



National Capacity Self Assessment for Global Environmental Management (NCSA)- Jordan

Environmental Policy Framework in Jordan 2006

An Overview

**Ministry of Environment
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Background and Terms of Use

This document has been prepared by the Ministry of Environment-NCSA project as a baseline assessment and analysis of the current policy framework for the environment in Jordan with special focus on the NCSA themes of Biodiversity, Desertification and Climate Change.

The information contained in this document has been compiled through a desk survey based on available documents from publications, websites, papers and reports.

This document will be used as a guideline reference for NCSA national action plan for capacity development under the NCSA process. It has been reviewed by the NCSA steering committee and national stakeholders.

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Document Framework in the NCSA Process:

The Ministry of Environment is currently implementing the National Capacity Self Assessment for Global Environmental project (NCSA) funded by the Global Environmental facility (GEF) and administered by the UNDP country office in Jordan.

The NCSA is a GEF initiative that aims to assess the capacity constraints and potentials for implementing the three International environmental conventions on Biodiversity, Climate change and Desertification.

The project focuses on cross-cutting issues within the three conventions to complement and enhance linkages and integration as well as promote resource mobilization and coordination in implementation.

The NCSA process represents the only nationally focused, global initiative explicitly designed to examine potential synergies between the Rio Conventions. In addition, they can be used by countries to mainstream the global environment into broader national sustainable development processes.

The NCSA process was launched at the Ministry of Environment in August 2004 with the first few months used for developing and operating coordination mechanisms. The NCSA process is composed of various inter-connected stages for capacity assessment and providing a national action plan for capacity development in the three conventions themes and cross-cutting issues.

The NCSA project will be implemented in four phases, as follows:

- 1- *Project Coordination Mechanism established and operational.*
- 2- ***Stocktaking and thematic profiles developed***
- 3- *National consultation and in-depth analysis of priority areas*
- 4- *Developing and endorsing the final NCSA report and action plan.*

This document has been prepared within the context of phase two of the NCSA with the main objective of documenting and analyzing the existing environmental policy framework with special focus on the three NCSA themes of Biodiversity, Desertification and Climate Change.

A historical Overview of Environmental Policies and Strategies in Jordan:

Planning and policy formulation in Jordan prior to the 1990s was based on a sector-specific approach with little consideration for environmental concerns. It can be said that environmental planning and policy formulation came to age in 1991 when the National Environmental Strategy (NES) was formulated by a national consultation process led by the Ministry of Municipal, Rural Affairs and the Environment with the technical assistance from IUCN and financial assistance from USAID.

The NES was the first environmental strategy in Jordan, and indeed in the Arab world. It has responded in content and recommendations to a large extent to the famous "World Conservation Strategy" of 1980 formulated by IUCN, UNEP and WWF.

Based on the NES Jordan was in a good political and strategic position to sign and then ratify the Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC) in 1992 during the Earth Summit. Two years later Jordan signed and then ratified the UN Convention to Combat Desertification (UNCCD).

Completing most of its international obligations and on the foundations of the NES, Jordan opted to develop a practical environmental action plan in 1995. The National Environmental Action Plan (NEAP) was prepared in a national consultation process coordinated by the Ministry of Planning and it included a prioritized action plan based on results.

The NEAP remained to be the environmental guidebook in Jordan, with most of its proposed project either implemented or started to implement. In 2000 Jordan launched its multisectoral National Strategy for Sustainable Development which was called "National Agenda 21" with technical and financial support from UNDP. The National Agenda 21 involved the participation of numerous organizations and individuals and was the most important participatory and learning-by-doing policy formulation effort in Jordan to date.

Between 1998 and 2005 an array of sectoral policies, strategies and action plans were developed and paved the ground for a solid policy framework. A total of 12 environmental related policies and action plans were developed between 1998 and 2005 covering water, poverty, agriculture, tourism, biodiversity, energy, youth, socio-economic development plan, childhood and desertification.

In 2005 however, Jordan embarked on the most promising and inclusive national planning process by developing the "National Agenda" which is a

blueprint for political, economic and social reform and development covering almost all sectors of national development. The Agenda included a specific sector on environmental sustainability. The Agenda is currently considered as the basis of public planning included various performance indicators.

Table 1 shows a chronology of environmental and sector-specific planning in Jordan from 1991-2006

Policy	Issued by	Year
National Environmental Strategy	Ministry of Municipal, Rural affairs and environment	1991
National Environmental Action Plan (NEAP)	Ministry of Planning	1995
Water Strategy and policies	Ministry of Water	1998
National Agenda 21	General Corporation for Environmental Protection	2000
Poverty Reduction Strategy	Ministry of Social Development	2001
National Strategy for Agricultural Development	Higher Socio-economic council	2002
Biodiversity Strategy and Action Plan	Ministry of Environment	2002
National Strategy for Tourism	Ministry of Tourism	2004
National Youth Strategy	Higher Council for Youth	2004
National Population Strategy	Higher Council for population	2004
National Energy Strategy	Ministry of Energy	2005
Childhood Strategy	National Council for Childhood	2005
National Strategy and Action Plan to Combat desertification	Ministry of Environment	2005
The National Agenda	Royal National Agenda Committee	2006

In the following section each of these strategies and action plans will be documented in details.

1- National Environmental Strategy (NES):

The national environmental strategy (NES) prepared in 1992 with IUCN and USAID support was an important first step of Jordan in confronting environmental problems. Formulated by some 180 Jordanian specialists, the NES catalogues all environmental pressures and problems and contains over 400 specific recommendation and suggested actions in the field of environmental protection and conservation.

In a document of 10 thematic chapters, five strategic directions for action were recommended under the NES:

- a) Construction a legal framework for environmental management including the enactment of a comprehensive environmental law and complementary environmental legislation and the creation of a national environmental impact assessment process.
- b) Strengthening institutions working for environmental protection and conservation including funding staffing training equipment educational outreach and legal authority. This should include the environmental agency key line ministries and NGOs.
- c) Focusing on cross-sectoral priorities such as water resources management and population expansion, which will have serious long term, impacts if not addressed urgently.
- d) Managing protected areas, including the creation of new natural reserves (Wadi Rum, Dana, Burqa) and a marine national park in Aqaba, to complement the existing reserves and the rehabilitation of the core area of the Azraq oasis.
- e) Fostering public additional environmental and conservation education environmental health awareness mechanisms for public participation in natural resources environmental decision making (EIA process), and creation of a system of urban nature parks and green spaces.

However the NES was not able to set priorities among over 400 suggested actions. Moreover financial costs have not been calculated institution capacity issues have not been addressed and the linkages with other national policies and strategies need to be clarified. The lack of prioritization has led the Government to spread its limited resources over a wide range of environmental initiative without a clear perspective on their cost effectiveness.

The NES included specific chapters on agriculture and land management, water resources, wildlife habitats, coastal areas and marine environment and energy. The thematic categorization by the NES was very helpful in

developing a scientific policy framework for future policies and action plans in Jordan.

2- National Environmental Action Plan (NEAP):

This document provided a comprehensive assessment of environmental problems and opportunities in Jordan, combined with a prioritized and phased plan of action for addressing these issues. The NEAP identified 41 priority environmental needs, which included four cross-sectoral environmental management capacity building needs and 37 sectoral environmental actions. Immediate attention was recommended for the following “short list” of 19 priorities:

1. National environmental management by the General Corporation for Environmental Protection
2. Rehabilitation of wastewater treatment plants
3. Upgrading of industrial technologies to minimize water pollution
4. Pricing of water
5. Enforcement of regulations in the water sector
6. Restructuring of the water sector
7. Development of water resources under the Jordan-Israel peace treaty
8. Development of a national land use planning/zoning system
9. Management of agricultural plastic waste
10. Preservation of forest lands
11. Development of regulations to control urban/industrial pollution
12. Treatment, storage, and disposal of hazardous waste
13. Study and plans for waste management in municipality of Greater Amman, and country-wide priority actions for waste disposal sites
14. Closure and replacement of waste disposal sites at Marka and Akaider
15. Urban and regional land use planning
16. Improved management of national cultural and natural heritage
17. Development of a national plan for heritage utilization
18. Completion of a protected area network
19. National biodiversity inventory

While not all of these priorities have been achieved, substantial progress is being made on many of them. Nevertheless, considerable work remains in order to reach the levels of environmental protection sought by the above ground-breaking studies.

3- National Agenda 21:

Jordan has prepared its National Agenda 21 document under the supervision of the General Corporation for Environment Protection and UNDP assistance. The document outlines several key areas related directly to natural resources, dry land issues and energy and it promotes the participatory approach at all levels to ensure success and sustainability. The Agenda also *reflects the integrated approach to environment and development and converges with objectives of poverty alleviation and sustainable human development*. Thus, Agenda 21 outlines a multi-disciplinary national plan of action for an environmentally sound and sustainable economic development. The *Agenda 21 demonstrates an umbrella document that identifies combating desertification as a national priority* and promotes its integration into the national policy and calls for the involvement of all stakeholders in the implementation of proposed programmes and actions.

