

**The National Action Programme To  
Combat Desertification and Mitigate  
the Effects of Drought  
of Islamic Republic of Iran**

**Compiled by:**  
Forest, Range and Watershed  
Management Organization

**Tehran 2004**

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Effects of Drought

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## **FOREWORD**

The Islamic Republic of Iran(I.R. of Iran) has a land area of 1648195 km<sup>2</sup> and a population of 65 million and lies in a strategic, geo-political and geo-economic region of the Middle East, north of Persian Gulf and south west of Asia.

The I.R. of Iran has a variety of geographic and climatic conditions, which contribute to its ecological diversity(fauna and flora). Due to its location in earth's arid belt and its specific synoptic conditions, Iran is exposed to the occurrence of drought, an issue emphatically mentioned by the United Nations Convention to Combat Desertification(UNCCD), particularly in the vast central plateau and east and south of the country where the rotation cycle is relatively short.

Rapid growth and improper distribution of Iran's population in the desert and semi-desert regions together with the occurrence of drought has exacerbated land degradation. As a result, the Government was prompted to take extensive measures through public participation to

conserve natural resources and protect residential and industrial infrastructures in 14 provinces, exposed to desertification.

The macro policies of the natural resources sector are set out in the following guidelines stipulated by the leader of the I.R of Iran:

- Strengthen national will for revival of natural resources and development of vegetation cover aiming at conservation and increased productivity as well as the promotion of production through raising public knowledge and participation.
- Identify and conserve soil and water resources as well as flora and fauna genetic resources to increase soil nutrients, optimize utilization based on capacity of resources and give effective support for investment.
- Revise the natural resources exploitation system and control the factors contributing to its unsustainability.
- Expand applied research into the environmentally and genetically sound technologies including flora and fauna species most suited to local conditions and establish a database and information system to update statistics.

Ministry of Jihad Agriculture as the National Coordinating Body (NCB) has formulated the National Action Programme to Combat Desertification and Mitigate the Effects of Drought of I.R. of Iran based on the above-mentioned macro-policies and in the framework of the objectives of the Convention through a participatory process in collaboration with all relevant organizations, research centers and international agencies whose valuable and enthusiastic cooperation is much appreciated.

***Mahmoud Hojjati***  
***Minister of Jihad Agriculture***

## **INTRODUCTION**

Following the severe droughts and famines in the late 60s and early 70s in Africa, desertification was unanimously recognized as a global issue, and the United Nations mandated UNEP to devise programmes to fight desertification and land degradation in Asia, Africa, Latin America and Europe.

Despite successful implementation, these programmes were not coordinated on a larger scale.

In a review made by the UN organization, it was indicated that these measures were not proportionate with the needs of international community and did not encompass appropriate solutions in addressing the issue of desertification.

The United Nations Conference on Environment and Development (UNCED), or Rio Summit, in 1992 adopted Combating Desertification in Agenda 21, in particular Chapter 12, and requested the international community to deal with desertification and drought. As a result, an intergovernmental committee was formed to prepare a draft document of the UNCCD. The committee finalized the draft document on 17<sup>th</sup>

### **Box 1: Chapter 12-Agenda 21**

*Desertification is land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors including climatic variations and human activities. Desertification affects about one sixth of the world's population, 70 percent of all dry lands; amounting to 3.6 billion hectares, and one quarter of total land area of the world. The most obvious impact of desertification, in addition to widespread poverty, is the degradation of 3.3 billion hectares of the total area of rangeland, constituting 73 percent of the rangeland with a low potential for human and animal carrying capacity, decline in soil fertility and soil structure on about 47 percent of the dry land area constituting marginal rainfed cropland; and the degradation of irrigated cropland; amounting to 30 percent of the dry land areas with a high population density and agricultural potential.*

June, 1994 after three years of extensive work.

The UNCCD encourages the international community to confront the existing challenges of desertification in a bid to attain the goals of sustainable development and Millennium Development Goals. Based on Article (5) of the Convention, the Parties agreed to construct their policies, strategies and priorities in the format of a National Action Programme to fulfill the objectives of the Convention.

The I.R. of Iran has made a strong political commitment to the Convention in an effort to present a brand new solution to reverse the desertification trend.

The present programme entitled "The National Action Programme to Combat Desertification and Mitigate the Effects of Drought" has been prepared using a bottom-up approach through the participation of local communities, NGOs, as well as local and national authorities and is characterized by high enabling drive of the local communities, strong participatory nature in terms of decision making, planning and implementation as well as flexibility.

### **Box 2: Article 5**

*In addition to their obligation pursuant to article 4; effected country Parties undertake to:*

- (a) Give due priority to combating desertification and mitigating the effects of drought; and allocate adequate resources in accordance with their circumstances and capabilities;*
- (b) Establish strategies and priorities; within the framework of sustainable plans and/ or policies; to combat desertification and mitigate the effects of drought;*
- (c) Address the underlying causes of desertification and pay special attention to the socio-economic factors contributing to desertification process;*
- (d) Promote awareness and facilitate the participation of local populations; particularly women and youth; with the support of non-governmental organization; in efforts to combat desertification and mitigate the effects of drought; and;*
- (e) Provide an enabling environment by strengthening; as appropriate; relevant existing legislation and; where they do not exist; enacting new laws and establishing long-term policies and action programmes.*

Forest, Range and Watershed Management Organization wishes to express its gratitude for the sincere collaboration of all relevant organizations and institutes in the formulation of the NAP and hopes that in the light of the implementation of the programme, practical measures could be taken to mitigate the effects of drought and control desertification at national, sub-regional and regional levels.

**Mohammad Samadi**  
**Deputy Minister & Head of Forest,**  
**Range & Watershed**  
**Management Organization**

## **CHAPTER 1**

### **General Overview of I.R. of Iran**

#### **1-1- Geography**

The I.R. of Iran covers a land area of 1648195 km<sup>2</sup>. It is located in the southern part of the temperate zone between 25° 00' up to 47° 39' north and 44° 02' up to 63° 20' east.

Iran is bordered by Turkmenistan, the Caspian Sea, Azerbaijan and Armenia in north. Over 900 km of Iran's northern border is coastline. Afghanistan and Pakistan are on Iran's eastern border with, the Persian Gulf and the Sea of Oman in the south, and Iraq and Turkey in the west. The average altitude is over 1200 m with the the lowest point with an altitude of 56 m in Chalehloot and the highest point with an altitude of 5610 m in Damavand in the Alborz mountains respectively.

The Sea of Oman and the Persian Gulf are at the same altitude as international waters.

Temperature ranges from -20C° to greater than 50 C° with maximum precipitation reaching approximately 1200 mm in the north,

falling to a minimum precipitation of less than 100 mm in the central region of the Country.

