise as much as possible and enhancing communication between educators and institutions will also be required.

Strategic Actions:

2.26 Improve coordination and efficiency of training and information programs by strengthening relationships among educational institutions, government institutions, local communities, private property owners, non-government organizations, business and industry;

2.27 Strengthen training programs in: ecological management, sustainable use, inventory methodologies, monitoring, data management, multi-disciplinary research, management of protected areas, environmental education, environmental impact assessment and emergency planning;

C. Monitoring

Monitoring programs are required to detect and measure changes in biodiversity, to understand the functional linkages in ecosystems better, and to evaluate the success or failure of biodiversity conservation and sustainable use policies and programs. Effective monitoring programs must be integrated and ecologically based, in order to determine and implement appropriate management practices.

Strategic Actions:

2.28 Develop and implement monitoring programs to:
- better understand the functional linkages in ecosystems;
- evaluate the success or failure of biodiversity conservation and policies and programs for the sustainable use of natural resources;
- better integrate the monitoring of biological and non-biological parameters;

2.29 Develop and use biodiversity indicators that are meaningful, scientifically defensible, practical and compatible with regional, urban, national and international programs;

2.30 Identify appropriate locations to establish base monitoring stations;

2.31 Target monitoring programs on ecosystems, species and populations that are currently under the most stress;

2.32 Develop and implement measures to monitor the *ex-situ* collection of biological resources;

2.33 Use volunteers in monitoring programs where appropriate and practical;

GOAL 3 Education and Awareness

To promote an understanding of the need to conserve biodiversity and use biological resources in a sustainable manner.

The loss of biodiversity is a global problem requiring solutions based on individual and community participation and commitment. If national and international efforts to conserve biodiversity and use biological resources in a sustainable manner are to succeed, individuals and communities must understand and appreciate the value of biodiversity and the causes of its decline. It has been demonstrated that education is the most cost-effective means of producing long-term social change. Education allows individuals to make lifestyle and consumption decisions that are sensitive to biodiversity conservation and sustainable use objectives. Biodiversity education and public awareness should be strengthened in a variety of ways to reach people across the country.

Strategic Actions:

3.1 Develop and deliver effective biodiversity education and awareness programs by:
- evaluating and monitoring the level of public understanding and knowledge regarding biodiversity conservation and the sustainable use of biological resources in order to design and target effective education and awareness programs;
- integrating themes and messages about biodiversity conservation and the sustainable use of biological resources into the formal educational curriculum;
- raising awareness towards biodiversity conservation and sustainable use of biological resources by building on existing interpretive programs in national parks and other protected areas, and at libraries, museums, zoos, aquariums and botanical gardens;
- strengthening coordination among educational institutions, government departments, museums, zoos, aquariums, botanical gardens, private sector and other organizations;

3.2 Provide opportunities for professional development for those involved in teaching environmental education;

3.3 Create educational material that emphasizes measures that can be taken to prevent or reduce impacts on ecosystems and biological resources;

3.4 Promote public awareness of biodiversity issues, conservation and sustainable use requirements and changes in the state of biodiversity and improvements in natural resource management practices through periodic reports, fact sheets, electronic information systems and other communication material and methods;

GOAL 4 Incentives and Legislation

To maintain or develop incentives and legislation that supports the conservation of biodiversity and the sustainable use of biological resources.

Incentives

Often, environmental conservation has been seen as a cost to society, rather than an investment in the future, and the benefits of biodiversity conservation have not been properly understood in Turkey. This has led to economic decision-making process has not adequately reflected the value of biodiversity. However, there is now growing recognition that economic activities must be pursued in harmony with Earth's carrying capacity. Government and international policies have influenced, and will continue to influence, the conservation of biodiversity and the sustainable use of biological resources. If the objectives of the Convention are to be achieved, all government policies will need to be supportive of biodiversity conservation and the sustainable use of biological resources.

Economic instruments should be developed to influence consumer behaviour in ways that support biodiversity conservation and the sustainable use of biological resources. Economic instruments have successfully been used to change consumer behaviour in many areas. For example, water consumption has been significantly reduced, by charging consumers for the volume of water they use. Economic instruments such as "green taxes" can be used to influence consumer behavior. Deposits on containers have been successful in promoting recycling.

