

NATIONAL REPORT

**ON THE UNCCD IMPLEMENTATION
THE HASHEMITE KINGDOM OF JORDAN**

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Abbreviations

| | |
|---------------|---|
| NEAP | National Environment Action Plan |
| NES | National Environmental Strategy |
| APC | Agricultural Policy Charter |
| ESCWA | Economic and Social Committee for Western Asia |
| UNEP | United Nation Environmental Programme |
| FAO | Food and Agricultural Organization |
| UNCCD | United Nation convention to Combat Desertification |
| AOAD | Arab Organization for Agricultural Development |
| NAP | National Action Plan to Combat desertification |
| NCB | National Coordinator Body |
| NAB | National Acton Plan for Biodiversity |
| HCEP | Higher Council for Environment Protection |
| GCEP | General Corporation for Environment Protection |
| NGO | Non-Governmental Organization |
| NCLP | Nature Conservation and Land Protection Department/GCEP |
| LP | Land Protection Division/GCEP |
| MOA | Ministry of Agriculture |
| MMREA | Ministry of Municipality Environment, and Rural Affairs |
| WCS | World Conservation Strategy |
| IUCN | International Union for Conservation of Nature |
| GEF | Global Environmental Facility |
| NCE | Nature Conservation Division/GCEP |
| GIS | Geographic Information System |
| JES | Jordan Environment Society |
| RSCN | Royal Society for conservation of Nature |
| JSDCBD | Jordan Society for Desertification Control and Badia Development |
| WFP | World Food Programme |
| NCC | Nature Conservation Clubs |
| IFAD | International Fund for Agricultural Development |
| ICARDA | International Center for Agricultural Research on Desert and Arid Lands |
| COP | Conference of Parties |
| CEDARE | Center for Environment and Development of Arab Region and Europe |
| CAMRE | Council of Arab Ministers Responsible for Environment |
| UNSO | United Nation office to Combat Desertification and Drought |
| EU | European Union |
| CIDA | Canadian International Development Agency |
| GTZ | German Technical cooperation |
| HCST | Higher Council of Science and Technology |
| UNESCO | United Nation for Education, Science and Culture Organization |
| JBRDP | Jordan Badiah Research and Development Programme |
| UNDP | United Nation Developmental Program |

1. SUMMARY

Jordan is a country dominated by arid climate and fragile ecological systems. The country suffered drastically from sudden increase of population due to political conditions that prevailed during the second half of the past century. These conditions have imparted their effects on natural resources and environment. Due to various factors most of the country is subjected to a one form or another of desertification.

Being aware of the dangers and threats of the phenomenon, the government has initiated several actions to streamline its policies and strategies with the objectives and principles of sustainable development and combating desertification.

The national efforts to control degradation, although not in the context of recent definition of desertification, had started before independence and continued in various forms by different institution, both public and NGOs.

Development plans gave considerable attention to environmental issues. However, the most recent plans gave more emphasis to desertification as compared to earlier ones. The Third Five-Year Development plan emphasized the need to protect agricultural environment from desertification, so that, the area of arable land is maintained and the soil is protected from various degradation processes. The plan advocated the adoption and encouragement of popular participation in all phases of development projects and programmes.

Jordan has prepared both a National Environmental Strategy (NES) in 1991 and a National Environmental Action Program (NEAP) in 1996. NES aims to maintain long-term environmental balance and enhancing the preparation of development plan, while ensuring its continuity through economic planning. NES prioritized the areas to be addressed to ensure sustaining productivity of agricultural land, while protecting the environment.

NEAP aims to guide government environmental policy and investment decisions and to articulate programmes to implement such decisions.

A country study on biodiversity was prepared and efforts are underway to produce a biodiversity strategy and action plan. Equally, a National Agenda 21 is being finalized which includes a comprehensive chapter on desertification, which includes causes, actions to be taken, and proposed projects that would address these threats.

Jordan has prepared an Agricultural Policy Charter (APC) with the objective of management and utilization of available agricultural production factors in an economically efficient manner while ensuring sustainability. APC stressed the need to tackle various factors hindering the application of effective production practices. In dryland farming areas, sufficient consideration is given to important practices and issues as water harvesting, combating desertification, genetic resources conservation and preparation of legislation pertinent to desertification, APC also outlined proposed measures to conserve and sustainably utilize low rainfall areas, forests and irrigated areas.

Jordan had also prepared a strategy for the utilization of water resources, which prioritizes the allocation of water resources between different sectors. The government also prepared several policies regarding the uses of different types of water. Special attention was given to efficiency, optimal utilization, resource protection, and participation of private sector in their management.

Following the adoption of UNCCD, the Ministry of Agriculture, with the assistance of ESCWA, UNEP and FAO, prepared a National Action plan to Combat Desertification with six programme areas. These programme areas streamline with the principles of UNCCD as the participatory approach, poverty alleviation, empowerment of local community and efficient resources conservation and management, it recommended the establishment of National Coordinating Body (NCB) to catalyze the preparation, coordination and implementation of National Action programme. It advocated joint efforts and coordinated activities, at the sub-regional and regional levels, with respect to combating desertification.

National institutions also had taken major steps towards the protection and conservation of resources. These efforts are reflected by the establishment of research plans and departments at public universities, with appropriate teaching and research agenda and advanced techniques to meet the nation concerns regarding the environmental degradation and the conservation of its resources. The rise of NGOs directly involved in combating desertification and control of environmental degradation also supported the national efforts

The environment is managed by two institutions as the main focal points, which coordinate the efforts of several public and semi-public institutions. The two institutions are the Higher Council for Environment Protection (HCEP) and the General Corporation for Environment Protection, (GCEP). HCEP as an autonomous body, has a wide range of responsibilities. With respect to soil resource, its duty is to supervise and monitor sources of pollution as well as soil erosion and desertification, in order to undertake necessary rectifying actions. GCEP has an Environmental Protection Fund that can be invested in different aspects of environmental conservation and management. It has a number of relevant specialized committees, one of which is the National Committee on Desertification.

GCEP is the lead national institution with respect to UNCCD and is concurrently acting as the NCB. The core of the work on desertification and recurrent activities are handled by Nature Conservation and Land Protection Directorate (NCLP) within this Directorate, the Division of Land Protection (LP) shoulders most of the responsibilities pertinent to desertification. LP is giving priority to the collection and consolidation of national experience for combating desertification.

The National Committee for Combating Desertification has determined areas for action. However its work plan is constrained by the limited financial resources and trained human resources. LP has limited staff, facilities, and funds and would greatly benefit from assistance to upgrade its present status and improve performance.

NCB has limited information system capacities and no database on desertification exists. Several national institutions have relevant databases, which can form the starting point for the establishment of a national database on desertification.

The Kingdom has a number of well-organized NGOs actively involved in programmes and activities dealing with environment, nature conservation, and combating desertification. Their activities are well focused but suffers from the lack of adequate funds

Jordan issued several laws directly addressing environmental issues (Environmental Law No 12) and agricultural law addressing resources and their protection (Agricultural Law No 20, year 2000). In addition, several strategies including the strategy for the protection of environment, Water strategy, Agricultural Policy Charter, different water policies, Action plans for Combating Desertification, Action Environmental Plan, Agenda 21 Action plan (under production) and Action Plan to Conserve Biodiversity (under preparation).

Efforts to conserve and combat desertification are assumed by the Ministry of Agriculture, GCEP, and other government institutions through raising awareness initiatives and promoting public participation. In addition to the vital role undertaken by NGOs who are taking the lead in this respect, Environmental education is gaining momentum through efforts of the Ministry of Education; the media, and the universities produce special documentary programmes.

Regional and international organization and developed countries have provided technical and financial assistance towards resources conservation and combating desertification. Coordination of international efforts is carried out through the Ministry of Planning while the coordination of national efforts is carried out through GCEP. Both the international and national coordination mechanisms need further improvement and enhancement.

Several relevant projects are either ongoing, or have been implemented. However, a comprehensive review of these projects to assess integration and harmonization efforts and relevance to UNCCD has not been done. The government also has not determined specific mechanisms to ensure funding and resource mobilization strategies for future projects and programmes that can be generated by reformulation of NAP.