The agenda proposed a number of projects based on a set of priorities that were identified following a thorough review of public needs in general, and the environmental sector in particular.

The Agenda 21 process also depended largely on information, and produced two strategies for environmental information and awareness as annexes to the main Agenda 21.

The Agenda 21 introduced the concept of "integrated resource management" by linking the sectors of water resource management, land resource management, agricultural resources, energy resources and mineral resources in one chapter. The outline of the Agenda 21 failed to integrate biodiversity issues within the "integrated resource management" section and placed biodiversity under the section on "natural and cultural heritage" providing little conceptual linkages with natural resource management.

Regarding specific themes of the Rio Conventions, the National Agenda 21 proposed the following:

- **Combating Desertification:**

This issue was addressed specifically in section 1.2 on land resources and was supported by other sections on rangeland resources management, agricultural land use and alleviation of land degradation.

For combating desertification National Agenda 21 proposed the following strategic objectives:

- 1- Develop a methodology for addressing and mapping the dynamics of desertification, and the processes and hazards involved in each ecological zone in Jordan.

- 2- Set up criteria to determine priority areas to combat desertification.
- 3- Diversify the income of people so as to mitigate poverty and reduce pressure on land resources.
- 4- Adopt sustainable land use plans and sustainable management of the water resources with help from remote sensing data and GIS systems.

Regarding rangeland development the following objectives were proposed:

- 1- Increasing the productivity and improving the management of rangelands on a sustainable basis, through management techniques, involving studies, installation of native species and other fodder species in association with water harvesting and other soil treatment techniques.
- 2- Strengthening capacity building by setting-up appropriate training, planning and management units, a research unit and improving capacities of human resources.
- 3- Ensuring a sustainable utilization of the forest and range resources by the design and implementation of rational management systems, which will provide employment, help to enhance people's participation and develop income generation activities for the rural communities.

The section on alleviating land degradation focused on measures against soil erosion, soil pollution, mining spills and enhancing urban planning issues.

- **Biodiversity:**

Biodiversity was tackled in chapter 3 of National Agenda 21 entitled "Natural and Cultural heritage" which included programme areas on natural heritage (plant and animal biodiversity) and cultural heritage.

It is noted here that National Agenda 21 dealt with biodiversity at the "species diversity" level and not the ecosystem level, which was a clear shortcoming and a gap in policy framework.

The objectives proposed under plant biodiversity included 14 objectives of which the following are highlighted:

- 1- Assess the species diversity of wild flowering and non-flowering plants.
- 2- Identify and conserve plant habitats in the different terrestrial and aquatic ecosystems.
- 3- Determine the status of natural forest ecosystems, the main conservation issues in these forests and the options for sustainable management.
- 4- Identify rare, endemic and endangered native plant species.
- 5- Produce Red-Data book for endangered and rare species.
- 6- Encourage the development of methods and strategies for propagating and cultivating endemic plants.
- 7- Promote the balance between the conservation and sustainable use of plant resources by protecting certain areas from cultivation, grazing and other interventions.

- 8- Improve the protection of vulnerable or threatened habitats and ecosystems.

Regarding animal biodiversity, the National Agenda 21 recommended the following objectives:

- 1- Conserve and manage endemic and relict species and their habitats such as sand dunes, Dead Sea and Jordan River habitats.
- 2- Conserve certain types of highly threatened ecosystems.
- 3- Conserve and manage Jordanian species and habitats of global significance.
- 4- Minimize negative impacts on biodiversity from tourism.
- 5- Continue efforts in the management and conservation of endangered species and their habitats in protected areas.

- **Climate Change:**

Climate change has not been mentioned in National Agenda 21. However, section 1.4 focused on energy resources and proposed the following programme areas:

- 1- Formulation of a coherent set of energy policies.
- 2- Enhancement of energy conservation and energy management.
- 3- Continue assessing ways for oil shale utilization.

Agenda 21 projects:

Agenda 21 proposed a package of practical projects to respond to the previous objectives. Some of the project were:

- **Agriculture Projects:**

1. Introduction of drought and salt tolerant crops.
2. Management of crop, water and nutrients needs under soil-water regimes.
3. Soil management under irrigated and rainfed conditions.
4. Reuse of treated wastewater in agriculture.
5. Integrated Pest Management (IPM)

- **Energy Projects:**

1. Oil shale utilization.
2. Renewable energy.
3. Geothermal energy.

- **Biodiversity Projects:**

1. Establishment of a general herbarium.
2. Establishment of a national botanical garden.
3. Geographical distribution and monitoring of rare, endangered and threatened species.
4. In-situ and ex-situ conservation programmes.
5. Biodiversity training center.
6. Completion of protected areas network.
7. Enforcement of environmental legislation related to biodiversity.

4- Water Strategy and Policies:

Due to the increasing of the water demand and the scarcity of supply, Ministry of Water and Irrigation (MWI) adopted a Water Strategy in 1998 and supplemented it with different water policies in four water sectors aiming to make a balance between water demand and supply and emphasizing to give major role for private sector. The four policies are related to: groundwater management, irrigation water, water utilities and wastewater management. The Government of Jordan also embarked upon a privatisation program. The goal was to increase the efficiency of management and attracting private investment into the economy.

Water Strategy:

The most important issues emphasized by the Water Strategy can be summarized as follows:

- Establishing a comprehensive national water data bank to support a program of monitoring and a system of data collection, entry, updating, processing and dissemination of information.
- Prioritization of water resources allocation to meet the basic human needs followed by tourism and industrial purposes.
- Collection and treatment of wastewater shall be carried out according to standards that allow its reuse in unrestricted agriculture and other non-domestic purposes, including groundwater recharge.
- Appropriate wastewater treatment technologies shall be adopted with due considerations to economy in energy consumption, and quality assurance of the effluent for use in unrestricted agriculture.
- Marginal quality water and brackish water sources shall be enlisted to support irrigated agriculture.
- Special care will be given to the protection of water resources against pollution, quality degradation and depletion.
- Mining of renewable groundwater aquifers checked, controlled and reduced to sustainable extraction rates

Groundwater Management Policy:

The groundwater management policy addressed the management of groundwater resources including development, protection, and management and reducing abstraction for each renewable aquifer to sustainable rates. The irrigation water policy addressed irrigation water including agricultural use, resource management, technology transfer, water quality and efficiency. It stated that irrigation water should be managed as an economic commodity, that water price has to cover at least operation and maintenance costs and as far as possible capital costs, and that different prices should be applied for different water quality. The strategy specified also preferential rates for small scale farmers in the Jordan Valley where the income is lower than other regions in the country.

With respect to private sector participation, the policy states that the government of Jordan intends to transfer infrastructure and services from the public to the private sector in order to improve the performance and efficiency of the water sector. The use of management contracts and other private sector participation in water utilities was introduced in this policy. Recovery of capital costs, and BOT systems became part of all water management policies. The MWI then introduced different prices for different qualities and uses of water. Profitable markets (tourism, industry) pay the full water cost. The water policy states that existing water distribution systems should be rehabilitated and enhanced.

The main points included in the groundwater policy are:

- Protect recharge area from pollution, prohibition of well drilling and groundwater abstraction without licenses, and monitor withdrawal from non-renewable aquifers.
- Emphasizes upgrading water quality laboratories and improved quality control and assurance.
- Regulate application rates of chemical and fertilizers use in agriculture within areas of aquifer recharge in the cooperation with the MoA.
- Encourage the use of marginal groundwater quality for agricultural uses especially when such use may relieve pumping from fresh groundwater aquifers.
- Legal action is to be taken against illegal drilling, rigs and violators
- Legislation and institutional arrangements for the development and management of groundwater resources shall be reviewed from time to time. Shortcomings and institutional arrangements shall be updated, and adjusted or restructured.
- Encouragement of Private Sector to cooperate in the rehabilitation of aquifers where needed,

Irrigation water Policy:

The irrigation water policy introduced new principles for the pricing of irrigation water, which should be managed as an economic commodity that has an immense social value.

- Existing areas of irrigated agriculture shall be granted the chances for sustainability.
- Irrigation water sources shall be protected against pollution, which is hazardous to the soils environment, or can endanger animal health, particularly livestock.
- Co-ordinate with the MoA and its research and development departments, and with other related institutions with the aim of enhancing on-farm irrigation efficiencies
- Surplus surface water during the wet season shall be provided to farmers through the irrigation networks free of charge to leach soils especially those farms that are irrigated with treated wastewater in the dry season.
- Drainage networks shall be installed in irrigated areas where natural drainage is not sufficient to serve the purpose.
- Maximum use shall be made of rainfall for crop production, and supplementary irrigation shall be employed to maximize production including increasing cropping intensities.
- The use of brackish water in irrigation shall be pursued with care. Soil salinity shall be monitored and its buildup managed and mitigated.
- Land shall be managed with the attention it deserves as a non-renewable resource.
- Crop water requirements in the various micro-climatic zones of the country shall be experimentally determined taking into consideration the prevailing different water qualities.
- Automation of on farm irrigation networks and their operation will be encouraged and training of farmers on advanced water management techniques shall be sought.
- Irrigation water quality shall be monitored through sampling at the sources and from the conveyance and distribution network.
- Where marginal quality water, such as treated wastewater effluent, is a source of irrigation water, care should be taken, to the maximum extent possible, to have the quality improved to standards that allow its use for unrestricted irrigation.
- Soil salinity and water chemical contents are also constraining factors. Care shall be taken in providing testing services to farmers.