Strategic Actions:

4.1 Maintain or develop and use appropriate social/economic policies and incentives as a means of promoting the conservation of biodiversity, the sustainable use of biological resources and identifying new sustainable use practices of biological resources;

4.2 Enhance our capacity to assign a value to biodiversity, and increase efforts to construct an ecological pricing system that considers ecosystem degradation, loss of species and genetic diversity and natural resource depletion, and complements the gross national product;

4.3 Investigate the impact of proposed biodiversity conservation policies and programs on economic activities in order to develop effective conservation measures that enhance positive impacts and minimize negative impacts on the economy;

4.4 Determine and make available to policy-makers the estimated costs associated with unsustainable use of biological resources, including the costs of ecosystem degradation and the depletion of species and populations;

4.5 Ensure that economic, trade, conservation and sustainable natural resource-use laws and policies are mutually supportive;

4.6 Encourage the participation of property owners and financial resource-developers in biodiversity conservation programs;

Legislation

Legislation is an important tool that can contribute to achieving the conservation of biodiversity and the sustainable use of natural resources. Legislation is most effective

when it is developed and used as part of an overall strategy that includes planning systems, education and incentives.

Legislation regarding biodiversity is implemented by the various orders of government. Implementing the Convention does not require changing the constitutional division of powers in Turkey.

Strategic Actions:

4.7   Examining the current legislative regimes with respect to the goals of this Strategy, and taking the necessary and practical steps towards creating an improved legislative framework by the jurisdictions that support the conservation of biodiversity and the sustainable use of biological resources;

4.8   Determining whether harmonization among Turkish jurisdictions and jurisdictions of other countries related to biodiversity conservation oriented legislation is necessary to remove duplication, power conflicts and to fill gaps and working towards harmonization where appropriate and practical;

GOAL 5   International Cupertino

To work with other countries to conserve biodiversity, use biological resources in a sustainable manner and share equitably the benefits that arise from the utilization of genetic resources.

In ratifying the Convention, Turkey has demonstrated a commitment to the international effort to conserve biodiversity and use biological resources in a sustainable manner. The international dimension of the Convention, addresses the need for countries to co-ordinate and organize efforts on a global scale, while respecting each country's own priorities and sovereignty over its biological resources. The international community will need to assist some countries in improving their capacity to address the objectives of the Convention. Turkey realizes the importance of building partnerships with other countries by developing and sharing knowledge, expertise, technologies and genetic resources in a fair and equitable way.

Turkey is co-operating with neighbouring countries and beyond, on a broad range of activities in order to conserve biodiversity and use biological resources in a sustainable manner. The Global Environment Facility (GEF) provides new and additional funding to address global environmental concerns, including biodiversity loss. Turkey will seek and allocate resources and technical assistance to support sustainable development, including projects and programs designed to reap long-term benefits from the sustainable use of their biological resources.

Strategic Actions:

5.1   Participate in international efforts to co-ordinate and enhance activities related to the conservation of biodiversity and the sustainable use of biological resources by:

♦ encouraging the implementation and integration of the objectives of the Convention;

♦ participating in international bodies to consider the development of international agreements to complement the Convention;

♦ considering the objectives of the Convention in the context of, and in relation to other international agreements;

5.2 Explore mechanisms to facilitate the transfer of environmentally reliable technologies to promote the conservation and sustainable use of biodiversity by:

♦ encouraging collaboration to develop new approaches in technology transfer among the private sector, government, non-governmental organizations;

♦ facilitating access to specimens of Turkey's genetic resources on mutually-agreed terms, and under the understanding that arrangements will differ for each sector using these resources;

5.3 Cooperate with the international community to explore mechanisms to encourage the private sector, government, local communities, non-government organizations to share benefits derived from using genetic resources provided by other countries;

5.4 Encourage the participation of stakeholders, including non-government organizations, the private sector and local communities in international efforts to implement the Convention;

5.5 Incorporate biodiversity conservation and the sustainable use of natural resources into the criteria for choosing, designing, and evaluating development projects undertaken using external development assistance funding;

GOAL 6 Implementation

Provide Implementation of the Strategy

The Turkish Biodiversity Strategy is a key building block in the efforts to achieve sustainable development. Ultimately, the degree to which the Strategy is able to enhance the national capacity to conserve biodiversity and achieve sustainable development will be the measure of its success. Specifically, we will know that the Strategy is making a difference if:

● the value and importance of biodiversity is reflected in the actions and decisions of all sectors of society, from international corporations to individual consumers, private property owners, and various orders of government;

● we are no longer planning and making decisions based exclusively on a species-by-species or sector-by-sector basis, but are practicing integrated ecological management;

● opportunities are being created through technological innovation, application of traditional knowledge, scientific discoveries and new applications of sustainable use;

- we are maintaining biodiversity for future generations and contributing to conservation and sustainable use efforts worldwide through financial assistance, knowledge, expertise and exchange of genetic resources.