Also, the formulation of practical indicators to monitor the implementation of the UNCCD has not been initiated. However, the scene is rich with relevant issues, strategies, policies, country studies, action plans, including Agenda 21, executions of wide range of projects covering different aspect of desertification in particular and environmental protection and resource management in general. In addition to institutional capacity building which can be employed to achieve this goal.

2. INTRODUCTION

Background

Jordan is a small country that exhibits great diversity of landscape, environments and biological characteristics. The country is affected by dry climate in most of its area (more than 90%). The country had witnessed high birth rate during the past four decades. However, the sharp increase in the population was accentuated by sudden surge of refugees in 1948, 1967, and 1991. The need to increase production to meet the growth in human population caused a greater pressure on the already limited resources. The increasing population pressure on ecologically fragile resources had exerted further pressure on the environment. Therefore, ecological characteristic of the limited resources, demographic pressures, and poverty are considered among the main causes of environmental degradation.

Jordan has been evolving from a largely agrarian society into a diversified economy where services and industry play increasingly important roles. In spite of this trend, rural areas still play a vital role in the overall socio-economic development of the country in view of the fact that they constitute a source of natural resources and a resource base for agricultural production. Rural populations directly affect the environment as well as conservation programme hence more efforts are directed to improve their living standards and to encourage them, through cooperatives and other arrangements, to participate in efforts aiming at the sustained development of their areas.

Jordan can be divided into four agro-ecological Zones: the Jordan Valley, the Highlands, the Steppe and the Badia (Arid) region.(3)

Jordan valley is used for intensive cultivation under irrigated farming system. This area is used mainly for the production of vegetables and citrus. Indigenous salinity, as well as the concerns from soil salinization, are among factors contributing to the degradation processes in this region

The Highland is used for rainfed farming. More than 95% of the urban centers are found in this zone. Urbanization and water erosion are among the factors causing degradation of the resources in this zone. This region also encompasses all the forests in Jordan. However, in spite of the fact the afforestation activities had started during the thirties, long before the independence, the area of the forest had not significantly increased. Several factors could be cited, the most important one is trespassing on forest especially at areas adjacent to the forest.

The steppe zone, dominated by an ecologically fragile system and problematic soils. Ecological fragility and climatic variation, overgrazing, and the expansion of dryland farming are responsible for the degradation of the region's resources.

The Badia, a local name for the dry region, dominated by a dry climate and problematic soils. Overgrazing, and the evolvement of soil agro-ecological condition as a result of continuing arid condition had accentuated degradation of vegetation cover. (3).

Generally, good proportion of agricultural land, forests and rangelands are lost to urban expansion. Competition on limited resources to meet urban demand is very high within the Highland region.

Further degradation by salinization is expected to occur in Jordan valley and within the Highland due to increasing use of treated waste water since fresh water is increasingly withdrawn for domestic use. Moreover, despite the fact that drip irrigation is extensively used in farm practices, salinization is a major concern due to diminishing of water resources and its quality deterioration.

The first act of conservation, declared in the mid-thirties, emphasized the crucial need for the conservation of forests and rangelands. To date, a network of forest, 23 range reserves, and 12 wild nature reserves have been declared and established. Despite the establishment of nature and grazing reserves many non-protected habitats, animal and plant species are lost, degraded or threatened.

Areas and Causes of Degradation

Different forms of desertification in the four ecological zones affect the country. Causes of desertification vary from one region to another. Indigenous properties such as soil salinity and other problematic soil properties play a vital role in determining the inherited risk for desertification. In some areas, pressure exerted on the resources due to increasing demands had aggravated desertification processes. Therefore, it could be concluded that more than 90% of the land area of Jordan is subjected, to various degrees, to one or another form of desertification processes (3). In irrigated areas concerns of further soil salinization is a real threat due to increasing use of water with marginal quality in irrigation, to withdrawal of fresh water for domestic use, or due to the increasing salinity of groundwater resources. With regards to the rainfed areas (Highland region), where most of the productive areas of the country are found, urbanization, higher erosion rate, and cultivation of land with marginal productivity are among factors causing degradation. The Steppe region, traditionally used for grazing, is suffering from higher rates of wind and water erosion as a result of plowing the range and misuse of the land resources. This is accentuated by highly fragile ecological system.

Currently, desertification as a problem is surmounted only by the critical situation of water shortage and deteriorating water quality. Further, desertification seriously threatens comprehensive and integrated efforts towards sustainable development in the country.

3. MEASURES UNDERTAKEN PRIOR TO THE UNCCD

The government efforts to arrest degradation had started long time ago, although the efforts were not organized in the context of the recent global efforts to deal with this phenomenon. Awareness of the threats has prompted the government to join the early efforts of the international communities to deal with desertification. Being aware of the dangers and the adverse effects of desertification, the government initiated several actions to fight this phenomenon and gave it the attention it requires in accordance with the threats and negative impacts that must be tackled. Thus, the government has undertaken several steps and initiated prompt actions to modify its

policies and strategies towards sustained development in order to accommodate combating desertification efforts. Through various institutions, the government attempted to respond properly and timely to the misuse of resources, land degradation and their consequences. The financial and technical assistance from the international community contributed to the realization of these attempts. However, efforts are constrained by shortage of funds and lack of sufficiently trained manpower to further pursue these efforts.

Along these efforts, Jordan had ratified several international conventions and treaties, including the Framework Convention on Climatic Changes, New York (1992); the Convention on Biological Diversity, Rio (1992); the Protocol on Substance that Deplete the Ozone Layer (1988); Montreal (1987); the Convention for the Protection of the Ozone Layer, Vienna (1985); the Convention on the Conservation of Migratory Species of Wild Animals, Bonn (1977); the Convention on the International Trade in Endangered Species of Wild Fauna and Flora, Washington (1973); and the Convention on the Protection of World Cultural Heritage and Natural Heritage, Paris (1972). The government ratified the UN Convention to Combat Desertification in 1996 and participated in the UN Conference on Environment and Development.

This report is be submitted to the conference of the parties in its fourth session for review. It summarizes efforts and progress made towards the implementation of the UNCCD. The draft has been reviewed and discussed by a national committee comprising all relevant stakeholders before being prepared in its final form. The reviewed draft has been presented at a national workshop to include comments by all stakeholders (NGOs, CBOs, private sector, academic and research institutes) and to ensure its endorsement.

3.1. Informal Activities

a) Afforestation Programme: This program was considered as one of the best efforts carried at the national scale with the participation of public and private institutions. The national efforts were lead by Ministry of Agriculture (MOA) who implements annual forest plantation. Furthermore, MOA produces about 8 millions plants and distributes them free of charge to schools, embassies, private companies, and clubs. Ministry of Education also carries similar effort by planting trees through different schools. The role of the Jordanian Armed Forces is also commendable through the annual forestation programmes. Different societies, universities, companies, and NGOs participate in annual festivals for planting forest trees on land allocated by MOA. Many of these places carry names suggested by those participants.

b) The Royal Society for the Conservation of Nature (RSCN): Established in 1966 with a mission to protect and manage the natural resources of Jordan. Responsibilities include setting up protected areas to safeguard wildlife and scenic areas, breeding endangered species to save them from extinction, enforcing government laws for the protection of wildlife, controlling of illegal hunting, raising awareness of environmental issues through education programmes, and promoting the sustainable use of natural resources. RSCN established six protected areas and over nine hundred Nature Conservation Clubs in schools. RSCN has pioneered in managing wildlife areas and is in charge of the protection and management of a RAMSAR site in Jordan.

c) Settlement of the Bedouins: This project was carried out during the period of 1960- 1975. Among the aims of the project was to provide housing for highly mobile inhabitants of the Badia. The project was envisaged as an attempt to indirectly reduce pressures on the range resources within the fragile areas.

d) Jordan Cooperative Organization:- This organization operates about 216 cooperatives and executes different kinds of activities. Among these activities is the establishment of range reserves and providing financial credit to farmers in the rural areas to promote the proper utilization of natural resources. The overall activities of this organization are related to alleviation of poverty in rural areas through better resource management.

e) Badia Program: This program was initiated in 1992 with the objective to achieve sustainable development of the desertified land in the Badia region, and the improvement of the standards of living of the inhabitants. The program covers about 12.5% of the total area of Jordan and focuses on (1) Human dimension: covering the field of demography, anthropology, and socio-economic, archaeology, epigraph, rural development, public health, and education, (2) Agricultural dimension: including livestock production, plant production, vegetation cover, wildlife, and related subjects. (3) Engineering fields: including areas such as geology, industry, environment, remote sensing, land and water resources using GIS. The program adopted the integrated approach. The Higher Council for Science and Technology (HCST) executes the project and has established strong linkages with national programmes as well as many international research centers and universities.