Wastewater Management Policy:

The following represent the key policy issues were included in the wastewater management policy:

- Provision of adequate wastewater collection and treatment facilities for all the major cities and towns in Jordan.
- Protection of the environment and public health in the areas affected by the proposed systems, especially, surface waters and ground waters.
- Consideration of treated effluents as a source for irrigation reuse.

- Treatment of wastewater shall be targeted towards producing an effluent fit for reuse in irrigation in accordance with WHO and FAO guidelines.
- A basin management approach shall be adopted where possible. The use of treated wastewater in irrigation shall be given the highest priority.
- Effluent quality standards shall be deemed based on the best attainable treatment technologies, and calibrated to support or improve ambient receiving conditions, and to meet public health standards for end users.
- Industries shall be encouraged to recycle part of its wastewater and to treat the remainder to meet standards set for ultimate wastewater reuse.
- Wastewater from industries with significant pollution should be treated separately to standards allowing its reuse for purposes other than irrigation or to allow its safe disposal.
- Consideration shall be given to isolating treated wastewater from surface and ground waters used for drinking purposes, and to the blending of treated effluent with relatively fresher water for suitable reuse.
- Priority shall be given to protecting public health and water resources from chemical and microbiological pollutants.
- Priority shall be given to agricultural reuse of treated effluent for unrestricted irrigation. Blending of treated wastewater with fresh water shall be made to improve quality where possible.
- Farmers shall be encouraged to use modern and efficient irrigation technologies. Protection of on farm workers and of crops against pollution with wastewater shall be ensured.
- Sludge produced from the treatment process would be processed so it may be used as fertilizer and soil conditioner.

5- Poverty Reduction Strategy:

The National Poverty Reduction Strategy was launched in 2002, aiming at improving living standards of all poor segments of the society.

The strategy to alleviate poverty includes short, medium, and long-term initiatives in each policy area. Policy objectives include social safety, employment, education, and healthcare; within these areas, policy objectives include improving the social safety-net for the poorest of the poor, improving employment opportunities for those capable of working, providing access to education, and assuring access to healthcare.

The basic approach to achieve the above policy objectives is to support existing strategies and programs that work well. Moreover, new forms of institutional cooperation need to be developed to address the multi-dimensional nature of poverty, and a network of non-governmental organizations (NGOs) needs to be established to galvanize their activity at

the local, governates, and national levels, and the creation of jobs to match the annual increase in the labour supply.

On the short-term level, the social safety net needs to be made more effective. It will take years for the expansion of the economy, meantime, a safety net, had to be improved. The strategy also proposes longer-term strategies for modifying the government 's role in the facilitation of job creation through a strengthened public-private partnership, as well as for increasing public awareness. Finally, a road map is designed to support each initiative and bridge gaps through improved collaboration between the public and private sector on one hand, and non-governmental organizations on the other hand.

The strategy recommends comprehensive measures to reduce poverty and to build on current experiences by addressing issues of health, environment, education, sustainable micro-finance, improving economic security of low-income working families, and increasing employment opportunities in rural areas and secondary towns, it limits its scope to poverty alleviation and does not attempt to build a comprehensive social policy. However, this strategy, does not address issues such as the role of women, domestic violence, child protection, etc. Conversely, there are other actions that will expand economic opportunities and result in a trickle-down effect on poverty alleviation such as tourism, structural adjustments, and access to markets, infrastructure development, which are core of other specialized strategies.

The Poverty reduction strategy includes the following programmes:

- 1- Understand, measure, and assess poverty to better target policies and services
- 2- Increase assistance to current National Aid Fund (NAF) Short-term strategies
- 3- Support sustainable micro-financing and improves economic security of low-income working families
- 4- Increase employment opportunities in rural areas and secondary towns through Cluster Village Development
- 5- Reduce government's role in the facilitation of job creation
- 6- Ensure that the poor have access to high quality healthcare and family planning services within a health environment.
- 7- Ensure that the educational system meets the needs of the poor.

The Poverty reduction strategy does not reflect a deep and clear understanding and appreciation of the "sustainable livelihoods" concept and the linkages between poverty eradication and natural resources management. This is a major gap in developing the poverty reduction strategy. However, the Jordan 2nd National Human Development Report 2004 was based on the concept of sustainable livelihoods.

6- National Strategy for Agricultural Development:

The National Strategy for Agricultural Development (NSAD) was prepared by the Consultative Economic Council, 2002 for the decade 2000-2010. The strategy stressed on sustainable agriculture and protection of natural and biological resources and is the most comprehensive environmental strategy that included strategic and operational programmes covering most issues of biodiversity conservation and sustainable use in addition to combating desertification.

The Committee started its work in June 2001. It formulated a work plan based on developing strategies for the agricultural subsectors that would form the basis for the preparation of the National Strategy for Agricultural Development. The AC established five specialized sub-sector committees for the preparation of the sub-sector strategies according to a unified methodology. An information committee was also established to provide the subcommittees with needed data and statistics.

The five sub-sectors committees are:

- 1- The committee for rain-fed agriculture.
- 2- The committee for irrigated agriculture in the Jordan Valley.
- 3- The committee for irrigated agriculture in the Highlands.
- 4- The committee for animal production and rangeland.
- 5- The committee for marketing of agricultural products.

The NSAD identified certain environmental added values and benefits to be achieved through implementation of the strategy, they are:

- Conserve land, water and natural vegetation, and utilize them within their production capacity to ensure sustainable and long-term agricultural production.
- Conserve Jordan's biodiversity and utilize it in supporting agricultural development.
- Improve the technical and managerial capabilities in the agricultural sector to cope with probable climate and environmental changes, and absorb their consequences.
- Halting unplanned expansion of urban areas on agricultural land, and or violation of current legislation prohibiting building on agricultural land, through denial of services to these buildings.
- Combating desertification and protecting, the environment, the agro-biodiversity and agricultural resources, to secure requirements for sustained development.
- Conservation of agricultural land by controlling soil erosion in mountainous areas with high slopes, through improved agricultural practices and water harvesting techniques.

Policies and Strategies for Sub-sectoral developments stated in The National Strategy for Agricultural Development and the projects and activities which enhance the national efforts to combat desertification and protect biodiversity are:

1. Rain-fed Agriculture Sub-sector

The following are Objectives of Policies and Strategies for the Development of Rain fed Sub-sector that enhances the national efforts to combat desertification directly:

1. Protect agricultural resources and improve their present use for sustained productivity.
2. Increase rain-fed cropped area by exploiting neglected areas and reclaiming new land.
3. Protect the environment and the agro-biodiversity and improve the quality of agricultural produce.
4. Increase the efficiency of rain-fed agriculture, maximize its economic returns, and increase its contribution to overall agricultural development.
5. Encourage crop diversification by introducing high-value cash crops and maximizing integration of plant and livestock production.
6. Create job opportunities for rural populations, specifically women, to reduce unemployment and limit rural migration.
7. Reduce the risk facing rain-fed agriculture and its resources.

2. Livestock and Rangeland Sub-sector

The Objectives of Policies and Strategies for the Development of Rangelands and Livestock Sub-sector that enhances the national efforts to combat desertification directly:

1. Protect natural rangelands, organize grazing, and develop the productive capacity of rangeland resources.
2. Define land uses according to productive capacity, giving priority to the development of areas that have high potential of incorporating water-harvesting measures as an integral component of rangeland development.
3. Develop rangeland on the basis of integrated management approaches and local community participation.
4. Conserve agro-biodiversity and use it for rangeland development, and expand the establishment of natural and rangeland reserves.
5. Develop agricultural farming systems that integrate water-harvesting techniques in the development of rangeland.
6. Monitor environmental changes, and combat desertification.
7. Increase animal feed production, improve its quality, and introduce new feed resources.
8. Promote small family livestock projects.

9. Support livestock breeders' organizations and encourage the establishment of councils or specialized associations for production and marketing of produce and providing support services.
10. Support integration between plant and livestock production.

This subsector included many important strategic objectives that are directly linked to desertification and biodiversity, which are:

Objective 1: Protect Natural Rangelands, Organize Grazing and Develop the Productive Capacity of Rangeland Resources.

Implementation Strategies:

Update legislation relevant to land ownership and rangeland use, and organize users of rangelands

Objective 2: Define Land Uses According to Productive Capacity, Giving Priority to the Development of Areas that have High Potential of Incorporating Water-Harvesting Measures as an Integral Component of Rangeland Development.