Iran's geological structures are a result of varying sensitivity to erosion. The wrinkles of the Alborz in north, the Zagros in east and the lowlands between these two mountains ranges encompass steep slopes, plains and playas. Each of these landscapes endure specific climatic and edaphic conditions including precipitation with varying distribution and volume, large temperature fluctuations in different regions, the formation and evolution of soil types with specific physical, chemical and biological characteristics, as well as a diversity of plant communities and ecology.

### **1-2- Land Types and Erosion**

Figure 1 illustrates the land types of Iran. Soil erosion, including wind or water erosions, is accounted one of the most important elements of land degradation in Iran. Besides over-exploitation of land resources as a result of population growth and lack of proper solutions for land management are also accounted among other factors contributing to land degradation in Iran.

Of the total land area of the Country, approximately 75 million hectares are exposed to water erosion, 20 million hectares to wind erosion and the remaining 5 million hectares to other types of chemical and physical degradations.

As a result, about 2 million hectares are in danger of infertility, 2 million hectares are exposed to salinization and 1 million hectares are threatened by other types of degradation.

### **1-3- Overview of the Natural Resources in Iran**

The mountainous terrains of the east west Alborz and the northwest to southeast Zagros ranges are considered the most important topographic features of Iran. As well as these two ranges, the coastal plains in northern and southern parts of the Country have specific characteristics. Almost 11.2 % percent of the land of Iran is agricultural, while forest cover, rangelands and deserts account for 7.5, 54.6 and 19.7 percent respectively. The remaining 7% of the lands is divided to salty lands,

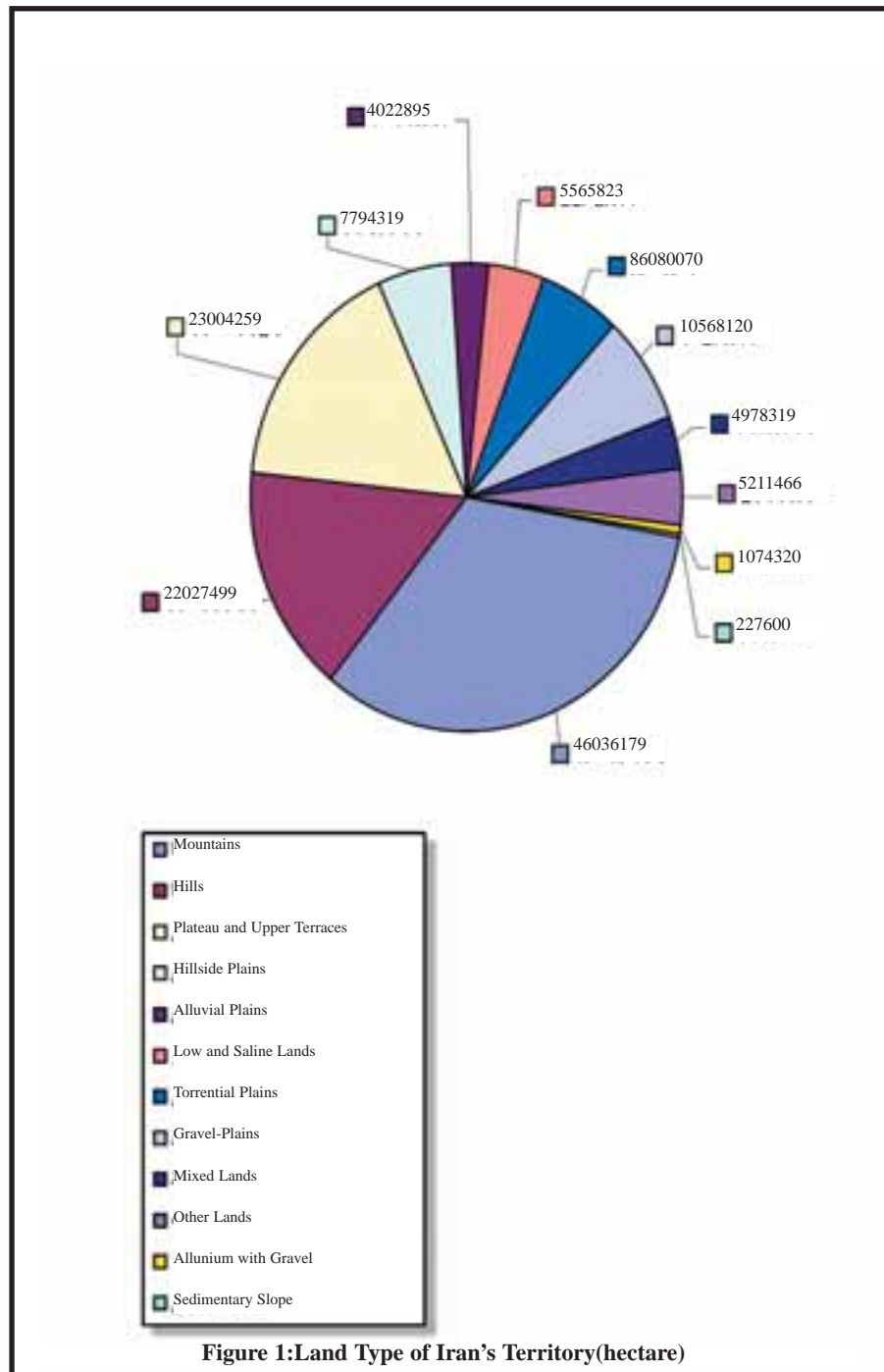
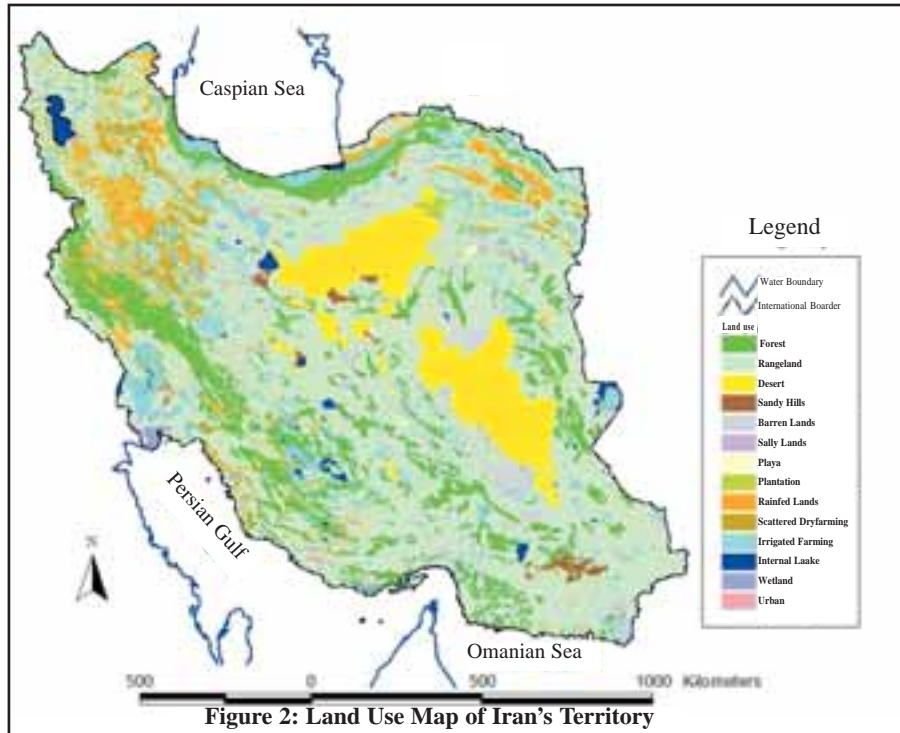


