Main Administration on Hydrometeorology
(Glavgidromet) at the Cabinet of Ministers
of the Republic of Uzbekistan

NATIONAL REPORT OF THE REPUBLIC OF UZBEKISTAN ON THE IMPLEMENTATION TO COMBAT DESERTIFICATION (CCD)

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Tashkent April 2002

Content

GIS	- geographical information system,
Glavgidromet	- Main Administration on Hydrometeorology at the Cabinet of Ministers of the Republic of Uzbekistan
CCD	- The UN Convention to Combat Desertification and Drought
NAP	- National Action Plan
NGO	- Non-Governmental Organizations
NSK	- National Coordination Body
NFP	- National Focal Point
AP	- Action Plan
UNDP	- UN Development Programme
UNSO	- UN Programme to Combat Desertification
IFAD	- International Fund of Agricultural Development
GKNT	- State Committee on Science and Technology
CNT	- Center on Science and Technology
GTZ	- Germany Society on Technical Co-operation
UNEP	- United Nation Environmental Programme

ii) Summary

This report has been developed from the first National Report (2000) considering the changes have occurred. While preparation the report the information published in scientific papers was used. The specialists of Main Administration on Hydrometeorology (Glavgidromet), the Ministry of Macro-Economical Statistics (Minmakroeconomstat), the State Committee on Nature Protection (Goskommpriroda), the Ministry of Agriculture and Water Resources (Minselvodhoz), the Academy of Sciences (AN), National Universities, Non-Governmental Organizations (NGO), Center on Science and Technology (CST).

Preamble

Deserts and semi-deserts occupy 80 percents of the territory of the Republic of Uzbekistan. Control of desertification and droughts holds high priority in ensuring sustainable development. This circumstance explains an active participation of the Republic of Uzbekistan in the designing and implementation of the UN Convention to Combat Desertification and Drought. The Republic of Uzbekistan is the first of the Central Asian States and NIS to ratify the Convention and had taken an active part in all phases of its preparation.

Intensive lands usage leads to irrigated lands degradation. Secondary salinisation affects more than 50 percent of irrigated area. Cattle pasture and related erosion processes together with other anthropogenic impacts have resulted in rangelands depression (losses in forage capacity). 16 millions hectares from 23 millions hectares are exposed to depression among them 7 millions hectares to a great extent, where losses in forage capacity amount to 30-40 percents and more. Drifting sands occupy about one million hectares, of which 200,000 have emerged during the last time along the boundaries of irrigated lands, what can result in intensify desertification processes.

Beginning from the past quarter of the 20-century until nowadays the degradation of one of the world's major land-locked water bodies, the Aral Sea has being taken place, the level of which has dropped by 17 meters and its water area shrank by more than half. New sand-salt desert with an area of more than 30,000 square kilometers has emerged on a dried-out Aral Sea bed. Changes of climate, landscape, fauna and flora as well as intensification of salt and dust transfer in Aral Sea littoral and adjacent territory intensify the desertification processes. The deterioration of environmental situation is having a both direct and indirect negative impact on the quantity of life and the health of 35 million people living in the Aral Sea basin.

In 1999 thanks to the financial and technical support of the Convention Secretariat, UN Environmental Program the National Action Plan of the Republic of Uzbekistan to Combat Desertification was prepared. A wide range

of most eminent experts and scientists of the Republic of Uzbekistan were involved in drafting the text of the National Action Plan. A number of seminars and workshops were held in Tashkent city and in the areas that have worst suffered from desertification, namely, Bukhara, Samarkand, Urgench and Karakalpakstan.

These seminars and workshops helped to extend sufficiently the range of people involved in the preparation of the NAP, these are local communities, NGO, students (hydrologists, soil specialists, land surveyors, hydroulic engineers, etc).

A series of priority pilot projects, which are a component of the NAP, will permit to check the correctness of approaches to desertification and drought control in the Republic of Uzbekistan.

Thanks to financial and technical support of the UNDP/UNSO and the Government of Finland, the Republic of Uzbekistan has implemented a project on holding regional seminars and workshops.

The Government of Uzbekistan is implementing a series of projects aiming at desertification control. These projects are related to the provision of rural population with drinking water and gas, development of small-scale power engineering using alternative energy sources. Much has been done to change the crop pattern, put an end to the cotton monoculture and increase the area of land under cereals, vegetables and forage grasses.

However to solve problems completely, to continue projects and to attract attention to the problem on national and regional level financial support of a world community is needed. The support can be given as scientific-technical grants, seminars and workshops holding, publications, international consultants, technical support, preparation of legislative acts, etc.

In October 2001 Memorandum on mutual understanding on strategic cooperation for the UNCCD implementation in Central Asia between CCD-GTZ Project, Government of Canada via CIDA, Asian Development Bank and Global Mechanism.