Implementation Strategies:

- Complete the soil survey and classification project on a more detailed scale for areas where annual rainfall exceeds 100 mm
- Diversify agricultural production systems through development of watersheds, using suitable water-harvesting techniques
- Establishment of an agriculture information unit at the MoA using modern information systems
- Train national staff in land-use planning and rangeland management
- Develop communities in the rangeland areas, and study the characteristics of pastoral communities, identifying their socio-economic features, their distribution and movement.

Objective 3: Develop Rangelands on the Basis of Integrated Management Approaches and Local Community Participation.

Implementation Strategies:

- Evaluate rangeland areas to identify promising areas for development
- Develop agricultural system in the watersheds through integrated management practices, crop diversification and water harvesting techniques and set priority programs for implementation
- Promote the construction of rainfall water storage system and on-farm wells to reduce the impact of water shortage during dry seasons.
- Locate Wadis with alluvial sediments that have promising areas and develop them for grazing purposes.

Objective 4: *Conserve Plant Biodiversity and Use it for Rangeland Development and Expand the Establishment of Natural and Rangeland Reserves.*

Implementation Strategies:

- Collect local plant landraces, describe their characteristics and conserve them in gene banks (ex-situ conservation)
- Use of native plant species adapted to the local environments for the development of rangelands.
- Conserve native plants in their original habitats (in-situ conservation) in cooperation with local communities
- Establishment of rangeland reserves on public lands to be managed by cooperative societies of livestock breeders, living in the reserve areas

Objective 5: *Develop Agricultural Systems that Integrate Water Harvesting Techniques in the Development of Rangelands.*

Implementation Strategies:

- Limit government-financed rangeland development projects, to projects that integrate water-harvesting structures in the development plans).
- Provide soft loans to finance the construction of water-harvesting measures and the construction of haffeurs for livestock drinking and the rangeland development.

Objective 6: *Monitor Environmental Changes and Combat Desertification*
Implementation Strategies:

1. Carry out hydrological studies for quantifying surface water availability in the rangeland, locating areas with promising productive capacity and suitable for development through the application of water harvesting measures
2. Construction of small earth dams and haffeurs to be used for the production of forages and as water points for livestock in areas where annual rainfall exceeds 100 mm
3. Development of lowlands and areas adjacent to waterways and planting them with crops suitable for growing under these special environments.
4. Improve the natural vegetation in areas through the introduction of water-harvesting and water-spreading methods
5. Develop and/or rehabilitate rangeland giving priority to these close to the pastoral communities and those that can be developed with the participation of local population.
6. Establish emergency assistance programs to mitigate the impacts of drought on local population
7. Introduce suitable crops for production of green fodder.
8. Introduce spineless cactus in the agriculture production systems

9. Evaluate and monitor environmental changes and identify potential changes in agricultural lands that accompany the various land-use systems
10. Monitor the deterioration of natural resources (land, water and natural vegetation and those accompanying desertification)
11. Evaluate land and water resources and natural vegetation to determine the extent of degradation, their current productive capacities, and the environmental causes for this degradation Evaluate the characteristics of the rangeland to identify their main problems in order to set priorities of mitigating environmental deterioration and to direct development efforts to areas with promising productive capacities
12. Establish a monitoring system for the natural vegetation and study agro-biodiversity to identify promising native plants species of agricultural importance and their potential use

3. Irrigated Agriculture in the Jordan Valley Sub-sector:

Objectives of Policies and Strategies of Agricultural Development in the Jordan Valley:

1. Ensure the sustainability of irrigated agriculture in the JV.
2. Protect irrigation water resources from pollution, salinity, and provide it in good quality to allow its continuous use for unrestricted agriculture.
3. Improve the efficiency of irrigation water management in the Valley.
4. Maximize the socio-economic returns of the agricultural resources, taking into consideration the environmental dimensions.
5. Conserve land resources and protect them from pollution.
6. Define Government role in the agricultural development of the JV.
7. Intensify cooperation with neighboring countries regarding water resources, water quality and the protection of the environment in the JV.
8. Maintain agricultural land productivity and protect it from all forms of deterioration.
9. Reduce the risks facing sustained agriculture in the Valley.

4. Irrigated Agriculture in the Highlands

Objectives of Policies and Strategies of Irrigated Agriculture Development in the Highlands were:

1. Ensure the sustainability of irrigated agriculture in the Highlands within the limit of available water resources.
2. Protect irrigation water resources from pollution and salinization and provide it in a quality that allows continuation of its use in unrestricted agriculture.
3. Maximize the economic and social returns of water resources used in irrigation.
4. Organize production to meet market demand, and maximize the competitiveness of Highland products in the export markets.

5. Encourage the establishment of farmer associations to assist in organizing, developing and marketing of production
6. Provide fair and efficient marketing systems and channels for producers.
7. Enhance the productivity of land resources and protect them from deterioration and pollution.
8. Improve the quality of agricultural produce.
9. Introduce and apply environment friendly production systems when using treated wastewater in agriculture.
10. Develop agricultural production systems that enhance the efficiency of surface water use.
11. Reduce the risks facing sustained irrigated agriculture in the Highlands.

7- National Biodiversity Strategy and Action Plan (NBSAP):

The Jordanian National Biodiversity Strategy is a response to the obligations of CBD and has been developed as a guide to the implementation of the biodiversity convention in the country. It has been published by the Ministry of Environment in 2002 based on a national consultation process.

The main strategic goals Of the NBSAP are:

1. Conserve biodiversity and use biological resources in a sustainable manner by protecting the various species of animals, plants and micro-organisms in their different agricultural environments; and productivity of environmental systems, especially wildlife habitat, forests, grazing land and agricultural land within a balanced environmental order.
2. Improve our understanding of ecosystems, increase our resource management capability, and promote an understanding of the need to conserve biodiversity by using biological resources in a sustainable manner.
3. Manage natural resources and distribute roles among institutions in a way that conserves the basic natural resources which are necessary for human growth and survival, such as soil, water, plant cover and climate, developing these elements and using them appropriately in a sustainable manner.
4. Maintain or develop incentives and legislation that support the conservation of biodiversity and the sustainable use of biological resources; and
5. Work with other countries to conserve biodiversity, use biological resources in a sustainable manner and share equitably the benefits that arise from the utilization of genetic resources.

The NBSAP contained five main themes under which specific projects were proposed:

1- Protection of Biological Resources:

- 2- Sustainable use of biological resources.
- 3- Reducing the impact of mining on biodiversity.
- 4- Promoting integrated land use planning and water resources development land tenure and land use planning
- 5- Towards a biodiversity-oriented society.

A national workshop attended by 35 institutions was held in April 2005 with the support of the NCSA process aiming at prioritization of the main actions contained in the NBSAP for the years 2005-2010 and the resulting list of priority projects was:

- 1- Endangered species: National Red Data List for flora and fauna species at risk.
- 2- Protected areas: Completing the protected area networks.
- 3- Wild plants: Establishment of a national botanical garden
- 4- Forests: Establishment of green belts to combat desertification
- 5- Terrestrial and freshwater wild fauna: Enforcement of legislation and conventions concerning the protection of wildlife.
- 6- Marine life and fisheries: Establishment of a Fisheries and Marine Life Institution.
- 7- Microorganisms: Comprehensive survey and ex-situ conservation of microorganisms.
- 8- Agricultural resources: Survey of range resources.
- 9- Plant production: Establishing as specialized center for plant biodiversity.
- 10-Animal production: Developing alternate animal feed sources in the Badia Region.
- 11-Rangeland production: Training and capacity building for rangeland management.
- 12-Mining: Study on the feasibility, costs and benefits of rehabilitating limestone aggregate quarry sites.
- 13-Industry and factory production: Studying the impacts of the Phosphate Company gypsum dump on marine life in Aqaba.
- 14-Biotechnology and biosafety: Establishment of a national council for the promotion and regulation of biotechnology in Jordan.
- 15- Eco-tourism: National environmental standards and guidelines for tourism projects.
- 16-Preservation of biodiversity-rich areas through urban planning.
- 17-Water resources: Assessment and monitoring of water bodies and ecosystems.
- 18-Economic valuation of biodiversity: Capacity-building on economic valuation of biodiversity.
- 19-Legislation and institutional structure: Reviewing existing environmental legislation.
- 20-Public awareness and participation: Establishing of a comprehensive database on Jordan's biodiversity.
- 21-Assessing the impacts of treated wastewater on biodiversity of the Zarqa River.

- 22-Organic Farming pilot project.
- 23- Fish farming development.
- 24- Eco-tourism development in protected areas.
- 25- Public awareness program to conserve biodiversity of ecosystems.

The Ministry of Environment has established a coordination system with national stakeholders aiming at resource mobilization for the implementation of the priority projects.

8- National Tourism Strategy:

The Ministry of Tourism has developed the National Tourism Strategy 2004-2010 with a private-sector led perspective on placing tourism as a major income-generating and revenue based sector. The tourism strategy states a mission that "Jordan will develop a sustainable tourism economy through a partnership of government, the private sector and civil society to expand employment, entrepreneurial opportunity, social benefits, industry profits and state revenue".