Figure 1: Land Type of Iran's Territory (hectare)

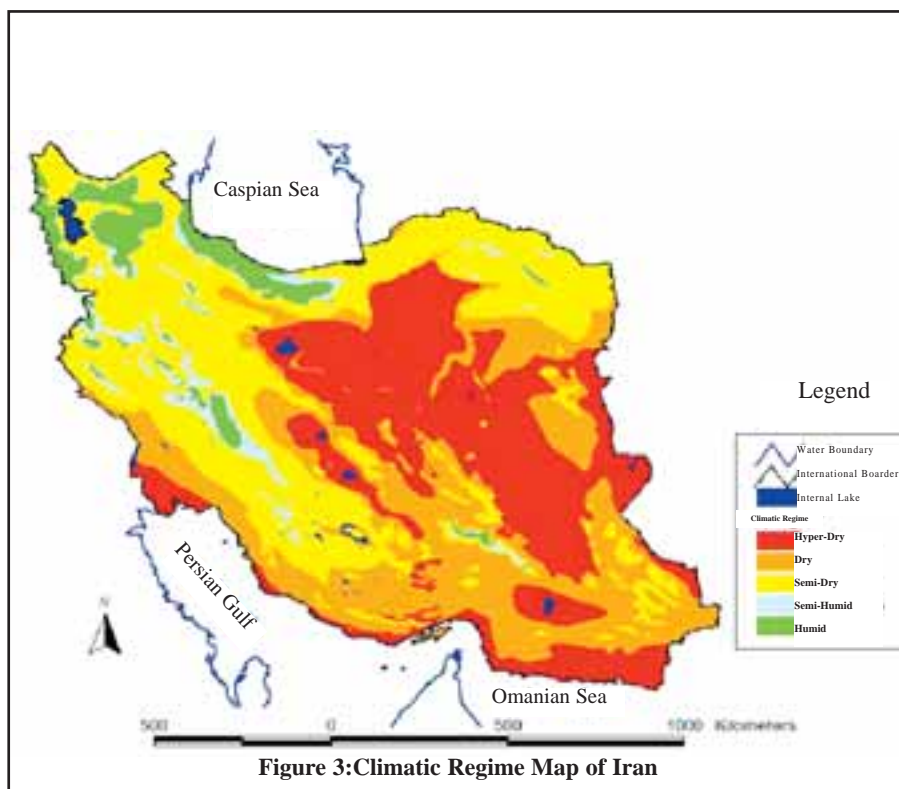
internal waters, buildings and infrastructures.(figure 2)



## 1-4- Natural Resources and Agriculture

### 1-4-1- Climate

Iran is divided into 8 major climatic regions, however, the humid climatic region may be further divided into 6 sub- regions thereby creating 13 climatic regions in total.(figures 3 and 4). The diversity of climates allows for a variety of agricultural and aquatic enterprises including the growing of citrus fruits, rice and tea in large parts of the northern region and, pistachios and dates in central and southern parts of the Country as well as tropical fruits such as bananas and mangos. In the cooler climates of the mountain ranges grapes, almonds and apples are produced. There is potential for further development of agriculture and aquaculture in most parts of Iran, especially in the northern and southern regions.



#### 1-4-2- Genetic Resources

Iran is renowned for having one of the richest plant reserves in the world, supporting some 12000 species of plants, the majority of which are endemic. The National Bank of Plant Gene, a member of the network for sustainable development of arid regions of West Asia and North Africa (WANA) focuses on the improvement of agricultural products to comply with sustainable agriculture development.

Up to 59156 samples of agricultural and orchard products are collected and some 11150 samples are preserved in the herbarium of Forest and Range Research Institute. A diversity of animal species, including 110 livestock and poultry eco-types, has been identified, of which 40 species are preserved.

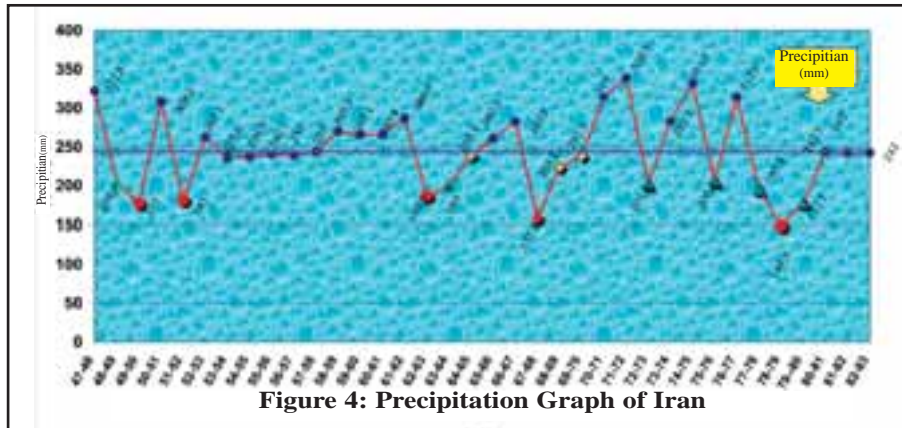


Figure 4: Precipitation Graph of Iran

### 1-4-3- Base Resources and Production Capacities

#### 1-4-3-1- Water Resources

A water resources study of Iran showed that 126 billion m<sup>3</sup> of the total volume of water including surface water is harvested. Once the volume of water required for consumption, sanitation, environment and industry is deducted from Iran's annual precipitation, approximately 100-118 billion m<sup>3</sup> may be utilized by the agriculture sector.

#### 1-4-3-2- Soil Resources

According to statistics, approximately 37 million hectares of the Iran's soils have an average or good capacity to withstand for cultivation. Currently 18.5 million hectares of these soils are under cultivation of which 17 million hectares are irrigated agricultural lands. (figure 5)

#### 1-4-3-3- Vegetation Cover:

The variable climatic conditions in Iran have led to a diversity of plant species occurring as well as valuable forest and range ecosystems and biosphere reserves.