f) Improvement of Agricultural Productivity in Arid and Semi-Arid Zones of Jordan: This project aims to contribute to the sustainable development of the Badia land of Jordan by providing basis for the optimal use of the region's land and water resources in areas suffering from desertification. The project impact zone is Steppe region receiving approximately 100-200mm annual rainfall. The project aims to produce land use recommendations based on technical packages ranging from water harvesting, improved soil management to the introduction of rangeland species. Towards the end, the project will provide extensive database and framework for future land use planning and environmental monitoring of the Steppes in Jordan.

g) The Jordanian Society for the Desertification Control and Badia Development (JSDCBD): was established in 1990 with the objectives to study the mechanism and extent of desertification in order to formulate scientific solutions to halt desertification processes. Focus areas include the research on the rate of destruction of the vegetation cover, protection and utilization of land resources using surface water resources, and improvement of soil fertility. Moreover, the Society focuses on raising the public awareness as to the threats, which could result from desertification, improvement of Badia environment through participation with other organizations, use of areas around treated waste plants for afforestation programmes, and rehabilitate waste disposal sites. The Society publishes studies and research results of relevance to desertification control and disseminates relevant information.

3.2. National Development Plans, Strategies and Policies

3.2.1. Development Plans

The various development plans gave varied attention to the environment and related problems. Desertification is prominently highlighted in the most recent ones. It has been clearly indicated, by most plans, that policies for conservation of the environment of rehabilitation and improvement should be high on the agenda of the government. The following is a brief description of efforts proposed through the various development plans:

The First Five-Year Development plan (1976-1980)

The objectives of the plan that are of relevance to environmental degradation included a number of focused projects. The projects included cooperative activities in providing credit for the reclamation of dry lands, implementing integrated rainfed production systems, implementation of soil conservation work to arrest soil erosion at several locations, planting fruit trees on steep land coupled with measures to reduce soil erosion. Projects also covered the expansion of irrigated areas, encouraging farmers to shift from surface and sprinkler to drip irrigation, and the introduction of regional land use planning for the selection with regards to urban activities.

The Second Five Year Development Plan (1981-1985)

The plan included several activities including the national afforestation project, additional allocation for new forest activities, soil and water conservation, irrigation drainage, construction of desert dams, expansion of irrigated areas coupled with efforts to shift irrigation practices from surface to drip irrigation to improve irrigation efficiency, monitoring the groundwater resources. Technology management was also addressed through the establishment of information database, and the establishment of waste disposal sites. In the areas of legislation, the plan suggested approaches to deal with land fragmentation, use of Steppe land, and range rehabilitation, and conducting appropriate surveys. (1).

The Third Five-Year Development Plan (1986-1990)

The plan was designed to enhance and improve the quality of production, utilize available resources, upgrade management efficiency and reduce production costs. In order to fulfil these goals a number of measures have been adopted as:

- 1. Policies:** Policies that place special emphasis on the problems of narrowing regional disparities, on one hand, and reducing the development gap between urban and rural areas on the other hand. This is anticipated to be achieved by reducing the concentration of economic activities in, and the consequent attraction of population to Amman and to the Amman-Zarqa belt in particular.
- 2. Environmental protection:** The plan was formulated to enhance the national capacity to sustain resource productivity, while protecting the environment. The various implemented projects provided clear evidence to this. The projects covered areas as enhancing the data collection by the Department of Statistics; employing GIS and remote sensing projects; halting urbanization at the expense of cultivated land. They also focused on the establishment of new waste disposal sites as well as new waste water treatment plants, and protection of water basins by preventing random dumping of waste water through the construction of waste water networks and reducing water leakage. The plan called for the protection of

agricultural environment from desertification, in order to maintain the area of arable land, and prevent soil erosion by giving more weight to afforestation and tree planting projects. The plan comprised several activities, which are of direct importance to combating desertification that can be classified into the following categories:

1st Management of Resources: Through planning of land resources, which was reflected by measures to halt the expansion of urban centers, and establishment of industrial centers on non-arable land, preventing random disposal of waste, and protection of water basin:

2nd Protection of Production Bases: through the execution of new projects, which covered improvement of range resources, soil conservation within the Highland, development of natural resources within the Arid region, expansion of cooperative activities, improvement of forest protection measures. Regarding water resources, the establishment of new waste water treatment plants, waste water collection network to reduce pollution of ground water resources, and the expansion of drainage project.

3rd Enhancing the Monitoring Process: through the establishment of integrated follow-up system to provide basic data and information relevant to water resources, and monitoring soil degradation, and monitoring animal diseases, especially in the Steppe and dry regions.

3.2.2. Action Plans

A The National Action Plan to Combat Desertification, 1987

The plan was formulated (ESCWA, UNEP, and FAO) with the view of providing a continuing framework for the analysis of the government's current and future activities to combating desertification in Jordan (1). It is concerned mainly with 100-300 mm annual rainfall zone. The plan identified number of gaps and recommended suitable actions to compliment what has been initiated by national planning for desertification control.

The plan called for a firm implementation of already established land use policy with regard to land zoning and the rule of no cultivation below 200mm annual rainfall. It emphasized the need for stricter enforcement of existing legislation with regards to forestry. The plan proposed the funding, implementation, and sustained replication of a pilot demonstration project for range rehabilitation in Jordan

B National Environment Strategy/National Environmental Action Plan

The National Environmental Strategy (NES) was prepared as the result of collaborative efforts of the government, and international agencies. The strategy was officially adopted in May 1991, which made Jordan the first Asian country to adopt a clearly defined national strategy for environment protection. (4).

The NES aims at maintaining long-term environmental balance. It also aims at enhancing the preparation of development plan and ensuring its continuity through direct contribution to proper national economic planning. The strategy is intended to play direct supervision role in such planning through the different sectors influencing the process of natural resources utilization and management.

The strategy presented five strategic initiatives to be undertaken covering the following areas:

- a) Constructing a legal framework for environmental management, which comprises formulation of a National Environmental Policy, empowerment of the department of environment, and creation of environmental impact assessment process.
- b) Institutional framework for environmental protection and conservation.
- c) An expanded role for Jordan's protected areas through creation of additional natural reserves and to expand the scope of existing managed areas to encompass additional environmental and conservation elements.
- d) Bringing environment to the people through environmental and conservation education that can be carried out by schools, literacy centers, vocational training institutes, colleges, and other education institutions.
- e) Stemming population growth by striking a careful balance between fast increase in population and the carrying capacity of the natural resource base. In this respect, the adoption of the national health programme for Birth Spacing would work to the achievement of this balance.

The strategy emphasized the need to give priority and to urgently address water issues and maintain productivity of agricultural land. The former is threatened by salinization, pollution, and depletion while the latter is threatened by encroachment of urban areas and erosion.

C The National Environmental Action Plan (NEAP)

The preparation of the National Environmental Action Plan was initiated by the Ministry of Planning and the Ministry of Municipal and Rural Affairs and Environment in collaboration with the World Bank. Its objective is to guide the government's environmental policy and investment decisions, and to articulate programmes to implement such decisions. Specifically the NEAP aims to formulate actions to deal with the national priority environmental issues, which were identified according to the following thrusts:

- Environmental activities related to land and water resources, cultural environment, and natural and cultural resources.
- Sectoral and cross-sectoral environmental issues. Areas of priorities included: public awareness; environmental monitoring and impact assessment; improvement, enacting, and enforcement of current and revised laws; and environmental degradation, which should be concerned with areas such as groundwater over-pumping, water pollution, land degradation, land pollution, air pollution, random expansion of urban centers, and biodiversity degradation.

The plan identified specific causes of environmental degradation, and suggested specific actions and requirements. The plan also, identified the short and long-term means of implementation through the following measures:

- Policies, legislation and by-laws
- Economic activities
- Institutional arrangements
- Information
- Public awareness

The plan has been linked with major national strategies, relevant policies, and activities. Linkage with the National Population Strategy was particularly highlighted. The plan further recommended adopting some policies whose implementation has strong impacts on the environment. Among such policies is the Agricultural Policy Charter.