This strategy is based on private sector investments in promoting national tourism, and does include ecotourism sites as "assets" for national tourism. The strategy does not take into consideration some basic "sustainable tourism" including carrying capacity, conservation and sustainable use of natural resources, and developing guidelines for management of natural heritage sites and ecotourism locations.

The strategy states that tourism development in Jordan will be sustainable and characterized by:

- 1- Preserving the environment and adopting ecologically sound policies.
- 2- Respecting the lifestyles and cultures of its people and communities.
- 3- Balancing the principles of profits with the need for socially responsible business practices.
- 4- Adhering to the global code of ethics for tourism as advocated by the World Tourism Organization (WTO).
- 5- Targeting the citizens and communities of Jordan as the primary beneficiaries of tourism.

9- National Youth Strategy:

The National Youth Strategy was supported technically and financially by the UNDP and prepared by the higher council of youth. It has included 9 specific themes including one theme on "youth and environment".

The youth and environment theme included 3 major strategic objectives broken down into 14 practical measures.

The major strategic objectives were:

- ▶ Enhancing environmental knowledge between youth and its accessibility according to the educational needs and interests with special focus on early stages of education.
- ▶ Increasing the impact of youth in developing and implementing national environmental policies and programmes.
- ▶ Maximizing the role of youth in sustainable use of environmental resources for socio-economic development.

Some of the main practical measures are:

- 1- Integrating environmental concepts in all educational curricula and extra-curricular educational activities for all stages.
- 2- Gaining benefit from national, regional and global experiences in environmental education and youth involvement in environmental protection with special focus on civil society.
- 3- Utilizing various media and outreach means to promote national environmental priorities and increasing the role of youth in environmental awareness.
- 4- Adopting a national youth programme focusing on integrating environmental concepts in national socio-economic development initiatives.
- 5- Increasing the role of youth institutions in environmental activities.

10- National Population Strategy:

The National Population Strategy was prepared and launched in 2002 and it has 7 strategic sections including one section on "Population, the environment and natural resources".

The main objectives stated under this section are:

- Reducing the imbalance between water supply and demand.
- Reducing the imbalance between the local demand for and the local supply of food products.
- Increasing the level of efficiency in the utilization of local energy resources.
- Achieving a better balance between the population size and environmental conditions.

- Achieving a better balance in the geographical distribution of the population between urban and rural areas.

Operational procedures under this section are:

- Increasing the level of efficiency in the management of water and energy resources.
- Rationalization of consumption of water and energy.
- Expanding the construction of dams.
- Increasing productivity efficiency and the level of technology used in agricultural production.
- Encouraging scientific research in the areas of energy, environment, and the natural resources.
- Implementation of the National Environment Strategy for Jordan.
- Instituting a unified and cohesive law for the protection of the environment.
- The promotion of environmental education and awareness among individuals.
- The reduction of population pressure on urban areas and the provision of incentives for the movement of the population towards rural areas.

11- National Energy Strategy:

The strategy included environmental components by focusing on the development of renewable and sustainable energy sources which provides linkages between environmental protection and transition to sustainable energy. The strategy did not include issues of climate change and the opportunities for both environmental protection and sustainable energy through the Kyoto protocol, but the strategy is considered to be a suitable planning road map for sustainable energy production and consumption.

The strategy states a target of 2% contribution of renewable energy in the total energy mix in Jordan and increasing the share of renewable energy for electricity to 8%. Jordan has also developed an energy efficiency strategy in 2004

12- National Childhood Strategy:

This strategy was developed by the National Council for Children in 2004. It has included five main themes including a theme on "safe and healthy environment". This theme included many proposed activities. Some of them are mentioned below:

- 1- Increasing the areas of green coverage and national parks.
- 2- Decreasing the level of air and water pollution resulting from stationary and mobile pollution sources.
- 3- Developing a national biosafety framework and law.
- 4- Prohibiting imports of toys and clothes containing toxic materials.

- 5- Developing a system for management of hazardous and medical wastes to minimize public exposure.
- 6- Rehabilitation and restoration of environmentally-damaged sites.
- 7- Producing environmental awareness materials targeting children.
- 8- Enhancing the participation of children in safe and interactive environmental activities.
- 9- Research and studies on the impacts of various environmental pollutants on children health.

13- National Strategy and Action Plan to Combat desertification

The National Action Plan (NAP) to combat desertification was prepared in 2005 and is expected to be officially launched in 2006. It includes six major programmes that are mainly "project-based". The programmes include several projects related to desertification monitoring and control, capacity building, natural resources rehabilitation and development. However, these programmes and the proposed projects provide framework for an action plan to combat desertification. The proposed programmes are mainly the following:

1. Desertification Information System (DIS),
2. Drought prediction and Desertification control,
3. Capacity building and institutional development,
4. Restoration of degraded ecosystems of rangelands and forests,
5. Watershed management,
6. Human, social and economic development initiatives.

Each programme has several projects with justification, activity, implementing agencies and initial budget. The following sections include detailed description of the programmes and projects. Proposed projects can be classified according to the programmes as follows:

- 1. Programme One: Desertification Information System (DIS) includes the following projects**
 - Establishing a Desertification Database
 - Desertification Mapping.
 - Public Awareness.
- 2. Programme Two: Drought Prediction and Desertification Control includes the following projects**
 - Center of Drought Monitoring and Prediction (CDMP)
 - Assessment of Drought impacts
- 3. Programme Three: Capacity Building and Institutional Development includes**
 - National Training Programmes in Desertification Monitoring and Control
 - Establishing a National Fund to Combat Desertification (NFCD).

- Desertification Legal Framework for Monitoring and Development.
- 4. Programme Four: Restoration of Degraded Ecosystems of rangelands and forests.** Includes the following projects
- Community Based Rangeland Rehabilitation.
 - Rehabilitation and Development of Forest Environment
- 5. Programme Five: Watershed Management** includes the following projects
- Documentations of Traditional Knowledge on Soil and Water Conservation
 - Artificial Recharge of groundwater
 - House Roof Water Harvesting.
 - National Rainfall Water Harvesting Project for Agriculture Farming
 - Use of Reclaimed Water for Greenbelt areas around villages and along roads in arid areas of Jordan.
- 6. Programme Six: Human, Social and Economic development initiatives:**
- Modules of comprehensive training for communities
 - Integrated socio economic development of communities in the arid lands of Jordan.

14- Climate Change Communication Report:

Although the Climate Change National Communication Report is not a policy document but a technical stocktaking of greenhouse gas emissions and future trends, it is the only national document that contains some strategic planning for the climate change sector. The 1st National Communication Report was prepared in 1997 and included the following "policy" and practical recommendations regarding climate change.

1- Estimating Impact of Climate Changes on the Water Resources of Jordan

Knowing that climate changes affect water resources, major objectives are:

- a. Identifying areas potentially vulnerable.
- b. Designating potential impact.
- c. Identifying future adaptive responses and analyzing their feasibility as adaptation strategies.

The associated action plan included investigating the changes of the three major hydrologic regimes of Jordanian catchments under alternative climate scenarios and evaluating the climate change.

2-Building Capacity to Operate and Maintain Waste Water Treatment Plants

The main goal of this action is to alleviate Jordan's water pollution by ensuring optimum wastewater treatment and improving effluent quality.

3- Building Capacity to Operate and Maintain the Domestic Water Network

The objective of this action is to alleviate Jordan's water shortage by ensuring optimum water conveyance and delivery to urban and industrial users, through rehabilitation of domestic water network, and minimizing water leakage and, hence, reducing pumping energy requirements (energy saving).

4- Building Capacity to Operate and Maintain the Irrigation Network

The main aim of this action is to alleviate Jordan's water shortage by ensuring optimum water conveyance to irrigation perimeters and farmers and thus reduce the energy needed and minimize water leakage.

5- Rehabilitation of Waste Water Treatment Plants and Implementation of Waste Water Reuse Programs

The specific objectives of this action are to rehabilitate the existing wastewater plants and implement on-site and/or off-site wastewater reuse programs.

6- Development of a National Land Use Planning and Zoning System

The main objectives of this action are:

- a. Develop a national land use plan.
- b. Achieve government's enactment of a land use and zoning law.
- c. Strengthen the capacity of the government department designated to monitor and follow-up the planning/zoning process.

7- Fighting Forest Fires

The main objectives of this action are:

- a. Develop a forest fighting emergency unit at the Civil Defense Department.
- b. Develop volunteer firefighters programmed to support the Civil Defense Department efforts.

8- Preservation of Forest Lands

The main aim of this action is to prohibit the use of Jordan's remaining forestlands for any other use and to declare forests, like the nature reserves, protected areas.

9- Assessment of the Environmental Impact of All Infrastructure Projects

The aim of this action is to ensure that all infrastructure projects that have a negative impact on the environment are identified and modified at the design stage.