On the basis of climatic classification, five forest regions are developed covering a land area of 13.86 million hectares plus an additional 90 million hectares of rangelands with more obvious tourist attractions, and services by the private and cooperative sectors, access to new tech-

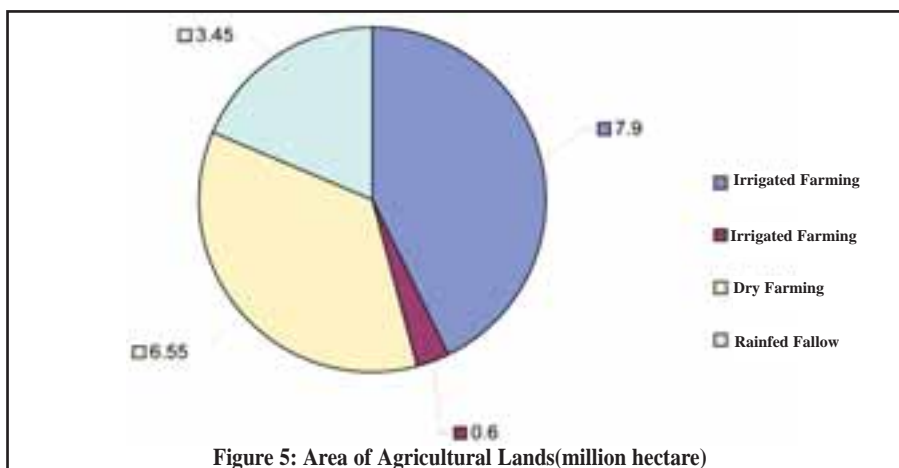


Figure 5: Area of Agricultural Lands(million hectare)

nologies, research centers and training facilities, coupled with conservation regulation and laws guiding the development and use of Iran's natural resources, guarantee a memorable stay for visitors.

## 1-5- Factors Contributing to Desertification

### 1-5-1- Agricultural sector

The factors contributing to desertification in the agricultural sector of Iran are:

- Insufficient knowledge or expertise
- A lack of planning mechanisms and coordination of Annual Integrated Farming
- Variable size of fragmented farmlands.
- Lack of involvement of the private sector in rendering services and production inputs.
- Poor training and extension activities.
- Lack of infrastructure operation on farmlands.
- Lack of water resources and inefficient irrigation systems.
- Lack of equal access of farmers to agricultural inputs.

### 1-5-2- Natural Resources

The natural resource factors contributing to desertification in the natural resources sectors of Iran are:

- Lack of a unified exploitation system and conversion of degraded lands to other land uses
- Lack of balance between livestock and range grazing capacities (figures 6,7,8 and 9)
- Lack of land use planning
- Insufficient facilities to protect Iran's natural resources
- The degradation of water and soil in terms of quantity and quality
- Unsuccessful research, training and extension activities
- Restrictions to water availability and short rotations of droughts

### **1-5-3- Socio-Economic Factors**

Iran's socio-economic status contributes to desertification through:

- Lack of application of appropriate technologies for the exploitation of natural resources and farmlands
- Insufficient insurance coverage on agricultural and natural resources products
- Unbalanced growth of urban, rural, and nomadic areas
- Inadequate management of the rural development system
- Increased level of relative poverty in rural communities, inappropriate rural structure and not taking advantage of socio-economic opportunities.

## **1-6- Measures To Combat Desertification and Mitigate the Impacts of Drought**

### **1-6-1- Institutional Arrangements**

- Ratification of the annexation law of the I.R. of Iran to the Convention by the Islamic Consultative Parliament
- Establishment of the National Committee to Combat Desertification aimed at further ratifying the macro-policies and strategies and cross- sectoral coordination presided over by the minister of Jihad Agriculture
- Nomination of FRWO as the National Coordinating Body(NCB)
- Establishment of a National Executive Committee(NEC)
- Nomination of UNCCD National Focal Point



▲ Figure 6: A view of high quality rangeland

▼ Figure 7: Land degradation in arid areas due to livestock over-exploitation





▲ Figure 8: Land degradation due to over-exploitation

▼ Figure 9: Sand dune movement due to over-exploitation and land degradation



- Promotion of civil institutions and NGOs network for NAP implementation (figure 10)
- Revision of the macro-structure of agriculture and natural resources management through organizational integration
- Establishment of a High Council for the Environment.
- Establishment of 3 scientific and research centers (International Center for Co-existence with Desert and Desert Research Centers in Tehran and Yazd provinces)
- Expansion of agriculture and natural resources training and research institutes with emphasis on management in arid and semi-arid regions.

#### **1-6-2- Legal Arrangements**

- Ratification of macro-policy guidelines on natural resources by the supreme leader of the I.R. of Iran
- Ratification of the annexation law of the I.R. of Iran to the Convention by the Islamic Consultative Parliament
- Ratification of the anti-desertification macro-policies of Iran by



▲ Figure 10: A view of CBOs' and local communities' gatherings

the National Committee to Combat Desertification

- Incorporation of the principles and objectives of the NAP in the Outlook Programme of the I.R. of Iran-2025 as well as macro-policy guidelines ratified by the supreme leader of the I.R. of Iran
- Incorporation of the principles and objectives of the NAP in the Third and Fourth Development Plans of the Country.
- Incorporation of the principles and objectives of the NAP in the forefront of the strategies of sustainable development of agricultural sector.

### **1-6-3- Executive Arrangements**

- Stabilization of 2.1 million hectares of shifting sand dunes through man-made plantations (figures 11 to 15)
- Formulation of the national plan for natural resources management in the desert areas of Iran
- Identification of wind erosion foci
- Promotion of NAP implementation through workshops held in the 14 desert provinces.
- Formulation of 9 million hectares of anti-desertification plans
- Adopting criteria and indicators of desertification in Iran
- Participation of all stakeholders to observe the World Day to Combat Desertification aimed to institutionalize anti-desertification culture and activities
- Study on 65 million hectares of catchments basins throughout Iran
- Implementing watershed management projects in 14.2 million hectares of catchments basins throughout the Country
- Recharging water-tables to an annual volume of 1.4 billion cubic meters
- Sedimentation reduction of up to 23 million cubic meters in catchments basins
- Land survey of 65 million hectares of rangelands throughout the Country
- Formulation of range management plans for 20 million hectares
- Elimination of 1 million animal units dependent on rangelands through the implementation of a national plan for the management of the arid and semi-arid regions of the Country



▲ Figure 11:Farming under windbreaks

▼ Figure 12:Reclamation of desert lands with resistant species





▲ Figure 13: A high quality rangeland in understory of plantation

▼ Figure 14: Plantation under windbreaks





▲ Figure 15: Watershed management operation

- Formulation of the Green Movement Plan through public participation
- Expansion of insurance coverage for agricultural, forest and range strategic products.
- Development of a pressurized irrigation system for farmlands and fruit orchards to optimize consumption and saving water in arid and semi- arid areas
- Preparation of large-scale maps of the arid and semi-arid areas using RS and GIS
- Preparation of a 1:250000 scale map of vegetation cover
- Development of a meteorological and early warning system
- Publication of training and extension booklets to increase public awareness on combating desertification
- Organizing national conferences on public participation in watershed management
- Production of 4 new varieties of wheats, 3 new varieties of barely and 2 new varieties of chickpeas.