The Government of Uzbekistan expresses its sincere gratitude to the Secretariat of the UN Convention to Combat Desertification, UNEP, UNDP, UNSO, GTZ for their support to Uzbekistan in the issues related to the implementation of the UN CCD.

National plans and strategies available in other social and economical areas are aimed to sustainable economical development of Uzbekistan and foresee:

- Securing a healthy and fruitful life for each citizen;
- Steady and stable social and economical growth and spiritual rejuvenation of the nation;
- Completion of structural and institutional reforms;
- Establishing a democratic state and socially-oriented economy;

- Improving ecological situation, overcoming repercussions of the Aral Sea crisis;
- Rationalizing and wisely using land and water and other natural resources;
- Desertification control and improving the environment.

National plans or strategies in the field of combating desertification developed prior to the UNCCD

Prior to 1991 the governmental expenses on environmental programs constituted only 0.06 percent of the gross national product. Nature protection policy and legislation were mainly developing along different lines and provided for no interaction between the various environments. Planned environmental interventions were either not implemented or were implemented only partially, mostly, due to lack of a sufficient legal framework.

Starting with 1991 Uzbekistan has being integrated in the world economic and political structures what have given a powerful impetus to the environmental problems solution. Environmental protection has become an inseparable part of economic reforms. The social and economical policies and strategy are based on the principals of harmonization of production and environment and awareness of severity of environmental problems facing the country.

Uzbekistan launched a legislative reform reviewing the old and outdated acts and passing new ones. Since 1991 a new governing system has been emerging in Uzbekistan. The process of establishment of organizational structures, securing the country' sovereignty, has been mostly completed. The programme of reforms in Uzbekistan includes macroeconomic management, structural and line reorganization.

Scientific and technical desertification control activities

In Uzbekistan within the NAP framework a special attention is given to the development of scientific-practical achievements in the field of desertification control and drought influence mitigation. For the best usage of a scientific-technical potential in the field of desertification control the Government of Uzbekistan in the framework of the strategy of scientific-technical activity improvement has established a special section on soils fertility increase and highly technological methods to combat desertification.

The Coordination Committee at the Cabinet of Ministers was established by the Decree of the President of the Republic of Uzbekistan "On improving organization of research activity" from February 20, 2002. The Chairman of the Coordination Committee is Prime Minister of the Republic of Uzbekistan. Under Coordination Committee specialized section on rising in soils fertility,

highly technological methods of desertification control, securing rational use and water resources reproduction, environment protection and security was established.

At present financing the State scientific-technical and fundamental programmes, aimed at land fertility increase and desertification control is being implemented at the national level. At present the Government of Uzbekistan finances the fundamental research, scientific-technical programmes and innovative projects, aimed at clarification of a role and zonal peculiarities of natural and anthropogenic factors in desertification processes; developing modern technologies of sands re-cultivation, forest- and ptyto- reclamation, raising in soils fertility and drought- and salt tolerance of plants, energy- and water supply of backcountry districts in desert and arid area of Uzbekistan using alternative energy sources.

Implementation of the recommendations of the State Committee on Science and Technology

The local scientists and specialists force is being used for the developing projects and programmes, public is getting acquainted with new scientific-technical achievements, information exchange is being performed, contacts with experts from other countries are being established, traditional technologies are studied and applied. The country' experts are participating in the preparation of the project "Improving life conditions of population on the base of Early Drought Warning System" jointly with GTZ-CCD.

Established and functional National Coordination Body (NCB)

In accordance with the decision of the Government of the Republic of Uzbekistan Glavgidromet of the Republic of Uzbekistan is established and functional National Coordination Body (NCB). The initiative of participation of the Republic of Uzbekistan in the negotiations for the CCD preparation and putting into practice the decision of the Conference of the Parties belongs to Glavgidromet. It was assigned the role of the focal point in the Republic with its professionals taking an active part in the CCD implementation.

An inter-department commission was formed ***to design the NAP.*** The Government of the Republic of Uzbekistan approved their membership.

Coherent and functional legal and regulatory framework

Coherent and functional legal and regulatory framework complies with the Constitution of the Republic of Uzbekistan, which guaranties environmental security of population. Legislation on nature protection has created economical

and social prerequisites for environmental security of population on the base of common principals of nature protection and wise nature management. To establish necessary legal base in Uzbekistan during the period of independence about 100 legislative documents, directly or indirectly related to environmental protection and nature management have been adopted.

With the active financial support of the CCD Secretariat, UNEP and UNDP the stakeholders in the design and implementation of the NAP in Uzbekistan are Governmental agencies, state institutions, local authorities, non-governmental organizations, representatives of the general public and local communities affected by desertification. Scientists, water managers and agricultural professionals, women and students are also taking an active part.