D The Convention on Biological Diversity

The General Corporation for the Environment Protection (GCEP) prepared Jordan Country Study on Biological Diversity with technical support from UNEP and funding from UNDP/GEF (8). The Country Study on Biological Diversity outlined several recommendations. The following represents some of the recommendations highly relevant to combating desertification:

Forest:

- Assess the relationship between forest and environmental protection
- Establish units for the management and conservation of forest resources
- Encourage scientific institutions to include genetic resources in teaching and research agenda
- Review and update legislation regarding all aspects of forest resources protection

Protected Areas:

- Produce management, zoning, and other sustainable use plan, set-up a network of protected areas
- Establish environmental centers
- Promote regional cooperation and conservation management of natural resources
- Rehabilitate rangeland and special habitat within protected areas
- Promote the participation of local inhabitants in the re-introduction programs
- Set-up national awareness program
- Promote sustainable development in and around biodiversity areas
- Promote and enhance status of habitats of global importance
- Review relevant legislation, and improve policies and regulations related to management and protection, and ratify international conventions and treaties related to protection and management

Wildlife:

- Promote sustainable development and initiate socio-economic project
- Monitor the use of agro-chemicals and pesticides affecting endangered species
- Rehabilitate endangered and endemic species
- Conserve highly threatened ecosystems such as desert system
- Conserve and manage species and habitats of global significance
- Promote local people participation in the re-introduction programs. Raise awareness among decision-makers and other parties towards conservation of wildlife
- Strengthen by-laws and regulations and law enforcement.

Land Resources:

- Encourage population distribution according to sound demographic environmental policies

- Promote public participation in land use policies and management
- Establish an environmental land use action plan for urban planning
- Define priorities and mechanisms for land use planning
- Set-up a national plan for capacity building in land use management and planning in accordance with environmental criteria

Genetic Resources:

- Determine sustainable use of genetic diversity and its effect on type of vegetation
- Update genetic resource inventory
- Establish a center for the conservation and enhancement of genetic resources
- Regulate the use of rangelands to ensure their rehabilitation and perpetual use
- Enhance coordination and cooperation between all concerned national agencies
- Strengthen by-law and regulations relevant to conservation and management of biodiversity

E Biological Diversity Strategy and Action Plan are under preparation by the Directorate of Nature conservation and Land protection, GCEP.

3.2.3. Policies and Strategies

A. Agricultural Policy Charter

General Objectives

The main objective of the Agricultural Policy Charter (APC) is the management and utilization of available agricultural production factors, in particular water, land, capital, and labor, in an economically efficient manner while preserving the environment and ensuring sustainability of agricultural production on the long-term (5). The policy clearly indicated that the utilization of land for agricultural purposes should be environmentally sound and sustainable, achieved social and economic equity within the sector itself, and provided equal social and economic opportunities to all participants in agricultural activities. The APC highlighted the government intention to preserve and protect agricultural land, and that land fragmentation in the rainfed areas be halted and reversed.

Specific Objectives

Rainfed Agriculture:

- Promote activities that result in equitable incomes for households
- Curb the encroachment of urbanization on agricultural land
- Promote the participation of public and private sector in soil and water conservation
- Protect agricultural land from fragmentation.

Low Rainfall Areas:

- Halt rangeland degradation and reverse degradation process
- Restore the productive capacity of rangeland and stabilize rangeland forage and livestock production
- Enhance the quality of the environment
- Improve the economic and social welfare of the inhabitants of the low rainfall areas

Forestry:

- Diversify forestry activities to meet peoples' needs
- Promote sustainable land use and consolidation of forestland
- Discourage practices that are not environmentally sounds

Irrigated Agriculture:

- Maximize the efficiency of water storage, conveyance and on-farm application
- Maximize efficiency of water use in irrigation
- Adopt proper treatment methods for recycling water and special measures for the preservation of the quality of groundwater

Livestock:

- The development of integrated crop-livestock production systems for the most efficient use of land resources
- Rangeland resources will be rehabilitated, developed, and managed to achieve a high level of rangeland productivity and sustainable production

B. Water Strategy and Policies

The government adopted a series of strategy and policies for the water. These policies and strategy had profound impacts on the protection of irrigated land resources from degradation. The following is a brief description of the policies and strategy: -

Jordan Water Strategy, 1997

The strategy focuses on resource development, management, shared resources, public awareness, health hazard, private sector participation, financing, and research and development.

Water policies**Irrigation Water Policy, 1998**

The policy focuses on sustainability of irrigated agriculture, resources development and use, on-farm water management, irrigation water quality, management and administration, public awareness, water pricing, regulation and control, irrigation efficiencies, linkages with energy and environment, legislation and institutional arrangement, and research and development.

Waste Water Policy, 1998

The policy focuses on development, waste water collection, and treatment, reuse of treated effluent and sludge, pricing, selected priority issues, standards and regulation and quality, legislation and institutional arrangement, financing, and investment, public awareness, role of private sector, human resource development, and research and development.

Water Utilities Policy, 1997

The policy focuses on institutional development, private sector participation, water pricing, and cost recovery, human resources, management, quality and environment, services level, public awareness, and conservation and efficiency measures.

Groundwater Management Policy, 1998

The policy focuses on resources exploration, monitoring, protection, sustainability and quality control, development, priority allocation, regulations and control, legislation and institutional arrangement, research and development and technology transfer, public awareness, and private sector participation.

C. Natural Resources Authority (NRA) is the focal authority for managing mineral resources. Recently, NRA had revised its law, which provided many amendments, to promote the protection of the environment, and the rehabilitation of quarries, and mines, which are not productive anymore.

3.3. Projects Undertaken to Combat Desertification Prior to UNCCD

Several projects and programmes were implemented by various government institutions in the fields of agriculture, environment and nature conservation. Though not originally designed to combat desertification, these projects had greatly contributed to soil and water conservation, vegetation cover regeneration and to increasing soil fertility and productivity. Ultimately these efforts had, to various degrees, contributed to combating desertification in areas where they have been implemented. A list of some of these projects and programmes is given in Annex (1)

4. MEASURES UNDERTAKEN TO COMBAT DESERTIFICATION FOLLOWING THE ADOPTION OF THE UNCCD.

4.1. National Action Program for Combating Desertification and in Mitigating Effects of Drought (NAP).

The proposed NAP comprised six-programme areas (10):

- (I) Enhancing the establishment of database and improvement of information and monitoring systems pertinent to regions subjected to drought and desertification;
- (II) Combating land degradation through consistent efforts for soil conservation, afforestation and reforestation activities;
- (III) Developing and strengthening integrated development programmes for poverty alleviation and promotion of alternative livelihood systems;
- (IV) Developing comprehensive anti-desertification programmes and integrating them into national development plans as well as in the national environmental planning;
- (V) Developing comprehensive drought preparedness and drought relief schemes, including self-help arrangements, for drought prone areas; and
- (VI) Encouraging and promoting popular participation and environmental education, focusing on desertification control and managing the effects of drought, for each of these programme areas.

The NAP outlined the basis for performing the relevant tasks, objectives, activities and methodology for implementation. Also, the NAP described the present institutional framework of government and non-government institutions and organizations responsible for or active in the field of combating desertification.

In line with Agenda 21 and UNCCD, the plan recommended the establishment of a National Coordination Body to function as a catalyst in the preparation, coordination and implementation of the National Action Program for Combating Desertification and / or mitigating the effects of drought.

As desertification does not recognize political borders the proposed NAP took into consideration the regional impact of the phenomenon. It advocated cooperation with neighboring countries and coordination of efforts to the most possible extent so that national efforts are in harmony with regional activities.

4.2. The Five-Year Development Plan for the Period of 1999-2004

The plan is not officially issued yet. The main feature of the plan is the agriculture, water and environmental sectors' components. The plan addresses the following main sectors:

i) Agricultural Sector: The plan included several projects concerned with rural development, protection and management of resources, poverty alleviation, and biodiversity conservation. It addresses the following activities, which are directly related to resource protection and desertification:

- Reclamation of new land within the rainfed region
- Intensive programmes to expand forest areas
- Enhance the national capability in forest management and development
- Improve production systems in low rainfall areas by means of range-livestock integration
- Issue proper legislation to curb expansion of urban areas towards agricultural lands
- Combat desertification
- Issue proper legislation to reduce land fragmentation.

ii) Water Sector: Included the following elements of environmental dimension:

- The social safety projects.
- Construction of dams to collect rain flood for irrigation.
- Improvement of the performance of treated wastewater plants.

iii) Environmental Sector: Included several activities related to national policies and action plans

4.3. National Agenda 21

A national Agenda 21 is finalized and will be presented at a national forum for endorsement. The Agenda includes a full chapter on combating desertification and programmes proposed.