#### **1-6-4- International Cooperation**

- Participation in Conferences of Parties (COPs) of the UNCCD and related committees
- Membership in Expert Groups under the CST of the Convention
- Submission of annual country reports on the measures taken or planned to combat desertification to the UNCCD secretariat
- Hosting the Third Asian Thematic Programme Network on Range Management and Sand Dune Fixation (TPN3)
- Collaboration with other international and regional organizations such as ICARDA, ACSAD, UNEP, UNDP, FAO, GEF, IFAD and GM
- Bilateral cooperation with Afghanistan in managing of the desert regions through the formulation of a joint management plan in Zaranj region
- Capacity building through participation in international training courses
- Organizing international seminars to discuss “New Technologies in Combating Desertification” and “Capacity Building for Implementation of the National Action Programme”
- Hosting training workshop on the Global Environment Facility’s Sustainable Land Management Approach in October 2004 in Gheshm, I.R. of Iran
- Formulation and implementation of the Carbon Sequestration Project in Southern Khorasan Province in collaboration with UNDP/GEF
- Implementation of an Integrated Range Improvement Programme in Zarand- Saveh .I.R. of Iran
- Implementation of South Khorasan Rangeland Rehabilitation and Refugee Income Generation Project (IFAD/UNHCR)
- Conducting Sustainable Management of Land and Water Resources (UNDP/FAO)
- Community Empowerment for Mangrove Conservation in Goater Bay by the Green Front of Iran (GEF/SGP)
- The Study on Watershed Management Plan for the Karoon River, IR of Iran (JICA)
- Alternative Range and Pasture Management Methods for the Protection of Native Plant Species in Agro-Pastoral Societies of North West Zagros.
- The Study on Integrated Management for Ecosystem Conservation of the Anzali Wetland .I.R. of Iran (JICA)

- The Study on Flood and Debris Flow in the Caspian Area Focusing on the Flood-Hit Region in Golestan Province(JICA)
- The Integrated Land and Water Management Project of Mazandaran Province



▲ Figure16:A view of a consultative workshop for NAP formulation

## **CHAPTER 2**

### **The National Action Programme Framework**

In implementing Articles 9 and 10 of the Convention, the Parties are obliged to formulate their own National Action Programme through:

- Identifying the factors contributing to desertification and establishing the benchmarks necessary to combat desertification and mitigate the effects of drought.
- Recognizing the paramount role of the local communities and land users
- Formulating long-term anti-desertification strategies and incorporating them in the national development policies
- Giving particular priority to the prevention of further degradation of less affected lands
- Giving due flexibility to the NAPs framework to adapt to ecological and socio-economic conditions
- Promoting preparedness of the public to droughts impacts and the introduction of appropriate risk management solutions

### **Box 3: Para 1-Article 9**

*In carrying out their obligations pursuant to article 5, affected developing country Parties and any other affected country Party in the framework of its regional implementation annex or, otherwise, that has notified the permanent Secretariat in writing of its intention to prepare a national action programme, shall, as appropriate, prepare, make public and implement national action programmes, utilizing and building, to the extent possible, on existing relevant successful plans and programmes and sub-regional and regional action programmes, as the central element of the strategy to combat desertification and mitigate the effects of drought. Such programmes shall be updated through a continuing participatory process on the basis of lesson from field action, as well as the results of research. The preparation of national action programmes shall be closely interlinked with other efforts to formulate national policies for sustainable development.*

- Boosting the efficient use of the water soil and vegetation resources in arid areas

The National Action Programme to Combat Desertification and Mitigate the Effects of Drought is formulated through the participation of all stakeholders at the local, provincial and national levels.

### **2-1- NAP Preparation Process**

The I.R. of Iran is committed to a balance of programmes for combating desertification of the UNCCD and, in agreement with the implementation of Article 9 of the Convention, included the the formulation of the National Action Programme framework in its agenda in 1998.

The main implications for the formulation of the National Action Programme to Combat Desertification and Mitigate the Effects of Drought in the I.R. of Iran, are the partnerships with the local communities at all levels of planning and decision making and the with emphasis on, and flexibility of, a bottom-up approach outlined by Article 10 of the Convention as follows:

#### **Box 4: Article 10**

- 1- *The purpose of national action programmes is to identify the factors contributing to desertification and practical measures necessary to combat desertification and mitigate the effects of drought.*
- 2- *National Action Programmes shall specify the respective roles of government, local communities and land users and resources available and needed. They shall, inter alia:*
  - (a) *Incorporate long-term strategies to combat desertification and mitigate the effects of drought, emphasize implementation and be integrated with national policies for sustainable development:*
  - (b) *Allow for modifications to be made in response to changing circumstances and be sufficiently flexible at the local level to cope with different socio-economic, biological and geo-physical conditions,*
  - (c) *Require regular review of, and progress reports on, their implementation.*

### **2-2-NAP Preparation Stages**

#### **2-2-1- Designation of National Coordinating Body (NCB)**

Following the appointment of the Minister of Jihad Agriculture in March 2001 as the Chairman of the National Committee to Combat Desertification (NCCD) by the president of the I.R. of Iran, the Forest, Range and Watershed Management Organization was designated as the National Coordinating Body (NCB) for issues relating to the Convention and the formulation of the National Action Programme (NAP).

#### **2-2-2- National Committee to Combat Desertification**

This Committee is chaired by the Minister of Jihad-Agriculture upon the decree of the president. The Committee comprises of the Deputy Ministers of Jihad- Agriculture, Energy, Petroleum, Foreign

Affairs,, Interior, Science, Research and Technology, and Health as well as the Management and Planning Organization, the Meteorological and Geological Organizations and the Department of Environment. The Committee is mandated to coordinate government organizations and institutions as well as establish the macro policies for anti-desertification activities.

### **2-2-3- National Executive Committee**

The National Committee to Combat Desertification (NCCD) is supported by the a National Executive Committee (NEC) which is composed of senior experts from the ministries and organizations mentioned in the previous paragraph. The NEC is responsible for the supervision and monitoring of the anti-desertification programmes and coordinating institutional bodies.

The committee is also mandated to provide technical advice and recommendations to the NAP for the consideration of the National Committee.

## **2-3- The National Action Programme Framework**

Success in combating desertification will depend greatly on a well-coordinated and integrated approach focusing on subsistence of local communities and their participation in the sustainable management of Iran's natural resources. Based on this premise, the NAP framework of the I.R. of Iran consists of four pivots:

- 1-Identification and control of the factors contributing to desertification
- 2-Support for the sustainable use and management of natural resources through conservation and reclamation
- 3-Promotion of sustainable livelihoods in affected areas through job creation, income generation and the improvement of socio-economic standards.
- 4-Strengthening the role of rural communities in terms of decision-making, planning, designing, implementation, monitoring and evaluation.