Local and indigenous communities, businesses and industries, conservation groups, research and educational institutions, and individuals as well as governments must be involved in the implementation of the Strategy. Success will require a coordinated approach based on cross-sectoral Cupertino and partnerships among all orders of government, non-government organizations, private sector interests and individuals.

Numerous policies, plans and programs have been developed in Turkey to enhance the conservation of biodiversity and to achieve the sustainable use of biological resources. Jurisdictions have developed conservation and sustainable development strategies and policy statements regarding the conservation of wetlands and other aquatic ecosystems, wildlife, fisheries, forest and agricultural resources, and protected areas.

Existing conservation and sustainable development strategies, sectoral policies and programs, regional plans, and many other mechanisms can be used for the time being, to help implement the Strategy. Mechanisms to more specifically address the provisions of this Strategy will be brought on stream according to the policies, priorities, constraints and needs of each jurisdiction.

Strategic Actions:

To ensure effective and coordinated implementation of the Turkish Biodiversity Strategy in accordance with each jurisdiction's priorities and fiscal capabilities government will:

6.1 Strengthen the implementation and monitoring of the Turkish Biodiversity Strategy;

6.2 Report to the Conference of the Parties on policies, programs, strategies and actions that are underway or will be undertaken to implement the Strategy;

6.3 Maintain or develop mechanisms to provide opportunities for meaningful participation of urban governments, local communities, interested individuals and groups, business interests, and the scientific community in implementing the Strategy;

6.4 Co-ordinate elements of the Strategy that require national participation in order to help develop international positions on biodiversity matters and oversee the development of national and international progress reports;

6.5 Ensure that there are mechanisms in place that permit and encourage non-government organizations and members of the public to participate in the implementation of the Strategy and the development of international biodiversity agreements;

6.6 Report periodically to the people of Turkey and the international community on the status of Turkey's biodiversity;

6.7 Challenge and invite the whole of the Turkish society, to contribute toward achieving the goals of the Strategy and take action to conserve biodiversity and to use biological resources in a sustainable manner;

6.8 Explore mechanisms to provide opportunities for participation of local communities in implementing the Strategy through a variety of mechanisms.

VI. PRIORITY ACTION PLAN

As the Strategy has a broad content, the actions to be taken need to be prioritized. In the context of prioritization, not only the cost of proposed actions but also, the cost that would result from not taking those actions will be of importance.

Actions are constantly underway to conserve and use biodiversity in a sustainable manner in Turkey as a matter of routine. However this priority action plan adds to those efforts and is the first attempt at undertaking a comprehensive approach to deciding on the actions necessary to ensure that biodiversity is adequately conserved and used in sustainable ways.

Five thematic papers from the working groups (Steppe Ecosystem, Forest Ecosystem, Wetland/Marine Ecosystem, Legal Regulatory Aspects, and NGOs and Public Awareness) provided the basis for a deciding on the strategy and recommending the necessary actions. The major results of this process are as follows:

1. Review of the existing legal and institutional framework for the purpose of conservation and sustainable use of biodiversity, identifying the gaps and inconsistencies in the legal framework and making the necessary re-arrangements for achieving a more effective conservation and management under the coordination of MOE.

2. Endorsement of integration of purposes and principles of conservation and sustainable use of biodiversity into sectoral activities, plans and programs.

3. Develop environmental public awareness through Cupertino with all stakeholders (agencies, NGOs, media); Ensure participation of local communities and NGOs in preparing and implementing management plans; Promote natural resource management awareness as a means of biodiversity conservation;

Actions outlined for immediate pursuit are as follows:

1. Review of the existing legal and institutional framework for the purpose of conservation and sustainable use of biodiversity, identifying the gaps and inconsistencies in the legal framework and making the necessary re-arrangements for achieving a more effective conservation and management under the coordination of MOE.
2. Establish and operate Clearing-house Mechanism to ensure information exchange and collaboration between national and international parties; under the coordination of MOE
3. Initiation of conservation programs and integrated ecosystem management plans for biodiversity rich areas particularly habitats of threatened, endangered and endemic species with the view of conservation of biodiversity and sustainable use of its components.
4. Spread training programs throughout the public, on conservation concepts, principles and sustainable use of natural resources.
5. Improve institutional capacity of NGOs and the related institutions on biodiversity conservation and sustainable use of natural resources.