4.4. Restructuring of Ministry of Agriculture

The Ministry of Agriculture was recently restructured whereby a Directorate for Rangeland was established. The main duty of this directorate is to supervise projects and activities related to rehabilitation, protection of rangeland resources within the country. Combating of desertification would also be a priority area, which the directorate has to deal with.

4.5. National Center for Agricultural Research and Transfer of Technology

(NCARTT): NCARTT developed a research strategy to improve rangeland productivity and management in order to provide feed for small ruminants, arrest desertification, improve soil conservation: and conserve agricultural natural resources through a series of activities. The center developed a five-year plan (2000-2004) focusing on projects related to combating desertification. The projects covered areas of management and utilization of non-conventional water, which aims to develop management and utilization practices as well as water conservation through optimal use and Agro biodiversity in arid lands project, which aims at conserving local sources of agro biodiversity and enhancement of their national utilization (9).

4.6. Faculty of Agriculture, University of Jordan

The faculty had been restructured to accommodate issues of national concerns. A special department concerned with environment and management of resources was established. The Faculty was involved in the implementation of the project “Improvement of Agricultural Productivity in Arid and Semi-Arid Zones of Jordan”.

The main objective of this project during the period of 1995-98 was to provide a scientific basis for the sustainable use of land and water resources in the Badia transition zone receiving 100-200 mm average annual rainfall. The major tasks of the project were mainly to test wide range of production techniques suitable for this fragile ecosystem, involving different water harvesting techniques. And to develop methods of land use planning based on detailed evaluation of land and water resources to be followed by analysis of land suitability for the proposed production system.

The establishment of a comprehensive database for the project area and the application of GIS techniques to land use planning were also associated with the project activities, and methods of monitoring past and future changes in land use, and vegetation by remote sensing.

A project new phase implementation will begin in the year of 2000. The new phase is designed to address the following objectives:

- Test technical recommendations on sustainable agricultural production systems with farmers in the Badia transition zone
- Develop an extension methodology appropriate to the Badia transition zone
- Make appropriate methods of land and water use planning in the Badia transition zone

These objectives will be achieved through:

- On-farm testing of recommended production techniques
- Development of extension methodology
- Transfer of land evaluation and land use planning techniques to the Ministry of Agriculture

4.7. Faculty of Science, Yarmouk University

The faculty was recently restructured. Environment had been emphasized through teaching and research agenda.

4.8. The UNESCO Chair for Desertification

This chair was established at the Yarmouk University. The aim of the chair is to conduct research in various desertification disciplines, and to hold special workshops to discuss relevant topics.

4.9. Jordan Badia Research and Development Program (JBRDP)

This is one of few institutions, which have been working in the Badia of Jordan since 1993. The general objectives of JBRDP are:

- Sustainable development of the degraded Badia environment and to compact desertification
- Obtain information on the Badia's human and natural resource bases, and to present that information to decision-makers at various levels
- Facilitate, the use of the acquired knowledge in the preparation of policies, strategies, and activities for development at the national level
- Provide local communities with direct access of the information and resources.

The first phase: (1993-1996) was mainly the founding phase of the programme. In addition to establishing the field center a number of studies and research activities were conducted including a base line socio-economic surveys, associated with research on livestock, water, soil, flora, and other resources.

The second phase: (1996-2000) carried out research action plan, which covered the following themes: human resources, water resources, environment, energy and geology, livestock, land resources, and information technology and management (GIS). During this phase, efforts were directed more towards applied research, while development was envisaged under three broad thrusts: 1-beneficial economic change, 2- conservation of the environment, and 3- improved delivery of services. The key environmental issues were the shortage of water and the degradation of the rangeland.

It has been highly recognized by the programme that development will involve management of local resources by members of the local communities, and that this can only happen, if they were directly involved in the decision-making processes leading to the desired changes.

4.10. The Royal Society for the Conservation of Nature (RSCN)

RSCN is one of the few voluntary organizations in the Middle East, which have been given such public service mandate. The society had remarkable record in the conservation of nature since its creation in 1966. Since then, the society had developed its strategy and activities tremendously. Among recent activities undertaken by RSCN are:

- Establishment of five major new protected areas
- Restoration of the internationally important wetland at Azraq (RAMSAR site)
- The establishment of database on the status and distribution of the plants and animals throughout Jordan to identify species at risk
- Extend the public awareness programme to all section of the Jordanian society and influencing the national school curriculum so that it reflects modern environmental concerns, and teaching methods
- Extend memberships to encourage the people to contribute to protection of environment

- Participate in international programmes to protect habitats and encourage the development of voluntary organization in the Middle East countries
- Extension of the pioneering Dana model to other protected areas in order to integrate the needs of nature conservation with the needs of the people

5. INSTITUTIONAL MEASURES TAKEN TO IMPLEMENT THE CONVENTION

5.1. Institutional Set-up for the Environment

In accordance with the 1995 Environment Protection Law, two entities dealing with environment issues were established. Namely the Higher Council for Environment Protection (HCEP), and the General Corporation for Environment Protection (GCEP) (6).

1- HCEP consists of 22 members from the public and private sectors among whom are four NGOs. It is chaired by the Minister of Municipal and Rural Affairs and Environment. HCEP has the following mandate:

- Approve the national environmental policy, and strategy,
- Approve environmental regulations and standards.
- Propose environmental legislation
- Issue regulations and decisions to implement the environment protection law:
- Approve plans to deal with environmental disasters.

2- GCEP is an autonomous body with managerial and financial independence. It reports directly to the Minister of Municipal and Rural Affairs and Environment. GCEP has the following duties:

- Design, in collaboration with other concerned institutions, policies for environmental protection and formulate mechanisms for its implementation.
- Prepare specifications and standards for environmental parameters and components.
- Carry out studies relevant to the environment in collaboration with national institutions.
- Monitor environmental parameters through designated national laboratories.
- Monitor utilities, public and private activities including projects and companies to ensure their compliance with environmental standards and specifications.
- Specify regulations, specifications and environmental conditions for agricultural, commercial, industrial and housing projects.
- Establish rules for handling hazardous waste:
- Supervise /conduct environmental impact assessment for projects;
- Formulate rules and procedures for establishing natural reserves:
- Prepare plans for environmental emergencies:
- Enhance public awareness about environmental issues.

According to the Environment Protection Law No. 12 of 1995, GCEP is responsible, in collaboration with concerned parties, to contribute the following:

- Protecting the environment from pollution in relation to the sectors of water, air, soil, and marine law in collaboration with local, regional and international bodies concerned with environmental issues;
- Issue general standards for all water usage;
- Monitor pollution in water sources;
- Issue standards and specifications determining their permissible limits of pollution in the air. Monitor the emission and sources of air pollution, and take measures necessary to control it;
- Prevent the entry into and land filling within the Kingdom hazardous waste, and take appropriate measures;
- Formulate directives for the classification of waste, hazard levels, and the treatment;
- Supervise and monitor sources of soil pollution and control it to environmentally permissible level;
- Supervise causes of desertification in order to undertake the necessary measures to check both of them.

GCEP has an Environment Protection Fund of investing in aspects of conservation and management of the environment in Jordan.

GCEP hosts the following committees:(i) the National Committee for Biodiversity, (ii) the National Committee for Combating Desertification (NCCD), (iii) national committee for NAB, and (iv) the National Committee with IUCN. GCEP coordinates the work of the first three committees, while the third rests under the umbrella of national coordinator of IUCN. The NCCD consists of most stakeholders and concerned parties in Jordan.

Planning Within GCEP

The planning committee within GCEP discusses programmes and actions related to reserves system, biodiversity and desertification.

5.2. The Roles of National Coordination Body and National Focal Point

GCEP was mandated by the Council of Ministers as the National Coordination Body with respect to all issues and programs concerning UNCCD and the combat of desertification.