## **CHAPTER 3**

### **Macro-Policies to Combat Desertification and Mitigate the Effects of Drought**

Progress has, however, been hampered by a lack of cross-sectoral interaction and insufficient attention given to the variety of ecological and socio-economic environments that exist across the country. An example is the lack of a coherent policy framework as an incentive to users. As a result, a priority of the NAP is to establish a concrete framework for adopting a coordinated and integrated approach for the macro economy sectors and take advantage of the decisions passed by the National Committee to Combat Desertification(NCCD)

#### **3-1- Macro Policies and Strategies**

##### **3-1-1- Macro Policies**

- Guarantee the provision of health, welfare, food and social security, equal job opportunity, equitable revenue distribution, and a suitable living environment, without discrimination, for families
- Provide production factors such as energy, investment, manpower, water, and soil

- Attain food security and self sufficiency in agricultural products
- Pay due attention to the economic, security, political and environmental values of water in terms of production, supply, reservation and consumption
- Optimize utilization of the border rivers and common water resources
- Promote the role of local institutions in decision-making and implementation of the National Action Programme

### **3-1-2- Strategies**

Based on the decisions made by the NCCD the following nine strategies have been implemented. These are:

- 1-Integration of sustainable development concepts into ministerial and organizational programmes, particularly any activities relating to agriculture, natural resources and the environment
- 2-Emphasis on population control and family planning policies especially in rural and nomadic areas
- 3-Priority for preventive measures in curbing desertification
- 4-Development of technologies related to combating desertification through research and training programmes with emphasis on indigenous knowledge and technologies
- 5-Review of existing laws and enactment of the necessary regulations commensurate with sustainable development programmes and anti-desertification activities
- 6-Raising public awareness on the risks and consequences of desertification
- 7-Increasing public participation in the planning, management and implementation of anti-desertification projects
- 8-Directing financial resources towards the realization of NAP objectives in national development
- 9-Developing measures for the expansion of applied research and integration of indigenous knowledge

## **3-2- Programmes**

### **3-2-1- Cross-Sectoral Programmes**

These programmes aim to establish coordinated and integrated links between the sectors affected by desertification as well as eliminate the deficiencies caused by the lack of a holistic approach to the planning process as follows:

#### **3-2-1-1- Strengthen Public Participation Programmes**

- Attracting expertise and investments to desert areas and areas susceptible to degradation
- Raising public awareness on deserts and desertification
- Decentralizing the government decision-making process
- Establishing a proper structure and policies to enable women, NGOs, and young generation participation in the sustainable development process
- Participatory monitoring and evaluation
- Handing over the exploitation of natural resources to land users
- Paving the way to boost effective participation of NGOs at the local, national and regional levels both in decision-making and NAP implementation
- Providing incentives for NGOs, women and youth participation in the sustainable development of desert areas
- Improving the productivity through enhancing public knowledge, revising the training and extension curriculum and continuation of the administrative evolution, and decentralization process (figure17)
- Facilitating access to information and new technologies for local communities

#### **3-2-1-2- Population Control Programmes**

- Establishing family planning programmes
- Forming programmes to control migrations and population distribution across the Country.



▲ Figure 17: Public participation in combating desertification

#### **3-2-1-3- Social Programmes**

- Reorganizing and reconstructing the agriculture and natural resources exploitation units
- Improving and enhancing the management of rural habitats
- Expanding insurance coverage to the rural population and land-users
- Exercising government ownership rights on national lands through land survey
- Diversifying and developing non-agricultural activities in rural and nomadic areas

#### **3-2-1-4- Cultural Programmes**

- Creating a culture that respects nature and the environment by increasing public awareness
- Reorienting the vision of land users and the general public through training

- Educating managers and experts on the integrated management of the water, soil and vegetation resources

#### **3-2-1-5- Applied Research Development**

- Developing applied research into desertification
- Developing a research programme on the role of indigenous knowledge
- Incorporating indigenous knowledge into applied research in the field of sustainable management of agriculture and natural resources

#### **3-2-1-6- Legal Reforms**

- Harmonizing sectoral and cross-sectoral rules and regulations on desertification control and the sustainable management of soil and water resources

#### **3-2-1-7- Reforming of the Planning System**

- Create a programme for organization of rural and nomadic development.
- Reorganize the environmental management plan for the Country
- Reforming integrated management for supply, development and exploitation of water and soil resources
- Reevaluate the causes of desertification by determining, measuring and evaluating the contributing factors and indicators

#### **3-2-1-8- Drought Mitigation**

- Installation of early warning system.
- Benefit from some new meteorological stations for climate data recording
- Forming methods to mitigate the effects of drought
- Providing water resources in arid areas
- Preparing a comprehensive plan for drought timely response (The Integrated Drought Management) for the agriculture sector

### **3-2-1-9-Sustainable Management of Energy Resources**

- Optimizing energy consumption
- Development and expansion of access to natural and liquid gas
- Utilizing solar energy
- Utilizing wind energy
- Replacing cheap electricity energy for remote villages
- Utilizing unclear energy for electricity production

### **3-2-2- Sectoral Programmes**

The sectoral programmes consist of 5 main programmes and 43 sub-programmes, covering the sustainable management of agricultural lands, natural resources, water resources and soil erosion control, as well as mitigation of drought impacts and energy resources.

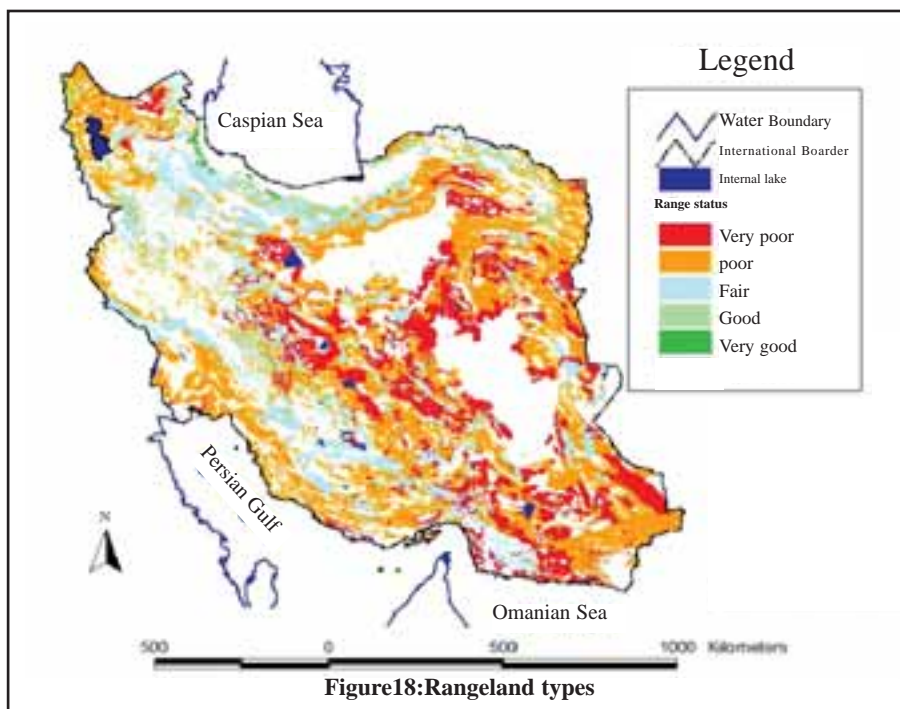
#### **3-2-2-1- Sustainable Management of Farmlands**