6. Develop legal and institutional frameworks to prevent the introduction of alien species and to create an inventory of and to control those, which are already introduced posing a threat to ecosystems.

7. Develop and encourage the use of incentive measures for conservation and sustainable use of biodiversity both sectoral and ecosystem level.

8. Determine indicators of biodiversity, to monitor status and trends of natural resources.

9. Establish and maintain legal, administrative and institutional mechanism to prevent and control adverse affects of genetically modified organisms on conservation and sustainable use of biodiversity taking also into account human health.

10. Develop an inventory with respect to the characteristics of Turkish biodiversity as a whole that will enable the conservation of these important ecological criteria in order to establish a "Protected Areas Network" from these representative ecosystems.

Implementation of the Action Plan will be iterative with two yearly progress reports providing feedback, which will allow adjustments to be made to the strategy and action plan.

All international conventions on nature conservation and related national plans and programs should be implemented and followed up. In order to implement the Action Plan it is necessary to prepare a legislative framework.

GENERAL ACTIONS and RECOMMENDATIONS

- Capacity and capability of the MOE, MARA, MOF, ASPA, and MOC should be strengthened, to provide effective Cupertino in all activities of these institutions.

- Concepts of the conservation and sustainable use of biodiversity as well as ecosystem and precautionary principles should be integrated into all sectoral plans and programs by means of the national development plans of the State Planning Organization and implementation process of the "National Environmental Action Plan" and "National Plan for *in-situ* Conservation of Plant Genetic Diversity" and national preparations of other international strategic initiatives of "Agenda 21" and the Convention on Biodiversity.

- The national legislation should be harmonized with the international conventions that Turkey is party to; legal arrangements towards implementation of Paris, Bern, Ramsar, CITES, Biodiversity and UNCCD Conventions shall be completed with great urgency.

- Revise existing legislation to incorporate new concepts related to ecological assessments as well as economical considerations to include terminology such as ecosystem integrity; sustainable management; indicators of biodiversity; precautionary approach; genetic resources; *in-/ex-situ* conservation, habitat, basin management; alien species, genetically modified organisms.

- Review, revise and redefine protected area classifications to meet international norms and classifications in order to enable more effective conservation and management.

- Legislation to control adverse effects of genetically modified organisms on conservation and sustainable use of biological diversity should be prepared immediately. The related institutional and administrative arrangements must be done in due course including establishment of "National Risk Assessment Center" under MARA in cooperation and collaboration with other related institutions risk-monitoring and management.

- Planning for protected area management should be based on *in-situ* conservation approach and should allow for establishment of buffer zones, core zones and ecological impact area.

- Develop conservation and monitoring programs for biodiversity conservation in areas that are not protected.

- Establish guiding regulations on areas of natural importance particularly marine, coastal zones, mountainous areas and rivers with respect to all activities, and enforce them through related governmental agencies.

- A comprehensive inventory of Turkish flora and fauna including rare, endemic,

threatened and endangered species should be completed.

- Inventories of habitats of national and international importance with respect to wild fauna, flora species and populations and rare and threatened habitats in order to broaden the Protected Areas Network should be completed and a database system must be prepared.

- The inventory results mentioned above should be made available to all public and private agencies, and monitoring and evaluation systems, especially for those that are threatened or endangered, should be established.

- *In-situ* conservation (Protected Areas) of mountain, steppe, wetland and forest ecosystem elements should be reinforced through establishment of *ex-situ* programs (i.e. nurseries, wild life breeding areas, seed production facilities, seed gardens, clone parks and gene banks.)

- Take all appropriate measures to regulate intentional or accidental introduction of alien species to the wild and also endeavour to implement all possible measures to eradicate and control the species that have already been introduced when after scientific assessment.

- Universities should support research, education and training in biodiversity and its conservation in their related and appropriate departments.

- Regulations for, marine and inland water fishing must be reviewed by MARA, MOF, Prime Ministry Undersecretariat for Maritime Affairs (PMUMA) and MOE.

- Allocation of Treasury land to industrial, tourism, or urban development should take into account biodiversity of potential lands.

Forest Ecosystems:

- The concept of forest ecosystem should be re-defined in legislation

- Constructions that threaten the biological integrity within forests should be moved or removed.

- The number of Protection Forests should be increased.

- Management strategies for Protected Areas should be reviewed and developed in line with the goal of conservation of biodiversity.

- Incentives should be provided for Agro-forestry.