The Nature Conservation and Land Protection Directorate (NCLP) within GCEP has a Director and comprises two divisions: Land Protection division (LP) and Nature Conservation Division (NC). The LP is responsible for handling all matters related to desertification as well as land use and information systems. The head of LP is the National Focal Point. The Directorate is responsible for the preparation of environmental plan for nature conservation, and protection of natural resources as well as determination of optimum utilization of land. The specific responsibilities and functions of the Directorate are given in Annex II.

NCLP is the focal point for biodiversity and it collaborates with several governmental institutions and NGOs in this regard. The directorate is a member of the Steering Committee of Sub-regional Agro biodiversity project. It had established a

system for soil protection from pollution, protection of parks and reserves, both of which have to be issued through a royal decree. NCLP is also charged with the preparation of the national Agenda 21, which has already been initiated. It has prepared an act on nature conservation. Another act on soil conservation is under preparation.

LP is giving priority to the collection and consolidation of national efforts in the field of combating desertification. It is realized that there is an urgent need to reformulate the National Action Program (MOA) in collaboration with local institutions as well as organizations. LP had limited facilities and would benefit from assistance to upgrade its capability. LP is constraint by the lack of financial resources.

The National Committee for Combating Desertification

The National Committee for Combating Desertification (NCCD) was established according to a council of ministers decree in 1996. It comprises several governmental institutions and NGOs (Annex III). NCCD elaborated a comprehensive programme of work. Thoughts are being given to expanding membership of the committee.

5.3. Constraints Facing the Implementation of UNCCD

The implementation of UNCCD in Jordan faces certain problems and constraints that should be overcome to give actions in this direction the momentum they require. Prominent among these problems and constraints are the following:

- a) Fund limitations
- b) Overlap of responsibilities between GCEP and other ministries
- c) Lack of sufficient well trained staff to lead efforts for combating desertification. In this regard, there is a pressing need to enhance collaborative efforts with universities and research institutions to cover fields of combating desertification but most importantly in training and upgrading the skills of GCEP staff
- d) Lack of national study to identify the various levels and intensities of land degradation and desertification, and to map desertified areas subjected to desertification hazard
- e) The National Information Center capacity is currently limited. No database pertinent to desertification is established yet, and relevant limited data is available. Also, desertification is not a priority in this center.

National Databases Relevant to Desertification:

Many databases are maintained by several governmental institutions and projects are quite relevant to desertification. Among these databases are:

- 1 The Soil Survey and Land Classification project: has database and GIS on soil as well as soil, topographic and geological maps. The Directorate of Land and Irrigation /MOA is using GIS and database management system with respect to land capacity, use and cover.
- 2 The Royal Society for Nature Conservation has a database of wildlife and vegetation and is presently utilizing GIS to process it.
- 3 The Faculty of Agriculture, University of Jordan has a good database on pedology of the Kingdom. The Faculty has also an extensive database relevant

to the Steppes zone, which suffers from higher rate of desertification. The database serves as a guide for optimal use of land in areas suffering from desertification, and for bases for desertification monitoring.

These fragmented efforts, in addition to what is available at NCB and the National Information Center, will be a valuable asset in the national efforts to combat desertification, if were coordinated and effectively linked to establish a national desertification information system.

In spite of the existence of several institutions with programmes and activities related to combating desertification, all these institutions are constrained by shortage of qualified and experienced staff in areas of desertification, environmental planning and natural resources sciences as range management, as well as the lack of adequate financial resources. The availability of adequate well-trained human resources is required to put development and desertification related activities in the right direction and to ultimately lead to sustainability as well as environmental conservation. This situation highlights and emphasizes the need to give more attention to capacity building and upgrading the institutional set-up for combating desertification. Training and enhancing the capabilities of the involved national cadre within GCEP, other institutions, and NGOs requires priority and urgency of action.

5.4. The Role of NGOs

Jordan has a number of well-organized NGOs, which are actively involved in environment, nature conservation and combating desertification. They are recognized as effective entities and their actions are well accepted and appreciated at both government and public levels. These NGOs collaborate with government institutions including GCEP in implementing programmes, participating in meetings and similar events, and through membership of specialized councils and committees they play a major role in education and awareness raising efforts. They are also actively involved in implementation of nationally funded or internationally assisted projects. Prominent among these NGOs are:

Jordan Environmental Society (JES): Jordan Environmental Society was established in 1988 to enhance environmental protection and prevention of pollution.

Royal Society for Conservation of Nature (RSCN)

RSCN has been mandated set up a network of protected areas and conserve and manage wildlife in the country. RSCN is the most active partner of the government in the implementation of legislation pertinent to wildlife and in establishment and management of natural reserves.

The Jordanian Society for Desertification Control and Badia Development (JSDCBD): The Jordanian Society for Desertification Control and Badia Development (JSDCBD) was established in 1990. The objectives of the Society are:

- To combat desertification processes that result from degradation of vegetation cover while protecting agricultural land from the threats of desertification.
- To develop the productive capability of rangeland by protecting forage plants and enhancing their propagation through establishment of special nurseries,
- To utilize media to raise public awareness about the adverse effects of irrational practices that accelerate the rate of land degradation.

5.5. Legal and Regulatory Framework

A comprehensive study or analysis on existing legislation, covering the various issues related to environment was prepared by the HCST in 1993. The study covered legislation in the following sectors: water, home and hazardous waste, agriculture, air, population, nature and wildlife, environment, strategy and policies in relation to science and technology as related to environment. The study identified strengths and area of overlap between these sectors. Finally, the document listed 45 individual base studies conducted for the purpose of preparing the final document, although desertification was not the center theme of this comprehensive document.

A national environment protection law was issued in 1995, and a proposed agricultural law for 1999 is being finalized. The latter, which will replace that of 1970 has the objectives of ensuring sustainable use of agricultural natural resources without causing environmental degradation. It also aims to combat desertification and conserving biodiversity. Both laws and other relevant legislation should be considered in any future analysis.

A careful analysis of both laws strongly suggests that they were formulated with special care to all environmental issues. Issues included in these laws are to be observed during the implementation of various activities. After the formulation of the appropriate by-laws, it is expected that the country will have a solid mechanism to protect, and monitor the environment effectively.

5.6. Participatory Approach not within Legal Framework

The cooperative move under the umbrella of Jordan cooperative is a viable example of people participation in conservation and development of their land resources. Out of the 238 agricultural cooperatives under this umbrella, 20 are range cooperatives with grazing reserves where management and improvement of the Badia lands by planting fodder shrubs and protection of the natural vegetation cover is widely adopted. This adds to other efforts to empower local communities to conserve natural resources protect land from erosion and degradation and improve livestock production as well as their incomes. The WFP assisted project and the UNDP/FAO Regional Range Management project have benefited a lot from this approach and local experience. The project for rehabilitation of the rangeland in Jordan(co-financed by IFAD and MOA) promotes local community participation in the planning and implementation processes.

6. PARTICIPATORY PROCESS IN SUPPORT OF PREPARATION AND IMPLEMENTATION OF ACTION PROGRAMMES

The Jordanian government realizes the deteriorating environmental conditions and impacts of desertification with concern, accordingly, it has initiated or is in the process of developing solutions and is taking necessary actions. In order to deal with environmental priority concerns including combating desertification, several available instruments are tapped including the utilization of information and public awareness instruments. The responsibility for utilizing these instruments rests with GCEP, Ministry of Education, other government institutions, and equally on NGOs.

GCEP has an information division for education and awareness on environmental issues. It also utilizes workshops, seminars and various similar events for extension and awareness raising. The corporation has also produced information awareness materials as leaflets, publications, and posters. An appreciable effort of GCEP in this direction is done in collaboration with NGOs, which are supported and encouraged by the corporation.

Environmental education is gaining momentum. The Ministry of Education started to upgrade the curricula in public and private schools emphasizing the value of protecting the environment and the need for launching effective conservation measures and actions. The Council of Higher Education is also focusing on environmental related subjects at the university level. Environmental education had also lately taken a very wide space within the universities teaching and research programmes. Several departments offering specialized courses, undergraduate, and graduate programmes in environment are offered.

Environmental issues also occupy a large space within the local media as reflected by the various programmes broadcasted on the public radio and television stations. Documentaries, interviews, and coverage of local events and workshops undertaken by various parties are given proper attention. Local newspapers also participate in covering local and international events, or conventions. One can hardly observe a day without an environmental topic being covered, discussed, or reported by daily newspaper.