To implement priority projects in 2001 under the support of the CCD Secretariat, the Government of Germany, GTZ trainings have been conducted in Tashkent city and Samarkand city in the framework of sub-regional plan of action.

To prepare the Project "Early Drought Warning System" the consultations with the representatives of the national hydrometeorological services were conducted.

The CCD Secretariat is taking an active part in the consultations. The technical measures to combat desertification have been developed. Studies, projects and pre-project works on desertification and drought are being implemented. Inter-departmental and inter-state co-operation in implementing the CCD is being strengthening.

In order to implement the NAP it is necessary to develop sub-regional co-operation in the Aral Sea basin what can be possible only with the financial support of the CCD Secretariat and international organizations.

The strategic approach to addressing the problems of the country development has been identified. The broad sections of population, state bodies, NGO are taking part in the NAP. International assistance helps train national research and engineering personnel. The systems of investment programmes, sustainable development monitoring and the NAP structure reinforcement are being developed.

To implement the priority projects included in the NAP the consultations with international donors were conducted and the project proposals have been forwarded to the international organizations.

The Republic of Uzbekistan has fully paid its dues to the UN Convention to Combat Desertification in the amount of 7,970 USD for the period 1999-2001. The Government of Finland financed the preparation of the NAP. In 2001 the agreement with GTZ about the support of the Project "Early Drought Warning System" in the Aral Sea basin in the framework of the sub-regional action plan was signed. At present the preparation to its implementation is in progress.

For the best the project implementation at the sub-regional level an additional support is needed, as the sub-regional ecological problems solution is possible

only with support of the international organizations and especially the CCD Secretariat.

Given report has been prepared by the group of experts including the representatives of the Ministry of Macroeconomics and Statistic, the Ministry of Agriculture and Water Resources, State Committee on Science and Technology, the Academy of Science and other interested agencies.

The representatives of the National Commission on UNESCO International Hydrological Programme and Water Economy Commission took part in this report preparation. It identified the needs for and the role of a national environmental information system in combating desertification in Uzbekistan, many facets that are needed for diagnosis of desertification. This information is scattered in many organizations, in governmental, non-governmental and international organizations, universities.

The information for the report was preparing at the seminars in the Nukus town (Karakalpakstan) and the Bukhara town with use of the data of local organizations. It was proposed to facilitate the exchange of data and information and include them in the information exchange network.

iii) 1 National plans and strategies available in other social and economic areas

During the period from 2000 to 2001 the drought was observed in the lower reaches of the Amudarya river caused by low water level and non-controlled transboundary waters resources usage. Evaluated damage amounted 26 billions of sums. The Government of the Republic of Uzbekistan undertook drastic measures to mitigate drought consequences with use of considerable physical and financial resources.

Unbalanced regulation of water regime of the Syrdarya river as a transboundary water flow has resulted in the water supplying reduction by 20-50% over the square in 700-800 thousands of hectares, fertile soil layer was washed, more than 130 thousands hectares were flooded. Production losses in the lower reaches has been estimated in 700 billions of USD. The damage caused is huge and has been paid by nobody. Resulting from winter water discharges into the Arnasay depression a new ecosystem has been formed, which at present time gives rise to anxiety as to support its being additional financing is needed.

As it is known the objective of the CCD is combating desertification and mitigation of drought impact in the countries exposed to these processes by taking effective measures at the all levels together with the agreements about international co-operation and partnership in the framework of comprehensive approach available in the Agenda for the XXI century and aimed at the achievement of sustainable development in considered regions.

In this direction the Government of Uzbekistan takes the definite measures promoting the achievement of the agreements on transboundary waters usage.

iii) 1.2. The National development plan

To achieve the goals of sustainable development in the Central Asian region on September, 1995 the UNDP held an International Conference on the Sustainable Development of the Aral Sea in Nukus, the capital of Karakalpakstan, which is a part of Uzbekistan. At the Conference the Presidents of the five Central Asian states signed the Declaration of the Central Asian States and International Organizations on Sustainable Development in the Aral Sea basin (the Nukus Declaration - 95). This document commits the five Central Asian States to practice sustainable development, primarily as regards the use of land, water, biological and human resources.