10- Promotion of Public Awareness and NGOs

The main aim is create public pressure groups and empower appropriate NGOs to monitor the environmental effects of industry, agriculture, mining and urban development.

11- Range Land Development

The aim of this action is to involve target groups in rangeland development planning, project design and action implementation.

12- Establishment of an Environment Monitoring System

The objective of this action is to:

- a. Provide line ministries with monitoring facilities.
- b. Regulating industry to provide data on air, wastewater, gaseous and dust emissions.
- c. Develop a national data bank for environmental monitoring.

15- The National Agenda 2006:

The National Agenda was prepared in 2005 and launched in 2006 comprising a comprehensive political and socio-economic reform plan for the country until 2017. The National Agenda was based on extensive research and integrated inputs from key players and organizations from within and outside the government. The main goal of the National Agenda is to achieve consistent policies and ensure that they will not be subject to government change while taking into considerations the need to regularly develop and update these policies.

The National Agenda contained a special section on environmental sustainability. This section focused on six issues including desertification and sustainable land management.

The National Agenda policy and practical recommendations regarding the following issues:

1- Sustainable land management and combating desertification:

- ▶ Survey and define criteria for desertification hazards; map areas accordingly
- ▶ Establish a monitoring system and use it efficiently
- ▶ Adopt national sustainable land use plans and sustainable management of soil and water resources, with support from Remote Sensing and GIS systems
- ▶ Set up a long-term policy to combat desertification, and integrate this policy with the national policies for sustainable development
- ▶ Improve water use efficiency by adopting the most advanced technologies in irrigation systems, to minimize soil erosion, sedimentation and salinization

- ▶ Carry out afforestation and soil conservation measures in areas prone to erosion
- ▶ Establish other alternative livelihood measures that could provide incomes in drought prone areas
- ▶ Enhancing research for drought and saline tolerant crops, and seed production

2- Biodiversity and Protected Areas:

- ▶ Improve management of natural reserves and develop a master plan for land use and ensure its implementation.
- ▶ Create a unit specially dedicated to awareness and involvement of Jordanians through Environmental education, training and community participation
- ▶ Closely monitor Human violations of Natural Reserves policies and Environmental Laws.
- ▶ Must put in place very strict regulations related to punishment of Natural Heritage Violations such as illegal hunting, forest fires, soil and water pollution, water over pumping, etc.

3- Energy:

- ▶ Achieve security of oil derivatives supply.
- ▶ Shift the energy fuel mix from oil to gas in power generation and energy-intensive industries.
- ▶ Achieve security of electricity supply.
- ▶ Evaluate the technical and economic feasibility of oil shale exploration in Jordan.
- ▶ Strengthen the role of the National Energy Research Center to develop the exploitation of new and renewable energy resources, promoting energy conservation and establish suitable regulatory frameworks to manage these resources.
- ▶ Promote the application of clean-technologies and the adoption of environmental management systems, e.g. ISO 14001, as vehicles for better environmental management
- ▶ Encourage and expand utilization of renewable energy resources such as solar, wind, and gas generation from solid waste sites.

4- Marine Environment:

- ▶ Integrate policies relating to the protection of the Red Sea and its environment in relevant development policies including the implementation of appropriate monitoring programmes for water and coral reefs.
- ▶ Establish monitoring programs on sea currents, seawater quality, phosphate fallout, alga growth and ship activities.
- ▶ Participate in regional and international programs for protection of marine environment in Aqaba

- ▶ Strengthen monitoring programs for air water and coral reefs, including data accessibility
- ▶ Monitor the dust emissions from the phosphate handling facilities at ports
- ▶ Enhance control of beach recreational activities and patrolling and control the wastewater treatment system, dumping of litter, garbage and tires into sea
- ▶ Conduct clean-up campaigns of the shoreline
- ▶ Conduct auditing of the Power Plant on the southern shore
- ▶ Control oil spills, waste disposal (liquid & solid) into the sea
- ▶ Encourage involvement of diverse sectors, promoting compatibility and balancing uses
- ▶ Enhance and increase public awareness on environmental issues
- ▶ Engage the public openly and transparently.

Conceptual Framework for the new National Environmental Action Plan 2006-2012:

The Ministry of Environment has formed in July 2005 a committee of its staff to undergo the process of review of previous and current environment and development strategies, and perform a detailed content analysis of those strategies resulting in a suggested conceptual framework for a new Environmental Action Plan (NEAP) that will cover the period 2006-2012

The taskforce produced a final report (in Arabic) in October 2005 including a detailed content analysis and suggested conceptual framework for the NEAP. The process of developing the new Environmental Action Plan will depend on the availability of financial and technical support and expected to be implemented in 2006.

The taskforce reviewed in details 19 national strategies, action plans and policies and after a comprehensive content analysis it has reached a list of suggested strategic themes to be highlighted in the new NEAP. The issues to be highlighted as priorities will be:

- **Issues Highlighted by the National Agenda:**

- 1- Institutional and legislative framework.
- 2- Waste management.
- 3- Air Pollution.
- 4- Biodiversity and Ecosystems.
- 5- Desertification.
- 6- Marine Environment.

- **Issues of National Priorities in other sectors:**

- 1- Water Resource Management.
- 2- Sustainable Energy.

- **Issues not adequately covered by other sectoral strategies:**

- 1- Poverty and Environment.
- 2- Environmental Economics.

The taskforce has also identified a set of cross-cutting issues that will be discussed across all the previous themes including capacity building, education and awareness, information management, science and technology and public participation.

It is expected that the Ministry of Environment will launch the process of developing the NEAP in the middle of 2006.

NCSA priority Issues for a Capacity Development action plan in Jordan:

The stocktaking stage of the NCSA, conducted between May and September 2005 included the development of various assessment reports by national consultants and the NCSA project team. Five stocktaking reports have been produced:

- 1- Biodiversity Stocktaking report.
- 2- Desertification stocktaking report.
- 3- Climate Change stocktaking report
- 4- Synergies report; and
- 5- Capacity development profile.

The first four reports provided a list of suggested priority areas for capacity development based on the stocktaking exercise, while the last report provided a practical conceptual framework of "capacity development" in the global and national context.

The national stakeholders' workshop conducted in September 2005 managed to prioritize the suggested capacity constraints to focus the process of developing the action plan. These capacity development priorities will constitute the basis of the NCSA capacity development action plan that will be prepared in 2006.

The detailed description of the national priorities is presented here:

Biodiversity Priority Capacity Constrains:

1- Lack of a long-term coordination mechanism between institutions working in Biodiversity:

Although a national committee for Biodiversity conservation was established in Jordan during the process of developing the NBSAP, the committee has not been effective ever since. There is a need to establish a practical, effective and sustainable coordination mechanism that brings together main institutions working in biodiversity for proper coordination. The MoE can act as the secretariat and focal point of this coordination mechanism.

2- Lack of a national knowledge management and data processing system for monitoring and reporting on Biodiversity:

There is a need for developing a viable monitoring system between government, NGOs, Academia and private sector for monitoring the state of biodiversity. This entails the necessity for developing national biodiversity indicators to be used in monitoring and reporting. Since biodiversity conservation efforts are divided between various sectors and institutions, a priority need will be to develop the national knowledge management capacity for biodiversity. Information should be collected, saved, processed and exchanged between institutions and professionals through an effective knowledge management network.

On the level of knowledge management for capacity development new and practical training programmes should be developed based on best practices in biodiversity conservation at the national or regional level of implementation. Such training programmes will increase the practical capacity by proof and evidence of the success stories in biodiversity conservation and provide hands-on experiences to be applied in local conditions.

3- Weak institutional and legislative framework for regulating access to genetic resources and benefits sharing:

The issue of benefits sharing and access to genetic resources is not adequately regulated through a package of re-enforcing modern policies and legislations to ensure smooth access and balancing right to access and intellectual property rights. This issue needs also technical capacity development and institutional networking.

4- Lack of an institutional process for assessing the impact of regional and international agreements on biodiversity:

During the last decade Jordan has moved with a high pace towards integrating with the international economic liberalization system and signed many trade and economic agreements. Some of the agreements contain articles and provisions that have a direct and cumulative impact on biodiversity. Other international agreements signed by Jordan in agricultural sector contain important provisions related to biodiversity. A capacity development programme should be established to raise the awareness of decision makers, professionals and community at large of the linkages between trade, agriculture and other economic agreements and biodiversity issues.

5- Shortage of national management guidelines for conservation sites:

Despite the growth in the number and area of the conservation sites in Jordan (land and marine protected areas, important bird areas, national parks, ecotourism sites, etc..) there are no specific management guidelines for such areas. Public and civil institutions managing conservation sites need to

develop its technical capacity in developing and implementing management plans that meet the various demands of conservation and sustainable use.

6- Weak mobilization of financial resources available for biodiversity:

Apart from one or two experienced organizations, most institutions in Jordan lack the technical and practical knowledge for resource mobilization to implement biodiversity projects. The NBSAP has not been effective thus far mainly due to the absence of a practical resource mobilization plan and fundraising strategy. This is a major field for capacity development at institutional and individual levels.