Agricultural extension has presence in the whole kingdom and is playing an increasing role in raising awareness and extending sound techniques to be adopted by local communities. The agricultural extension department prepares and broadcasts documentary films on desertification and major projects implemented by the MOA. The department produces and distributes several related leaflets and posters in spite of the limitations of staff and facilities.

NGOs are taking the lead in issues related to the raising of awareness about environmental protection and combating desertification. In 1986 RSCN, in collaboration with the Ministry of Education, began forming Nature Conservation Clubs at schools. Today, there are about 900 clubs, which helps increasing efforts targeting decision-makers, women, and the media to promote environmental awareness.

The Jordanian Environmental Society organized several seminars about desertification in collaboration with the JSDCBD. The latter collaborates with several governmental institutions, universities, and other NGOs in raising awareness through seminars, camping, and other environmentally related activity (7).

In spite of the above mentioned appreciable efforts, the area of raising awareness would benefit a lot from:

- More coordination of awareness-extension activities.
- Well-focused and simply expressed education messages.
- Improvement of approaches to communicate relevant information and findings to the public as well as producers groups.

7. CONSULTATIVE PROCESS AND PARTNERSHIP AGREEMENTS WITH DEVELOPED COUNTRY PARTIES.

Several organizations from the developed countries play a vital role in cooperating with different national institutions in Jordan in areas related to environmental management, monitoring etc. Although these agencies do not coordinate their activities, (6), recently, the Ministry of Planning, created Donor Coordination Directorate and the Directorate of Water, Environment, and Tourism. Among the duties of these directorates is to improve donor -government coordination on environmental projects. GCEP should take a lead role in such coordination efforts while ensuring sufficient efforts to involve international partners in plans and implementation of programmes.

8. MEASURES TAKEN OR PLANNED WITHIN THE FRAMEWORK OF NATIONAL ACTION PROGRAMMES

8.1. Diagnosis of past experience

Careful examination and analysis of past experience is recognized as an important area that should be tackled. Significance of such examination stems from the facts that substantial efforts were exerted for long time although not in the context of recent definition of desertification.

8.2. Projects in the Fields of Resource Management and Combating Desertification.

A comprehensive review of projects on natural resources management and combating desertification to assess the integration of the UNCCD principles in these projects has not been done. The NCCD and national institutions should naturally carry out such a review. Nevertheless, several projects had been executed in the field of resource management and combating desertification. The following is a brief description of some of these projects, which clearly suggests that the ingression of resource management had formed a prominent component of the work plan of these projects.

A. Agricultural Production in the Semiarid and Arid Land and Areas Suffering from Desertification

This is a collaborative project between the Faculty of Agriculture, University of Jordan and the European Union. The project started since 1985 and is now on its fourth phase. It aims at arresting further degradation of resources within the fragile arid regions by introducing systems that enhance sustainable development, maintenance of the natural equilibrium and prevention of land degradation. The project aims also to develop and apply suitable techniques e.g. water harvesting, and rangeland rehabilitation, in collaboration with local farmers. The project contributed to training of national staff, capacity building, and establishing of a database related to arid land resources management through its research programme and by training in various fields of its activities.

B. Assistance to Land Development Project

This project is carried out the World Food Program support and is based on popular participation. Its goal is to establish suitable production systems for the benefit of farmers, livestock owner, and women who suffer from poverty through the protection and optimal use of natural resources. The general objectives of the project comprises the following:

- Protection and development of farmers basic resources through soil and water conservation measures, improvement of unutilized land and planting dryland farming areas which are unsuitable for field crops with high value tree crops
- Improvement of rangeland productivity through development of selected range sites within the project area
- Achievement of environmental conservation and checking land resources degradation through the expansion of forestland
- Increase agricultural production and food security
- Create job opportunities and sources of income for the poor communities
- Concentrate activities in areas of poor farmer and emphasize women participation in establishing community institutions.

In the area of rural women development the project will:

1. Allow 10% of all those involved in land development and planting of fruit trees as women heads of households.
2. Assist women in land development and cultivation
3. Increase the percentage of women working in nurseries to 40%
4. Provide small loans/ soft terms to invest in income generating small-scale projects
5. Train them in various fields to upgrade their abilities and increases their chances of job opportunities

C. The National Programme to Rehabilitate and Develop Rangeland

IFAD and the Jordanian Government fund this project, the overall goal of the project is to check and reduce deterioration of rangeland environment through the introduction of sustainable management practices. The project comprises three components namely the planning process based on popular participation, information and environmental awareness; and the implementation of range management plans in pilot areas in the Badia. The specific objectives of the project are to:

- Provide decision-maker with reliable and updated data on the condition of rangeland resources.
- Enhance environmental awareness in rangeland utilization.
- Adopt a planning approach based on local community participation in order to rehabilitate and develop rangeland resources.
- Assist beneficiaries and target groups to implement and refine rangeland development plans.

Dana Nature Reserve: a UNDP/GEF funded project that combines both conservation of wildlife and the welfare of local population so that both can benefit from the presence of the reserve. It is considered a pilot model for sustainable development of a deteriorated area. The approach adopted in this case is sound, practical and motivating to local communities and offers a viable approach that can be adopted,

under similar circumstances, for projects to combat desertification. In this model, protection of the degraded site from grazing has been coupled by socio-economic initiative, which provided alternative source of income for the local population. Several job opportunities have been created based on the establishment of the reserve and promotion of eco-tourism.

D. Yarmouk Agricultural Resource Development Project (1999-2004): This project will be executed in collaboration between the Arab fund for social and Economic Development, IFAD, and MOA. The project aims to improve food security and income levels of target group of farmers by arresting degradation and restoring soil fertility for sustainable use of land and water resources in Yarmouk Basin. The project will include an innovative participatory approach for the management and conservation of soil and water resources to ensure empowerment of the poor, providing them with access to productive resources, and to decision-making. The project will have a direct positive impact on nutrition and household food security. Intervention in soil and water conservation measures and introduction of sustainable land use practices would reduce soil erosion and loss of soil fertility

8.3. New Actions and Planned Measures

Contacts have been made and a proposal was submitted by GCEP to obtain support to upgrade its land protection division in charge of desertification activities. In line with that, it is proposed to formulate and raise funds to enhance the institutional framework of NCB and build its capacity to deal more effectively with desertification issues giving priority to the following:

- a) Updating the NAP
- b) Determination and mapping of desertification intensities and delineation of areas subjected to desertification hazard,
- c) Training of national staff
- d) Establishment of database

8.4. Sub-regional and Regional Action Programmes

Projects: Several projects of sub-regional or regional nature are in line with national policies and efforts to combat desertification. They include:

- The world Bank-funded project to control Desertification in the Near East involving Egypt, Israel, Jordan, Palestine and Tunisia.
- Agro-biodiversity project, which comprises Jordan, Lebanon, Palestine and Syria, The project is coordinated by ICARDA. .
- Mashreq and Maghreb project, funded by IFAD and coordinated by ICARDA, which is adopting regional adaptive research for the development of integrated crop-livestock production in Mashreq countries of Iraq, Jordan, Lebanon and Syria. It has a component of combating desertification and studying agro-climatic characteristics.
- Improvement of Agricultural Productivity in Arid and Semi-Arid Zones of Jordan, the project is co-financed by the EU, implements new technology to improve production of fragile zone in collaboration between University of Jordan with Granfield, UK

Participation in Regional and International Meetings

Jordan participated in several meetings and activities related to desertification either through governmental institutions or both institutions and relevant NGOs.

GCEP participated in COP2 in Dakar, Senegal and in the meetings of the group to prepare the work plan for West Asia. Jordan is a member of the group in charge of traditional knowledge.

The Jordanian Society for Desertification Control and Badia Development is the focal point for the Society for Conservation and Protection of Environment, which is part of RIOD Network in southwestern Asia. The Society participated in a regional workshop on preparation and funding of national action programmes to combat desertification in Cairo, Egypt, July 1997. The workshop was organized by CEDARE in collaboration with IFAD, the technical Secretariat, CAMRE and UNDP/UNSO. JSDCBD also participated in the international meeting for the preparation of sub-regional action plan to combat desertification and drought in West Asia, Muscat, Oman in September 1998. It attended COP2 in Dakar, Senegal JSDCBD is a member of Arab Network for Environment and Development.