Table 1

The tendencies of development of the sectors of Uzbekistan

Index	Unit of measurement	1995	1996	1997	1998	1999
Gross inner product	Billions sums	302,8	559,1	976,9	1358,8	1531,1
	Percent from previous year	99,1	101,7	105,2	104,4	105,9
Structure of Gross Product	Percent from total	100	100	100	100	100
Industry		17,1	17,8	15,6	15,0	15,2
Agriculture		28,0	22,4	28,3	26,4	26,9
Transport and Communications		7,3	6,8	6,5	6,2	6,4
Building industry		7,1	8,3	7,3	7,8	8,4
Trade and public cattery		5,2	7,0	8,4	8,5	8,9
Other including Services		22,2	23,3	21,5	20,6	21,1
Other taxes, including tax on import		13,1	14,4	12,4	15,5	16,4
Volume of industrial production	Billions sums.	233,6	419,1	607,8	957,8	1023,9
	Percent from previous year	101,1	102,6	104,1	103,6	105,3
Agricultural production	Billions sums.	124,4	181,0	400,0	550,1	654,6
	Percent from previous year	102,3	94,4	105,8	104,0	103,8
Investments in basic capital	Billions sums	88,9	176,7	276,6	396,7	499,9
	Percent from previous year	104	107	117	115	119
Retail commodity circulation	Billions sums.	106,7	238,5	497,2	718,5	897,9
	Percent from previous year	95,7	122,2	112,7	114,0	118,1
Paid service for population	Billions sums.	17,0	34,0	70,4	115,5	140,2
	Percent from previous year	73,0	109,8	121,4	110,5	131,1

***The objectives of the Sustainable Development Concept in Uzbekistan are those*:**

- Justifying the need for a sustainable development towards the nation' prosperity in the next century;
- Assessing the overall social and economical conditions and state of the environment;
- Formulating the general strategy for transition from unsustainable to sustainable development in the 21st century.

In Uzbekistan the social base for implementing the Sustainable Development Programme is not a social group as such but a territorial social community - the *mahalla*. It is the *mahalla,* as a form of community, characteristic of the manner of settlement of the Uzbek people, has a powerful capacity for sustainability and a social- psychologic framework for the families living therein.

For the Republic of Uzbekistan strategic sustainable development objectives are as follows:

- securing healthy and fruitful life of each citizen, along with a steady and stable social and economic growth (Table 1) and spiritual rejuvenation of the nation based on completed structural and institutional reforms;

- establishing socially-oriented market-based economy in a secular democratic state governed by the rule of law and integrated on worthy conditions into the global economic system;
- addressing the repercussions of the Aral Sea disaster and improving the tense environmental situation in the other parts of the country;
- conserving and improving the environment;
- rationalizing and wisely using land, water and other natural resources, with their conservation for the future generalizations of Uzbekistan.

iii) 1.3 National Action Plan on Environment

Uzbekistan, like all the other Central Asian states, is developing in a tense economic, water management, demographic and environmental situation. Conceptual guidelines of nature protection policies of Uzbekistan should provide for the creation of a favourable environment for human quarantined by the Constitution of the Republic of Uzbekistan, and be based on the Law on Nature Protection enacted by the Oliy Majlis as well as the legislative acts on

the protection of its most important natural complexes. Simultaneously, considering the integration of Uzbekistan into the world community, the guidelines of the nature protection policy reflect its specific approach to the existing economic, demographic and environmental situation.

The Sustainable Development Strategy of Uzbekistan views the nature protection policy in the context of its attitude to the solution of global, regional and national environmental problems such as:

- global problems - predicted climate change, desertification control, conservation of biological diversity, observance of the Ramsar Convention on Migratory Birds and the 1983 Geneva Convention on the prevention of long-distance trans-national air pollution;
- regional and national problems: mitigation and liquidation of the causes and negative consequences of the Aral Sea disaster and desertification in its littoral area; protection and wide use of water resources; rehabilitation and restoration of the natural environment in the zones of local ecological tensions; restoration of the optimal salt and water balance on irrigated lands; restoration and improvement of soil fertility; anthropogenic erosion control. Protection of biological resources, nature reserves and national parks, conservation of environmental balance in the new ecosystems such as the Arnasay, Dengizkul and others. Increasing the area of land under forests in Uzbekistan, especially in the upper watersheds of local rivers.

The nature protection policy will address the following priority issues:
The nature protection policy will address the following priority issues:

- water conservation in all spheres of consumption and rehabilitation of the quality of water resources;
- development of systems of quality drinking water supply to the population;
- restoration of soil fertility - normalization of water and salt balance; increase in humus content in soil; prevention of soil erosion by wind and water; wise use and protection of vegetation in the foothills, the mountains and desert rangelands.

Mitigation of the Aral Sea Disaster is a fundamental condition of sustainable development in the Central Asian region. Mitigation of the after-effects of the environmental and economic crisis in the Aral Sea littoral area is based on a comprehensive solution of the inter-related regional and national problems.

The key regional measures aimed to the decision of the problems related to the protection of transboundary water resources: simultaneous improvement of the efficiency of irrigated systems and irrigated fields by regional states; financing of the operation and development of inter-state water use and water

withdrawal systems; co-operation and specialization in agricultural production; research work and studies in priority areas of nature use and nature protection.