- Training and education programs and curricula forestry engineers, forest guards, afforestation technicians and similar forestry related occupations should be revised.

- The principles of conservation of biodiversity should be applied in forestry activities

such as: silviculture, afforestation, physical constructions in forest areas, harvesting activities and utilization of lands classifies as "forest" for non-forestry related activities.

- Classification for Protected Forest Areas and Production Forests should be reformulated to take conservation of biodiversity into account.

- Forestry production/management plans should take into account biodiversity and conservation of natural resources.

- Functional Planning to be incorporated into Forest Management Planning.

- Clear-felling method should be avoided where possible during rejuvenation activities, and if and where not, should be practiced taking biodiversity into account.

Wetland ecosystems:

- Active participation in Mediterranean Wetland Initiative (MEDWET) and the related database system shall be put into function.

- There is a need to revise national policy and legislation for conservation of wetlands to provide consistency with other existing legislation, and conformity to international agreements. Revisions must be made to all related legislation, to strengthen protection of wetlands.

- With the perspective of functions and benefits received from wetlands, to enable conservation and wise-use the necessary legal, institutional and technical arrangements must be initiated by the related institutions.

In this context, for the following acts that may result in degradation of the ecological characteristics of wetlands;
  - Article 9 of the "Act on Malaria Eradication" number 7402
  - Act number 5516, regarding "Drainage of Swamps and on the Use of Land Gained by Drainage"
There shall be attempts for their review and rationalization.

- Principle of "Polluter Pays" must be applied to those discharging pollutants.

- A National RAMSAR Committee and formal relations with the RAMSAR Bureau should be established.

- Conservation and wise use of wetlands should be integrated into national, provincial and local planning and decision- making on land use, subterranean management, catchment/river basin and coastal zone planning and all other environmental planning and management

- Considering the "Guide for Preparation of Wetlands Management Plans", which has been prepared by Ramsar Bureau, and starting with the wetlands of Ramsar List,

management plans for wetlands of international importance shall be developed and implemented with the participation of institutions, organisations and NGO's concerned.

- Education programs aiming at increase in the public awareness the importance, functions and values of the wetlands shall be developed; for this purpose, attempts shall be made so as to gain the support of media and broadcasting organisations.

- Research and Development; Gaps in data must be filled through completion of a thorough inventory of wetlands, their flora and fauna, and present conditions thereof. Populations of indicator species must be researched.

- An inventory of pollution sources, their pollutant levels, areas affected must be determined and possibilities for treatment and recycling sought. Recycled water use for purposes of irrigation should be considered on a large scale.

- Effective land-use planning must be developed, including buffer zones between agricultural areas and neighboring wetlands to prevent damage caused by agro-chemicals.

- Wetlands in need of restoration and rehabilitation should be identified and implemented necessary measures. Technical infrastructure towards Wetland restoration must be constructed.

- Inventory and database of invasive species which pose a threat to wetlands and wetland species should be establish and the necessary measures for their control and eradication should be identified.

Steppe ecosystems:

- Areas destroyed by mining should be restored and rehabilitated.

- Agricultural practices should be reviewed for impact on land. Public awareness, extension services and policy making, specifically for land use regulation and enforcement there of, should be directed to alleviate the pressures resulting from such practices (e.g. plowing parallel to the slope, stubble burning, excessive irrigation, badly maintained terraces, etc.). Ministry of Agriculture and Rural Affairs (MARA) through its provincial and county directorates should promote sustainable land use.

- NGO involvement at the local and national level should be promoted and supported through their inclusion in public awareness campaigns.

- To achieve improved input to be used the damage done or to minimize the adverse impact on the environment, Cupertino between farmers, MARA local staff and representatives of fertilizer, pesticide and herbicide producers should be promoted.

- Carrying capacity, animal type to be supported, potential for rehabilitation and

farmer training in rotational grazing should be evaluated and applied, given the size and diversity of problems in Turkey, under site-specific conditions.

- Use of rangelands and mountain pastures for ecotourism and the use of settlements should be carefully planned and implemented. Local monitoring capacity (technical, staffing, training) and authority (support through legislative measures and local political will) should be in place before implementation begins.

- Research and conservation studies for Economic Valuation should be undertaken for wild relatives of agricultural plants in steppe and mountain areas.

- Steppe areas that need to be protected must be identified and the protected area network of steppe lands shall be improved.

- Conservation programs towards flora and fauna species specific to steppe and mountain ecosystems should be prepared.