9. FINANCIAL ALLOCATIONS.

The government has indicated its commitment to finance projects and programmes to combat desertification and to improve the management and sustainable use of resources. It has contributed towards these goals in various ways ranging from completely financed actions to joint efforts with international partners and funding agencies including UNDP, WFP, EU, Abu Dhabi Fund, IFAD CIDA, GTZ and the World Bank. Local NGOs are contributing to these efforts.

To date, the government has not determined specific mechanisms to ensure funding of special projects and programmes to combat desertification. However, several projects are included in the developmental plan of 2000-2004, which are highly relevant to the national efforts to combat desertification.(Example, rehabilitation of rangeland, resources management, etc) The allocation of funds for research and training by the public universities, as reflected by the establishments of specialized departments, will also contribute to capacity building and better understanding of how to deal with the issue of environmental degradation, in general, and desertification in specific.

10. REVIEW OF BENCHMARKS AND INDICATORS.

The following represents milestone efforts by national institutions in response to international commitments:

1st- **GCEP** was established to monitor various environmental activities and to ensure compliance with environmental regulations. This is done in collaboration with designated laboratories and according to standards and specifications set by the corporation. GCEP also determines permissible levels of pollutants. As far as desertification is concerned, the need to monitor and evaluate impacts of on-going and completed projects and programmes, the need to establish benchmarks and indicators to determine progress and achievements is well recognized.

2nd- Agriculture Production in the Semi-Arid and Arid Land and Areas Suffering from Desertification: A project implemented by the Faculty of Agriculture, University of Jordan, and MOA. One of the outputs of this project is the establishment of a comprehensive database with GIS for the Steppes zone, which is given highest priority for combating desertification in Jordan. The database is an excellent starting point to establish benchmarks and indicators for combating desertification.

3rd- Environmental law: This law was issued in 1995. It is considered as an advanced law. It covers all aspects of environmental protection, monitoring, and impact assessment. GCEP is mandated to implement the law and issue special regulations to invigorate compliance with the law. The law is given a superiority status over any other legislation.

4th- Agricultural Law: This law is waiting the House of Representatives' final approval. The law includes important revisions and additions to the previous one . Wide range of environmental issues were dealt with. Upon its implementation, it will provide the country with appropriate means to enhancing, protection of environment, and the implementation of APC, which specifically included recommendations regarding combat of desertification.

5th- Environnemental Action Plan: The final draft is available. The plan covers wide projects, legislation and various implementation plans to promote the protection of environment.

6th-Biodiversty Strategy : Under preparation.

7th-Desertification Action Plan: - The plan provided recommendations regarding the different mode of actions to be taken at the national level to combat desertification.

8th-Jordan Water Strategy, 1997: The strategy focuses on resource development, management, shared resources, public awareness, health hazard, private sector participation, financing, and research and development.

9th-Irrigation Water Policy,1998: The policy focuses on sustainability of irrigated agriculture, resources development and use, on-farm water management, irrigation water quality, management, and administration, public awareness.

10th- Waste Water Policy, 1998: The policy focuses on development, waste water collection, and treatment, reuse of treated effluent and sludge, pricing, selected priority issues, standards and regulation, and quality, legislation and institutional arrangement, public awareness, role of private sector.

11th- Water Utilities Policy, 1997: The policy focuses on institutional development, private sector participation, water pricing, and cost recovery, human resources, management, quality and environment, services level, public awareness, and conservation and efficiency measures.

12th- Groundwater Management Policy, 1998: The policy focuses on resources exploration, monitoring, protection, sustainability and quality control, development, priority allocation, regulations and control, legislation and institutional arrangement.

ANNEX I

Projects and programmes initiated prior to UNCCD

A National projects

- Establishment of Nature Reserves. The Royal Jordanian Society for of Nature Conservation 1975-1995
- National Projects for Agricultural Development.
- Establishment of protected areas. MOA, 1946-2000.
- Jordanian Government and IDA, 1985-1994
- Rangeland Development Projects, Jordanian Cooperative Organization and WFP, 1980-1995
- Zarqa River Basin Development Project, 1980-1996.
- Diversifying Family income through resource management, 1993-2000.
- Hamad projects Arab Fund for Economic and Social Development 1987
- Forestation and Forests Management Project
- Department of Forestry, afforestation programme 1930-2000
- Bedouins Settlement Project. 1960- 1975.
- Soil Mapping and Land Use. EU, 1991-1995
- Programme for Research and Development of the Badia 1991, the Higher Council for Science & Technology (HCST)
- Project for Enhancing the Productivity of Arid and Semi-arid Lands Affected by desertification, Faculty of Agriculture, University of Jordan and EU, 1986-1997

B Regional Projects

- Regional Range Management Projects. UNDP/FAO, 1984
- Mashreq and Maghreb Project, IFAD/ICARDA.
- Desertification in the Near East, Egypt, Israel, Jordan, Palestine and Tunisia.
- Agro Biodiversity Project, Jordan, Lebanon, Palestine and Syria, ICARDA. .

ANNEX II

Responsibilities and Functions of the Nature Conservation and land Protection Directorate

In the field of nature conservation:

- 1st-** Prepare standards, specifications and conditions for establishing nature reserves and national parks, their control and follow-up all matters pertinent to these reserves as well as issue regulations and instructions required.
- 2nd-** Focusing attention on the welfare of wildlife (both plants and animals) and eliminating threats of extinction through cooperation and coordination with all parties concerned in regulation and control of actions such as hunting and supervision of trade in wildlife and their products:
- 3rd-** Prepare proposed regulations and instructions needed for the protection of wildlife and nature reserves:
- 4th-** Conservation of biodiversity as well as plant and animal genetic resources through the preparation of a national plan, and by implementing necessary projects in collaboration with all concerned parties:
- 5th-** Prepare short and long-term policies, plans and strategies for conservation of natural resources
- 6th-** Study and monitor impacts of technology transfer especially biotechnology and international safety technologies, in the area of biotechnology, on national genetic resources:
- 7th-** Study performance of different ecosystems as well as the interactions between man and the biosphere in order to protect biological resources and their economic linkage with man and development, and concurrently encourage sustainable practices to conserve natural ecosystem:
- 8th-** Protection of rural and agricultural environments from pollution as a result of organic or chemical materials used in agriculture and assesses impacts of agricultural technology.
- 9th-** Conservation of wetlands and wildlife habitats through a comprehensive plan that suits their locations and geographical distribution, as well as conducting studies and implementing necessary projects in collaboration with concerned parties.
- 10th-** Implementation of international convention, their national commitments and their follow-up with respect to conservation of nature resources through preparation of pertinent plans, projects, programmes, studies and research.

In the field of land protection:

- 1st-** Make necessary efforts to combat Desertification conventions, their mitigate the effects of drought will all possible means through preparation of pertinent plans, projects, programmes studies and research.
- 2nd-** Surveillance of soil erosion and Desertification and taking necessary actions to check their influence and protect lands from the adverse process that cause their degradation;
- 3rd-** Control irrational urban expansion and prevent its encroachment onto agricultural land through the preparation of a national land use plan
- 4th-** Monitor sources of soil pollution and controls them within the permissible levels through preparation of specifications and standards that determine allowable levels of these pollutants;
- 5th-** check soil deterioration in arid lands, grazing areas and steppe through implementation of suitable projects for development and rehabilitation of such areas;
- 6th-** encourage development of programmes to extend green areas in order to stabilize and protect soil against erosion through designing scientific and applied programmes:
- 7th-** study development projects sites and their impacts on land and natural resources, and emphasize the need to include environmental considerations when formulating such projects:
- 8th-** Implementation and follow-up of international conventions and the related national commitments with respect to land protection through the preparation of relevant plans, programmes, projects, studies and research.
- 9th-** Introduce the concepts of environment and environmental protection in land use
- 10th-** Prepare a national plan to establish GIS for the different ecological zones of the kingdom according to priorities.

ANNEX III

National Committee for Combating Desertification Membership

- Ministry of Planning
- Ministry of Agriculture
- Ministry of Water and Irrigation
- The Royal Jordanian Geographical Center
- The Armed Forces.
- The University of Jordan
- Jordanian Society for Desertification Control and Badia Development
- Representative /UNESCO chair in Yarmouk University
- The Higher Council for Sciences and Technology.

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