National measures aiming to mitigate drought in the Aral Sea littoral include the rehabilitation of production funds in water management and agriculture; prevention of water pollution; establishment and development of quality water supply systems; comprehensive interventions aiming to restore and raise soil fertility. Rational use and nature protection policies of Uzbekistan are based on the following principles of international agreements and its own national sustainable development strategy:

National strategy and action plan to preserve biological diversity have been designed in connection with the Republic's accession to the Convention on Biological Diversity, in conformity with the commitments adopted in the framework of this Convention, and approved by the Government in April 1998.

The main priorities of the strategy and the action plan are as follows:

- establishment of a National Commission for Biological Diversity;
- assessment of the current state of biological diversity;
- reorganization and development of a network of especially protected territories;
- dividing the responsibilities in managing biological resources;
- public awareness, education and participation in preservation and non-destructive use of biological diversity;
- specific actions and mechanisms of non-destructive use;
- calendar plan, funds and their sources.

The public executive agency is the State Committee on Nature Protection.

Uzbekistan: Study of Climate Change in the Country

This national project of capacity building to enable Uzbekistan meet its commitments under the Framework Convention on Climate Change conforms to its long-term goals.

The project elements include the preparation of the first and second National Reports of Uzbekistan to the Conference of the Parties. The report includes the inventory of greenhouse gases, materials for calculating emission trends, an outline of accessible or planned climate mitigation measures, an assessment of the country's susceptibility to climate change, and an outline of accessible or planned adaptation measures.

The elements include:

- raising the awareness of the general public and officials of the issues related to climate change;
- developing organizational structures to intensify the dialoge and co-operation among governmental and non-governmental agencies, private sector, etc.;
- the project identification as to climate change by greenhouse gases.

The public executive agency is the Main Administration of Hydrometeorology (Glavgidrommet).

iii) 2 National plans and strategies to combat desertification prior to the UN CCD

iii) 2.1. Environmental situation prior to 1991 (year of declaration of independence of Uzbekistan)

Prior to 1991 the governmental expenses on environmental programs constituted only 0.06 percent of the gross national product. Nature protection policy and legislation were mainly developing along different lines and provided for no interaction between the various environments. Planned environmental interventions were either not implemented or were implemented only partially, mostly, due to lack of a sufficient legal framework.

Starting with 1991 Uzbekistan has being integrated in the world economic and political structures what have given a powerful impetus to the environmental problems solution. Environmental protection has become an inseparable part of economic reforms. The social and economical policies and strategy are based on the principals of harmonization of production and environment and awareness of severity of environmental problems facing the country. Uzbekistan launched a legislative reform reviewing the old and outdated acts and passing new ones.

Since 1991 a new governing system has been emerging in Uzbekistan. The process of establishment of organizational structures, securing the country' sovereignty, has been mostly completed. The programme of reforms in Uzbekistan includes macroeconomic management, structural and line reorganization.

Radical institutional changes have taken place in agriculture. The most significant change in the structure of agriculture was the abolish of state farms and their transformation in co-operative farms (*shirkats*) as well as the development of leased and private farms.

The major element of the institutional reform is reconsideration and re-distribution of the functions, rights and responsibilities of all existing governing entities, from the central economic ministries, departments, territorial bodies down to amalgamation, enterprises and agencies, in such a way as to ensure compliance of their relationship to the new content of the market-oriented development.

One of the result of the first phase of the market-oriented transformation in Uzbekistan on its way to sustainable development was the establishment of new market institutions, which had no existed in the pre-reformed period, such as stock and commodity exchanges, a new banking system, privatization funds, insurance and leasing companies (Table 2). An organization and legal framework for a socially oriented market economy has been created. However, sustainable economic development requires the solution of a number of serious economic, social and environmental problems. These include unstable financial

position of many enterprises, low productivity of institutional changes, normalization of the payment balance, liquidation of the prevalence of the mining of raw materials in the economy, rational and effective use of land, water, labour and mineral resources, and stabilization of the environmental situation in the Aral; Sea littoral area.

Table 2

Privatized enterprises in different branches of economics January 2000 (thousands of units)

Index	Uzbekistan	Karakalpakstan
Total:	178,3	8,884
Including: Trade and public catering	35,8	28,5
Building industry	7,9	9,3
Agriculture	23,2	23,6

Characteristic peculiarities of the demographic development are as follows:

- large proportion of the rural population;
- high population growth rate;
- low migration ability of the native population;
- irregular population density throughout the territory of Uzbekistan.

At present the country has a powerful labour force. Uzbekistan has unique reserves of minerals and raw materials not involved in production yet.

An important fact for economic development is that Uzbekistan has considerable strategic resources such as oil and gas condensate, natural gas, coal and precious metals (Table 3).