7- Lack of national directives for biodiversity Impact Assessment:

Although a national bylaw on Environmental Impact Assessment has been developed in Jordan, there are no detailed EIA directives for Biodiversity Impact Assessment. Some capacity development programmes and initiatives can be invested for developing the directives and applying them

8- Low integration of the CBD main concepts in the national policy formulation process:

The stocktaking report has identified that the main concepts advocated by the CBD and which constitute the main policy elements of biodiversity are not well reflected in current national development and sectoral policies. Linkages between biodiversity and poverty eradication should be emphasized to ensure the credibility of integrating biodiversity into development policies. A major capacity development effort should be taken to increase the awareness and familiarity of decision makers with the new concepts of biodiversity management practices.

9- Low national capacity for in-situ conservation outside protected areas, including lack of capacity of community management:

A national network of nature conservation protected areas and national parks has been developed and managed by the government and the RSCN. The network covers around 11% of the area of Jordan. However, biodiversity-rich habitats are being eroded and degraded outside the network of protected areas. Capacity development efforts should be done to establish an enabling environment for in-situ conservation of biodiversity-rich areas beyond the current and proposed protected areas system. The main elements of this effort can be focused on Important Bird Areas and National Tourism Parks and developing management plans for all kinds of protected areas.

A good amount of efforts has been put in place for increasing the capacity of local communities and institutions for the conservation and sustainable use of Biodiversity components. A national capacity development programme for local communities centered on biodiversity concepts and direct community involvement should be developed.

10- Lack of clear national policies for regional and international technology transfer:

Apart from linkages developed on project-basis between national institutions and regional and international organizations and initiatives working on biodiversity conservation, Jordan lacks an effective mechanism for developing and maintaining regional and international partnerships for technology transfer and technical cooperation in Biodiversity related issues.

11- Lack of long- term programmes for awareness and education on new concepts in Biodiversity management:

Although many awareness and education programmes have been implemented in Jordan, there is still a need to advocate new concepts on biodiversity science and applications, especially benefits sharing, ecosystem approach and strategic biodiversity impact assessments for various stakeholders to keep up with new technical developments.

12- Weak linkages between research and policy making:

The major efforts conducted in scientific research on biodiversity issues in Jordan are not finding their route to the policy making and management systems. A capacity development programme for creating an enabling system for linking scientific research to policy making is one of the major priorities in biodiversity management in Jordan.

13- Lack of economic incentives and valuation of biodiversity components:

A major shortcoming in biodiversity management in Jordan is the absence of economic tools for biodiversity conservation. Economic tools are to be developed and advocated in decision-making processes, with particular emphasis on providing economic incentives and economic valuation. An important component of systemic capacity development will be to develop such economic tools.

Desertification Priority Capacity Constraints:

1- Lack of a national land use policy:

The root cause of desertification and land degradation problems in Jordan can be attributed to the lack of an effective national policy or guidelines for land use planning. The country needs to invest in capacity development efforts at both systemic (policies) and individual levels for the main objective of developing an effective land use policy that will protect the fertile land from urbanization and assign sustainable use patterns for various types of land.

2-Desertification is not considered as a national development priority with no allocation of enough financial resources:

Although land degradation is occurring at an accelerated rate in Jordan, it is not yet considered to be a major socio-economic and developmental challenge like water and energy. The public budget and the private sector are not allocating enough financial and technical resources for combating desertification in a systematic way.

3- Weak technical capacity in sustainable water demand management for agriculture and the increasing salinization of soil:

In Jordan land degradation is a function of water scarcity. Water available for agriculture and other land use activities is being reduced and substituted by treated wastewater. The treated wastewater, along with brackish water is leaving behind salinized and unproductive lands. The scarcity of water resources is considered as the main technical constraint causing land degradation. Technical and institutional capacity development is required at all levels to develop a new concept of water demand management aiming to stabilize and protect the ecosystem and land resources.

4-Absence of guidelines for the rehabilitation of degraded land:

Many developmental activities, mainly agriculture and mining, are leaving behind vast areas of degraded lands. Jordan does not have any effective guidelines for rehabilitation of degraded lands, and there is a scarcity of best practices and success examples in land rehabilitation. Capacity development is required for developing practical guidelines for land rehabilitation.

5-Lack of linkages between scientific research and policy making:

Although a lot of efforts are being conducted in scientific research on biodiversity issues in Jordan on land degradation issues, they are not finding their route to the policy making and management systems. A capacity development programme for creating an enabling system for linking scientific research to policy making is one of the major priorities in sustainable land management in Jordan.

6- Absence of educational and training programmes for various target groups on sustainable land management:

Despite good efforts done in awareness, education and training programmes in Jordan there is a general lack of sustainable and technically sound programmes for various target groups associated with land management on sustainable land management priorities and combating desertification. Such concepts in land management should be integrated in curricula and taught in training programmes that are based on hands-on examples and lessons learned in sustainable land management issues.

7- Absence of clear roles and responsibilities of organizations working in land management:

The efforts of land management and combating desertification are scattered among many institutions. There is a pressing need to define specific roles and responsibilities to minimize redundancy and for better integration of available resources.

8-Absence of a national indicator system to monitor desertification and drought and absence of a national programme for knowledge management:

There is a pressing need to develop and implement a national programme for monitoring desertification and drought based on a sound system of indicators. This system should be linked to a national programme for knowledge management on sustainable land management issues that is accessible to all stakeholders.

9-Weak capacity for outreach and networking with regional and global organizations and programmes:

The capacity of national organizations to coordinate and network with regional and global programmes and organization should be enhanced through capacity development for networking and outreach and opening communication channels with regional and global stakeholders for better sharing of experiences and developing practical partnerships.

10-Low empowerment of local communities and weak documentation of local and traditional knowledge:

Local communities are the ultimate beneficiary of sustainable land management programmes and their empowerment through training, institutional and technical capacity development and financial resources development is a key factor for the success of any desertification control programmes. This should be associated with documenting and applying traditional knowledge for sustainable land management.

11-Lack of economic valuation of the costs of land degradation:

Land degradation is spreading unnoticed in many cases due to the lack of economic valuation methods that identify the real economic loss associated with natural resources degradation. The development and application of such tools would be very helpful for decision-makers and environmental advocates for integrating economic cost effectiveness models in natural resource management options

12-Lack of a national process to evaluate the impacts of economic and agriculture agreements on land management:

Jordan has signed many trade and economic agreements in the last few years in its pursuit to be integrated into the global economic system. Some of the agreements contain articles and provisions that have a direct and cumulative impact on sustainable land management. Other international agreements signed by Jordan in agricultural sector contain important provisions related to land management. A capacity development programme should be established to raise the awareness of decision makers, professionals and community at large of the linkages between trade, agriculture and other economic agreements and land degradation issues.

13-Lack of integration of the "ecosystem approach" in national policies and programmes to combat desertification:

The "Ecosystem approach" has proved to be the most holistic approach in management of natural resources at the global levels. As in entails management of all components of the complex ecosystems (environmental, social and economic) it is the most practical entry point for sustainable land management. This concept should be advocated to all stakeholders and decision-makers through all potential capacity development tools and programmes.

14- Absence of specific directives for land management in Environmental Impact Assessments:

Although a national bylaw on Environmental Impact Assessment has been developed in Jordan, there are no detailed EIA directives for Impact Assessment on land degradation and desertification. Some capacity development programmes and initiatives can be invested for developing the directives and applying them

Climate Change Priority Capacity Constraints:

1- Capacity building for developing Mitigation measures:

Mitigation measures are key components of Jordan's response to the climate change challenges. Required capacities relate to technical capacity to undertake GHG mitigation work (Energy, Industrial Processes, Agriculture, Forestry, Wastes), technical capacity to identify GHG Mitigation options in the various areas and to elaborate mitigation plans, technical capacity to identify GHG Mitigation options in the various areas and to elaborate Mitigation plans, capacity to use forecasting models in the different sectors and capacity to undertake cost assessments.

2-Lack of economic incentives for climate change mitigation and adaptation:

Jordan is in need for capacity development at systemic and institutional levels for establishing and operating economic tools and incentives for various stakeholders in climate change dimensions.

3- Weak Institutional and technical capacity development for the Climate Change focal point at the Ministry of Environment:

The Climate Change focal point at the Ministry of Environment is coordinating national activities in the field of climate change and is in need for more capacity development investments in all aspects of climate change. This will ensure high quality management and coordination performance of the climate change unit parallel to the on-going technical and institutional capacity building process at the Ministry of Environment. Specific issues in capacity development include energy evaluation and emission factors, adaptation and mitigation programmes and CDM mechanisms.

4- Capacity Building for implementing the CDM:

Jordan's participation in this mechanism is hampered by a lack of understanding and information of the institutional and legal framework, technical infrastructure, enforcement capacity, and human resources needed to implement the mechanism. Major efforts in capacity development should be focused on this particular issue.