- Attaining food security by producing sufficient quality and quantity of agricultural products
- Expansion and sustainable production of the main agricultural products
- Identification of the potential growth areas suitable for agriculture
- Protection of the water and soil resources and the reclamation of abandoned farmlands
- Conservation of the plant genetic resources and integrated pests and diseases management
- Providing infrastructure and services towards the development of agricultural lands.
- Optimal use of agricultural water resources
- Enhancing mechanization and transfer of environmentally sound technologies
- Employment and improvement of the exploitation system and expansion of agro- industries
- Crop insurance cover, waste reduction and market regulation

### 3-2-2- Sustainable Management of Natural Resources

#### Programmes:

- Sustainable management of catchments basins with emphasis on conservation and principled utilization
- Preservation of ecological potential, and reclamation of degraded catchments basins and control of critical areas exposed to wind erosion
- Determination of range quality and incorporation of the results in natural range management programmes (figure 18)
- Formulation and implementation of multi - purpose forestry and range management plans as well as the management of desertification
- Preservation of genetic resources in agreement with the Natural Biodiversity Strategy and Action Plan of the I.R. of Iran
- Conservation of soil and prevention of soil erosion particularly through the development of vegetation cover



- Monitoring and evaluation of natural resources projects through new technologies aimed at increasing the quality and assessment of execution as well as constant evaluation of activities in line with sustainable development objectives
- Land survey and control of grazing permits
- Formulation and implementation of a balance between livestock and range grazing capacities
- Adjustment of exploitation units
- Reduction of livestock numbers on the rangelands in the drought season
- Determination of factors contributing to desertification through the assessment and monitoring of the criteria for desertification in Iran

**Activities:**

- Implementation of an anti-desertification project covering 1.5 million hectares on the prevention of wind erosion in the Fourth Five Year Development Plan
- Balancing range grazing capacities through a 50% reduction of livestock on the rangelands
- Implementation of watershed management activities in 20% of dam basins and 10% of other areas.
- Implementation of flood spreading and water harvesting activities covering 1.5 million hectares aimed at conversion of deserts to farmlands and recharge of watertables
- Afforestation in arid, semi - arid areas and dry sub-humid areas of, up to 500000 hectares

**3-2-2-3- Sustainable Management of Water Resources**

- Reducing runoff and increasing the distribution and consumption of water in irrigation and drainage networks in an efficient manner
- Exploitation of surface water by the installation of small structures such as diversion dams and reservoirs
- Artificial recharge of aquifers in critical areas of the Country
- Installing a pollution control network to assess and reduce the

- pollutants volume to control water and environmental pollution
- Enhancing water productivity in the agriculture sector
- Improvement of irrigation methods.

### **3-3- Benchmarks and Indicators**

The Convention to Combat Desertification emphasized the need for an evaluation of all activities relating to desertification in Iran. It is clear that the continual assessment of the factors contributing to desertification is of utmost importance. The determination and measurement of benchmarks and indicators, in collaboration with prominent scientific and research centers, are an important step in proceedings. The process will start from the beginning of the Fourth Five-Year Development Plan (figure 19)

### **3-4- Early Warning System**

Early warning of drought will assist planners to make the optimal exploitation of resources. Such a system will also contribute to the management of agricultural and climatic factors, in harmony with a sustainable use of natural systems.

The Meteorological Organization, as a member of the National Executive Committee for NAP implementation, has conducted a number of research projects in the field of early warning systems. It is expected that progress will be made during the implementation phase of the NAP in line with the objectives of the Convention between Meteorological Organization and FRWO.

A number of related studies conducted so far are as follows:

- The management and organization of early warning systems in climatic and atmospheric crises
- Climate change and dry farming production
- Drought indicators and standards for different areas of the Country
- Statistical predictions of drought in Ilam Province
- Early warning methods