Table 3

Oil and gas production in the Republic of Uzbekistan in 1992-2000

Years	Oil (thousands tons)	Gas (billions m^3)
1992	2952,5	42,5
1993	3291,8	44,4
1994	4000,5	46,3
1995	5516,9	47,6
1996	7586,8	49,0
1997	7623,0	51,3
1998	7891,0	52,5
1999	8000,0	53,8
2000	-	55,6

A wide range of their possible application opens up broad prospects in the growth of the country’s export potential and establishment of a number of joint venture with the involvement of foreign capital.

Uzbekistan possesses diverse natural resources, many of them are unique and in great demand on the world market. This creates enabling conditions for the country’s sustainable economic development in future

iii) 3 Scientific and technical desertification control activities

In Uzbekistan within the NAP framework a special attention is given to the development of scientific-practical achievements in the field of desertification control and drought influence mitigation.

For best usage of a scientific-technical potential in the field of desertification control the Government of Uzbekistan in the framework of the strategy of scientific-technical activity improvement has established a special section on soils fertility increase and highly technological methods to combat desertification.

At the national level financing of the public research, scientific-technical programmes and innovative projects related to scientific and applied tasks in the field of desertification control and rational use of the resources of desert and arid zones is being implemented. The list of the projects under financing is given below:

Designing agricultural and engineering land reclamation techniques of soils desalination by optimizing the parameters of land reclamation systems, selection of farm crops, phyto-reclamation technology and use of saline water.

Conducting an environmental and agro-chemical zoning of the cotton-growing according to migration and accumulation of chemicals, heavy metals and radioactive elements; studying deflation and erosion processes, and developing effective methods of their prevention as well as rehabilitation and improvement of fertility of irrigated lands and sand re-cultivation.

Developing techniques of forest reclamation of the dried out Aral Sea bed and the mountain forest belt, and designing a technology for growing forest plantations with the aim of creating local marketable timber reserves.

Developing, production, putting into operation and monitoring of three photo-electric stations on the base of using amorphous silicon in stock-raising farms in the Samarkand district.

Developing environmental and economic models and methods of rational use of water resources in the Aral Sea southern littoral.

Developing mathematical models and methods of decision-making in the ecosystems of the Aral Sea and its littoral.

Regional environmental problems and development of scientifically justified nature protection interventions aimed at improving the environmental situation in the southern littoral and the delta of the Amudarya River.

Developing water-saving techniques and technologies of irrigation, accumulation and retention of moisture and its rational use (creating and aqueous network in the desert).

Preserving biodiversity of vegetation and protecting natural ecosystems (phyto-reclamation of the dried Aral Sea bed).

Developing methods of treatment and ways of utilization of polluted river, drainage and return water using new local composite materials.

Development methods of forest reclamation in the dried-out sea bed and creating rejuvenated pasture protecting forest belts in the desert.

Developing a system of environmentally balanced use of rangelands for Karakul sheep breeding, ensuring a stable and high feed productivity of arid rangelands.

Developing ways of regulating the agro-physical properties and raising the fertility of irrigated soils in conditions of human-induced desertification.

Erosion and deflation susceptible irrigated lands in the desert zone of Uzbekistan and ways of preventing erosion and restoring fertility of deflated soils.

Studying human-induced pollution and biological activity of soils in irrigated areas of Uzbekistan.

Development of theoretical foundations for creating new types of single and compound mineral and organo-mineral fertilizers with due regard for soil and climatic conditions in Central Asia. Kinetic regularities of the process of chemical enriching of the Kyzylkum phosphorities using solutions of sulphuric and phosphorous acids will be studied, compound fertilizers effective on saline soils will be proposed.The nature of osmotic and toxic effect of saline soils on the ripening capacity and plants productivity and application of anti-stress factors. A new method of raising salt tolerance of various plants will be offered to agriculture.

Zonal peculiarities of soils formation in natural and human-induced landscapes in the lower reaches of the Amudarya river and their classification. Material on the desert zone collected in the past 20 years will be summarized. A system and classification of soils, the peculiarities of soils in desert areas and also their development and desertification will be developed.

Studying the impact of cultivation of drought-tolerant cotton varieties on aqueous and physical properties of alluvial meadows including those on the right bank of the Amudarya delta. Recommendations on preventing negative anthropogenic impact on soils structure and secondary salinisation of irrigated soils will be developed.

Adaptive strategies of the main biomorphs of plants in the arid zone. A summary description of the main biomorph in the South-Western Kyzylkum desert and the dried-out Aral Sea bed will be implementeded.

Studying anthropogenic transformation of desert vegetation and current state of rare communities of relic plants in the mountainous zone.

Introduction of arboreal and grass plants in connection with environmental changes in the southern littoral. New to Karakalpakstan varieties and forms of salt-tolerant plants will be revealed.