5- Developing linkages between research, systemic observation and policy making:

The major efforts conducted in scientific research on energy and climate change issues in Jordan are not finding their route to the policy making and management systems. A capacity development programme for creating an enabling system for linking scientific research to policy making is one of the major priorities in energy management and climate change in Jordan. The research capacity building component should be focused on systemic observations and collecting, managing and utilizing activity data and emission factors as well as capacity to establish a sustainable Observation System on Climate Change.

6- Technology Inventory and Transfer:

In order for Jordan to fulfill its obligations under the UNFCCC, financial and technological support is necessary to ensure technology transfer; for example, building institutional capacity, establishing/strengthening research centers and funding demonstration projects that mitigate climate changes. Other capacity requirements include capacity to identify, adapt and disseminate relevant Climate Change safe technologies and capacity to coordinate the various Transfer of Technology initiatives and to report on the achievements.

7- Lack of clear and systematic integration of the UNFCCC main concepts in the national policy formulation process:

Climate change and UNFCCC concepts are not well integrated in the national policy and planning system. Although renewable energy has become an important element in the national energy and socio-economic policy, the

issues of climate change are not among the main priorities of national policies.

8- Capacity Development for Energy Efficiency

Recent political and economic developments, especially raising crude oil prices, in the region and the world, have stressed the need in Jordan for more emphasis on developing renewable energy options. This approach is driving the country to develop technologies and practices for energy efficiency at all levels of energy consumption. The national focus on energy efficiency will be a positive driving force in many sectors including energy and transport, and a practical capacity development programme should be associated with this transition

9- Capacity Development for Practical Education and Training:

Education and training is a major cross-cutting issue that is central to the success of any environmental programme for capacity building. Any education and training programme for climate change should be based on the national priorities identified through this stocktaking exercise and main capacity constraints and should be looked at as a tool and not an end by itself. The main entry point for education and awareness could be the adaptation measures and plans for different sectors and assimilating and processing new practical knowledge resources on climate change adaptation and mitigation measures and clean development mechanism especially project design and requirements. Other entry points for education, awareness and training could be based on identifying socio-economic impacts of climate change in addition to major environmental impacts.

10- Capacity development for Knowledge management and networking:

There is a clear need at the national level to develop a knowledge management and networking system that would facilitate the acquisition, processing and dissemination of technical knowledge on climate change issues across organizations and between various professionals in the field.

11- Improving the Quality of Future National Communication Reports

Determining the full implications of the greenhouse gas emissions of an energy system using the IPCC bottom-up methodology requires examination of every phase of the whole energy chain, from the supply side of the energy system (i.e., resources extraction, refineries, electric power plants) to the demand side (i.e., industrial plants, residential and commercial units).

In order to improve the quality of future communication reports, it is necessary to determine local/regional emission factors, taking into account all variables such as technology being employed, efficiency and type of fuel as well as developing and conducting capacity building efforts for using the modern energy balance software systems.

12-Capacity Development for National GHG inventory:

National efforts for capacity development in GHG inventory will include capacity to enforce and sustain GHG inventory process, technical capacity to undertake GHG inventory in the 6 related emissions and sink sources, capacity to collect and compile relevant data and capacity to enter and maintain GHG data in an electronic database.

13- Capacity Development for National Adaptation Plans:

One of the main priorities for Jordan will be to build national capacity for developing adaptation plans and measures for the impact of climate change on major sectors (water, agriculture, energy, etc.). This is consistent with the great emphasis given to adaptation measures in all developing countries. Required capacity in this field relates to technical capacity to undertake vulnerability assessments (agriculture, forestry, water resources, health, human establishments, etc.), technical capacity to identify adaptation options in the various areas and to elaborate adaptation plans, and technical skills to use climate models, to use scenarios and to interpret results.

14- Creating an enabling environment for renewable energy

Recent political and economic developments, especially raising crude oil prices, in the region and the world, have stressed the need in Jordan for more emphasis on developing renewable energy resources and increasing the share of renewable, i.e. wind and solar, in the national energy mix. Capacity development in the field of systemic and institutional aspects of renewable energy is considered one of the main priorities.

15- Capacity Development for Resource Mobilization:

Most institutions in Jordan lack the technical and practical knowledge for resource mobilization to implement climate change projects. A particular focus should be given to GEF resource mobilization options in the area of climate change. This is a major field for capacity development at institutional and individual levels.

National Priorities in Synergies between the Conventions:

The NCSA synergies report proposed 10 strategic priority areas for capacity development that would entail the various specific capacity constraints shared by the thematic reports. The strategic priorities would allow the NCSA to develop strategic action plans under the ten priority areas that were ranked by the national stakeholders as follows:

1- Knowledge management and networking:

Since efforts in implementing the three conventions are divided between various sectors and institutions, a priority need will be to develop the national knowledge management capacity for synergies between the three themes. Information should be collected, saved, processed and exchanged between

institutions and professionals through effective knowledge management networks whether these networks already exist or should be developed. The knowledge management system could act as a tool for unified monitoring for environmental components and reporting requirements of the three conventions.

2- Outreach and awareness on synergies between conventions:

Although many awareness and outreach programmes have been implemented in Jordan on sectoral basis, there is still a need to advocate the integrated synergies between the three conventions for various stakeholders to keep up with new technical developments. Any awareness and outreach programme should be considered as tools for capacity development and not an end by itself.

3- Technology Transfer:

Technology transfer and cooperation is important to all three conventions. The Rio Conventions emphasize the importance of technology co-operation and transfer in achieving their respective goals. Mutually- supportive technologies like renewable energy, agriculture efficiency and ecosystem preservation will be of high value to address the common elements and synergies from a technological perspective.

4- Sustainable institutional coordination mechanisms:

Although the Ministry of Environment is the focal point for all the three conventions, the implementation of obligations depend upon the active involvement and commitment of other institutions especially line governmental institutions and some NGOs. This requires a dynamic and sustainable coordination mechanism between the various institutions and to present the synergy perspective to all those institutions. This will help in developing integrated responses to the commitments and interlinkages between the conventions.

5- Education and Research:

The existing educational system in environmental sciences and natural sciences in general does not adequately address scientific and practical linkages between the themes of biodiversity, desertification and climate change, and between these themes and the natural environment. Education on global environment issues can promote the development of an increased awareness and understanding of the impact of local actions that degrade the environment sustainable development and human well being and will assist in developing educational packages that address the three themes and their cross-cutting issues in an integrated manner.

Concepts related to the synergies between the conventions should be integrated in educational programmes and curricula to ensure a sustainable

flow of education packages and an integrated approach to education for environmental management and linkages between the three themes.

Another important capacity development priority is creating an enabling system for linking scientific research to policy making. Scientific research should focus on cumulative and synergistic impact assessments of the linkages between biodiversity loss, desertification and climate change and produce informed decisions on integrated responses and mitigation plans. Research on adaptation to climate change would be an essential component of cross-cutting research options.

6- Capacity Development for Resource Mobilization:

Most institutions in Jordan lack the technical and practical knowledge for financial and technical resource mobilization to implement projects and programmes tackling synergies between the three themes. This is a major field for capacity development at institutional and individual levels since financial constraints represent some of the major difficulties facing environmental management in Jordan. Integrated resource mobilization can also help in minimizing overlaps and maximizing the benefits from international aid.

7- Lack of clear and systematic integration of the cross-cutting concepts in the national policy formulation process:

The report has identified that the main cross-cutting concepts advocated by the conventions and which constitute the main policy elements of biodiversity, desertification and climate change are not well reflected in current national development and sectoral policies in a clear and integrated manner. Linkages between the Rio conventions and poverty eradication should be emphasized to ensure the credibility of integrating the themes into development policies. A major capacity development effort should be taken to increase the awareness and familiarity of decision makers with the concepts developed by the conventions.

8- Training:

Environmental and technical training packages developed by and for national institutions should begin to focus on linkages and synergies between the conventions. Programmes must be developed to utilize existing national and regional specialized centers to provide courses in technical areas relevant to all three conventions to targeted audiences. Another training tool could be course materials for technical professionals and agency staff on issues relevant to the three conventions — and the synergies, complementarities, and areas of overlap that exist — to be used in structured courses, workshops, and seminars. Such training programmes will increase the practical capacity by proof and evidence of the success stories in synergies and provide hands-on experiences to be applied in local conditions.

9- Local Communities empowerment and participation:

Communities are the end beneficiaries of any environmental management programme. Local communities' capacities to address issues of biodiversity, desertification and climate change should be developed in a sound technical way keeping close attention to the linkages with sustainable livelihoods.

This can be done through capacity development for local institutions (municipalities, NGOs, CBOs, etc...) to enable them to develop their own initiatives to implement global environmental thinking in the local context.

10- Development of infrastructure facilities:

This will include developing new capacities in existing facilities such as laboratories, data centers, libraries, museums, herbariums, field stations, and monitoring sites. These could be shared between two or more institutions implementing activities under the conventions to make use of existing synergies (in, for example, data storage) and for cost effectiveness.

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