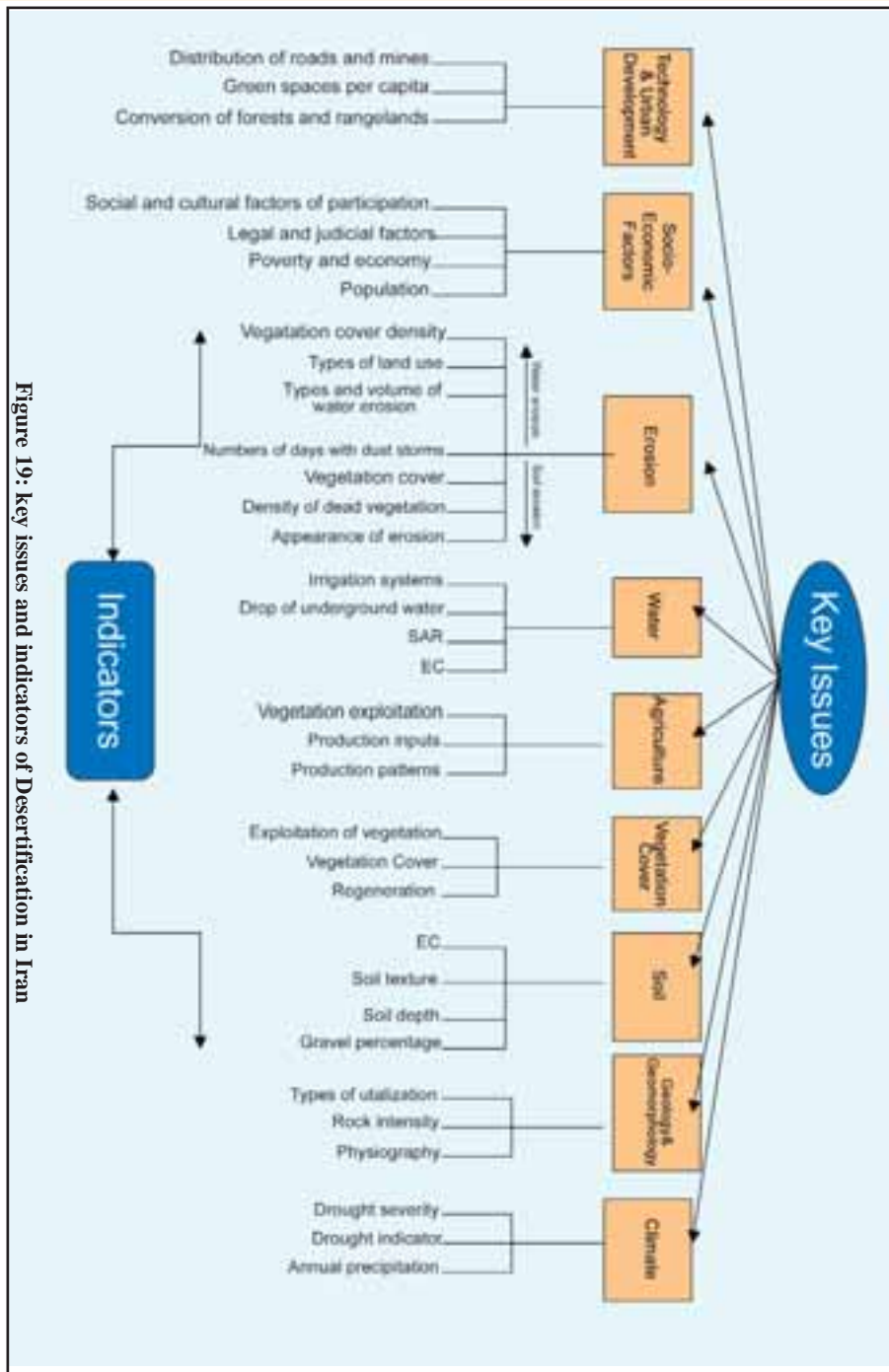


Figure 19: Key issues and indicators of Desertification in Iran

### 3-5- Legal and Institutional Frameworks

Legal and institutional framework allow for the effective implementation of the NAP based on comprehensive, flexible, effective and frugal principles. Such frameworks provide bottom-up integrity, accountability, changeability, transparency, stability and planning. Taking these criteria and the NAP objectives into consideration, it would be necessary for all organizations and institutions including land users to become involved in the decision-making, planning and implementation of the National Action Programme. From all accounts, the establishment of an independent institution for combating desertification and mitigation of drought impacts would serve to assist the coordination and harmonization of the sector.

An analysis of possible alternatives, indicates that reinforcing the NCCD and NEC as well as linking NCCD with the High Council for the Environment, and the National Committee for Crisis Management, would result in a meaningful coordination. (figure 20)



Figure 20: legal and institutional framework

### **3-6- Financial Resources**

The Government of I.R. of Iran is committed to the philosophy and objectives of the Convention and, in recent decades, has allocated substantial credits towards the management of arid, and semi-arid areas and the mitigation of drought impacts. The following mechanisms were adopted:

- 1-Incentives to the public and private sectors for sustainable development of arid and semi-arid regions affected by desertification
- 2-Growth of national investment volume for supporting development programmes in the sector
- 3-Credit and capital facilities for producers and local communities of the affected areas
- 4-Mobilization of foreign financial resources through collaboration with regional and international funds and agencies

### **3-7- Synergies with other Conventions**

It is generally believed that the synergy of the Convention to Combat Desertification with other environmental conventions, namely the Convention on Biological Diversity (CBD) and United Nations Framework on Climate Change Convention (UNFCCC) could be beneficial because:

- Sustainable development is a universal topic that can be easily followed up within the conventions framework
- These conventions cover environmental, socio - economic and cultural aspects
- Policies and measures adopted or planned under these conventions may have both positive or negative implications
- Decision - makers, institutional framework, stakeholders and members of this convention are, to a great extent, common
- Joint efforts of the conventions could meet mutual or multilateral interests of all stakeholders

- The conventions consider the alleviation of poverty and sustainable livelihood in one way or another
- The conventions are similar in terms of planning processes, structural frameworks, raising public awareness, emphasis on technological and information exchange
- All conventions are dependent on the GEF as a financial mechanism

Measures required for synergy are as follows:

- 1-The coordination and integration of policies and programmes of the environmental conventions aimed at a more rapid process of identification, design and implementation of projects
- 2-The coordination of institutional frameworks, legislation amendments and enactment of new laws, exchange of information, formulation of Joint projects as well as the establishment of thematic working groups
- 3-Establishment of links for implementation of the national action programme

### **3-8- Monitoring and Evaluation System**

Desertification is an encroaching phenomenon, continual monitoring to desertification is necessary, as is the identification of those factors most successful in combating the impacts of desertification.

The Convention to Combat Desertification in Article 4 Annex for Asia, emphasizes the need for partnerships between those involved to assess their past and present programmes on desertification and mitigation of drought impacts. The Article stresses that strategy formulation is dependent upon a sound monitoring and assessment schedule. It will be necessary to establish guidelines to determine, control and evaluate any changes in desertification criteria and indicators. Finally, the flexibility of the National Action Programme itself is also an incentive for incorporating the results of such an evaluation in future plans, which at present is high on the agenda of FRWO as a priority area of work.

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## Appendix

### **I) List of Individuals and Organizations Contributing to NAP Formulation**

#### **1) Ministries and Governmental Organizations**

- Ministry of Energy
- Ministry of Petroleum
- Ministry of Foreign Affairs
- Ministry of Science, Research & Technology
- The Interior Ministry
- Management and Planning Organization

- Department of Environment
- Geological Organization of Iran
- Meteorological Organization

## **2) Research Centers/Private Sector/Consultants**

- Natural Resource Faculty of Tehran University
- Desert Research Center of Tehran University
- Center for Co-existing with Desert
- Research Institute for Forests and Rangelands
- Tarbiyat Modares University
- Rural Development Institute of Iran

## **3) International Partners**

- The Secretariat of United Nations Convention to Combat Desertification
- The Global Mechanism
- United Nations Development Programme
- Dr. Tijan Jalou (International Consultant)

## **4) NAP Drafting Committee**

- H.E. Mr. Mohammad Samadi
- Mr. Abolghasem Bahrami
- Mr. Naser Moghaddasi
- Dr. Seyed Ata Rezaei
- Mr. Seyed Mohammad Mousavi
- Mr. Mohammad Jariani
- Mr. Mohammad Ebrahim Fallah Kohan
- Mr. Ali Kholdebarin
- Dr. Hassan Madah Arefi
- Mr. Bahram Noushafarin
- Mr. Farshad Amir Aslani

## **II) Abbreviations**

ACSAD: The Arab Center for the Studies of Arid Zones and Dry Lands

CBO: Community-Based Organization

COP: Conference of Parties

CST: Committee on Science and Technology

FAO: Food and Agricultural Organization

GEF: Global Environment Facility

GM: Global Mechanism

ICARDA: International Center for Agricultural Research in the Dry Areas

IFAD: International Fund for Agricultural Development

I.R. of Iran: Islamic Republic of Iran

NAP: National Action Programme

NCCD: National Committee to Combat Desertification

NCSD: National Committee for Sustainable Development

NEC: National Executive Committee

NFP: National Focal Point

NCB: National Coordinating Body

NGO: Non-Governmental Organization

TPN: Thematic Programme Network

UNCCD: United Nations Convention to Combat Desertification

UNDP: United Nations Development Programme

UNED: United Nations Environment Programme

WANA: West Asia and North Africa