Parazitologic monitoring of water bodies in the southern littoral for assessing and forecasting ecological situation. Recommendations on prevention and control of the main fish diseases.

Theoretical foundations of the use of animal population (mammals) in economy and preservation of their biodiversity. Population regulating mechanism and specific features of the adaptive reactions of animals to the impact of exo- and endogeneous environmental factors.

Population ecology of rare and dissapearing fish species in the Aral-Amudarya region and design of a strategy of preservation and rational use of their biodiversioty. Biodiversity in systems of the southern littoral in conditions of desertification.

Biochemical plants adaptation to some environmental factors (including salinisation and drought) and its practical utilization.

Development of a modern theory of moisture evaporation from heterogeneous environments with the aim of identifying optimal conditions of farm crop irrigation in arid area, drying of moist materials and weather modification.

Comprehensive ecological assessment of environment of the southern-western part of the Kyzylkum desert and in the vicinity of Bukhara city.

For exchanging information and conducting consultations with scientific-technical community and with purpose to attract attention of general public to the desertification problem in Uzbekistan the international conference "To combat desertification in Uzbekistan" was held in Samarkand city in 2001. Subjects on arid problems and desertification have been introduced in high educational institutes; scientific personnel involved in the desertification researches are being trained in foreign scientific institutions.

iii) 4. Implementation of the recommendations of the State Committee on Science and Technology

iii) 4.1 Assessment of achievements in implementation of the recommendations of the State Committee on Science and Technology

To exchange of information and experience in the field of desertification control scientific seminar and workshops are conducted in the regions most subjected to desertification. Public Universities host seminars and workshops. This enables to use the capacity and knowledge of local scientists and specialists and disseminate them.

Scientific papers are regularly published in local newspapers and magazines related to rational use of land and water resources, biological diversity.

An urgent task of state-of-art period is improving the system of education and raising of personnel skill involved in agriculture. Public educational institutes prepare personnel of relevant professions for agriculture and water management, climatology, biology and others.

Scientific and technical achievements are being applied in agricultural production. Advanced international experience is introduced, such as applying Holland technology of potatoes growing, China technology of cotton sowing under film.

Research works directed to desertification control are accompanied with field works, the result of which are various specialized maps. The maps made enable to use wisely land and water resources at all governing levels.

Within the natural resources monitoring system there are special experimental sites that enable to collect agro-meteorological data. Satellite data and modern computer technologies are applied in desertification monitoring, however wide spreading is hampered because of the lack of funds for conducting satellite surveys and aerial visual works.

Every year the World Day To Combat Desertification and Drought is conducted with calling specialists, mass media, non-governmental organizations. Holding seminars and workshops enables to disseminate information with the purpose of general public opinion mobilization and attracting attention of public opinion and also for popularization, use and improvement of knowledge for desertification control. The reports presented at the seminars reflect the main achievements and give scientifically grounded methods to combat desertification and drought.

International experts took part in the National Action Plan preparation. International experts also participate in the implementation of the international programmes financed by international organizations. Often limited financing hampers calling international experts for participation in national programmes.

iv) 1 Established and functional National Coordination Body (NCB).

Official Status

The initiative of participation of the Rupublic of Uzbekistan in negotiations on the preparation of the CCD and implementation of the resolutions of the Conference of the Parties belongs to Glavgidromet of the Republic of Uzbekistan. It was assigned the role of the focal point in the Republic, with its professional taking an active part in the CCD implementation.

An inter-departmental commission was formed to design the NAP and the Government of the Repuiblic of Uzbekistan approved its membership.

The Republic of Uzbekistan participated in the following inter-governmental agencies, sessions and workshops on the UN Convention:

1) 10 sessions of the Inter-Governmental Committee for negotiations on the preparation of the International Convention to Combat Desertification and Drought;
2) 5 sessions of the Conference of the Parties to the UN Convention to Combat Desertification, Asia;
3) 4 Conferences of the National Focal Points for the implementation of the CCD;
4) International workshop "Decisions of the CCD and education" (Turkmenistan, 1999);
5) Workshop on national report for Central Asia and east European countries (Kazakhstan, 2000).

Membership of the Coordination Body on the Development of the National Action Plan:

V.E. Chub	Chief of the Main Administration on Hydrometeorology under the Cabinet of Ministers of the Republic of Uzbekistan, National Project Coordinator,
P.K. Khabibulaev	Chairman of the State Committee on Science and Technology,
A.Sh.Khabibulaev	Chairman of the State Committee on Nature Protection,
A.A. Khanazarov	Chairman of the State Committee on Forestry,
B.B. Bekturdyev	First Deputy Chairman of the Council of Ministers of the Republic of Karakalpakstan,

A.A. Jalalov	First Deputy Minister of Agriculture and Water Resources,
T.F. Aripov	Vice-President of the Academy of Sciences,
O.A. Ashurmetov	Director of the Institute of Botany of the Academy of Sciences,
B.A. Tashmuhamedov	Head of the Section of Biological Sciences, Academy of Sciences.
A.M. Ovchinnikov	National Focal Point of UN CCD for the Republic of Uzbekistan

International consultants:

N.F. Glazovsky	Vice-Director of the Institute of Geography of the Academy of the Russian Federation
L.I. Krumkachev	UNEP Chief Counselor, Nairoby, Kenya.

The list of experts from ministries, departments, non-governmental Organizations, who participated in the NAP design, include 47 persons

Experts from relevant ministries and departments conduct consultations and meetings in order to exchange information.

iv) 2 Institutional framework for coherent and functional desertification control

Recognizing the need to intensify control and take effective measures to prevent degradation of ecosystems and secure a wise use of natural resources in conjunction with the international community, the Republic of Uzbekistan signed the UN Convention to Combat Desertification and Drought on December 7, 1994. The Oliy Majlis (Parliament) ratified the Convention on August 31, 1995.

The Coordination Body has been established for designing the NAP to Combat Desertification and the text of the NAP has been prepared. The National Action Plan to Combat Desertification in the Republic Uzbekistan was designed as the first step to implement the Convention, with the financial assistance and technical support of the United Nations Environmental Programme (UNEP). Leading scholars and professionals from research institutes, ministries and departments took part in the design. Glavgidromet was assigned the role of the focal point and it on behalf of the Government of Uzbekistan takes an active part in the CCD implementation on republic and local level.

In 2000 the Governmental Commission was established on overcoming consequences of shortage of water and drought.

The Constitution of the Republic of Uzbekistan, laws, and edicts, normative and legal acts of the President, Government, international obligations, departmental acts are the base for legal regulations of environmental problems.

Improvement of the structure of environmental protection, land and water use management includes the separation of functions of public control from the functions of utilization of natural resources, if both of them are concentrated within the same management body as was the case in the Republic of Uzbekistan.

Considering the great importance of land as natural resource, the land surveillance service along with the land use inspection, have been separated from the Ministry of Agriculture and Water Management. On its basis was established the State Committee of Land Resources subordinated to the Cabinet of Ministers.

The following is being done in the field of land and water resources management:

- Strict dividing responsibilities is conducted between various governmental institutions involved in nature use and the role of local authorities and communities is strengthened;
- More managerial functions in environmental protection and use of natural resources are delegated from the center to locales. However, decentralization of management to the regional level does not mean the transfer the powers, it primarily signifies the rights and duties of local bodies established by law and aiming to secure economic stability coupled with a sustainable socio-economic development of the region;
- The basin approach (establishment of basin inspections, etc) is applied in order to raise the efficiency of protection and wise use of water resources (including trans-national water resources);
- The general public is involved to discussions and implementation of environmental measures, especially at the level of local communities;
- The staffing of nature protection agencies is improved.

To intensify the control over the observance of environmental requirements and standards, a package of legislative acts should be formed regulating and securing an effective functioning of the mechanisms of environmental assessment, assessment of the impact on the environment and the environmental auditing.

Measures undertaken to strengthen capacity of the existing local and national institutions

The social and economic policy of the state is based on the desire to harmonize production and environment, and raise public awareness of the severity of environmental problems facing the country.

A vivid manifestation of this policy is the fact that Uzbekistan was the first among the Asian countries to ratify the UN Convention to Combat Desertification. At the same time, there is a considerable number of legislative and other acts related to environmental protection in general and its specific aspects.

The legislative framework is being constantly improved and expanded, what permits to meet the requirements of economic reforms now underway in Uzbekistan.

The legislative framework of environmental relations is based on citizens' rights and duties proclaimed in the Constitution of Uzbekistan, as well as the state objectives in environmental protection and the form of ownership of natural resources.

Under the Constitution, this legislative framework includes:

- the laws passed by the Oliy Majlis of the Republic of Uzbekistan;
- the edicts of the President of Uzbekistan having the force of a law as well as other regulatory and legal acts of the President;
- the regulatory and legal actsof the Government of Uzbekistan;
- international and other commitments of the Republic of Uzbekistan;
- departmental and other acts.

Improvement of the legislative framework of environmental protection and desertification control is among the top priority tasks.

The national legislation and regulatory acts of various levels must conform to the binding provisions of bilateral and multi-lateral international instruments on environmental issues.

Active participation of independent Uzbekistan in major international conventions and nature protective activity of international, governmental and non-governmental organizations is largely determined by the extent to which their provisions are taken into consideration in national legislation and regulatory acts.

iv) 3 NAPs as a part of the national economic and social development and environment protection plans

In compliance with the governmental policy and its priority commitments under the Convention, the Republic of Uzbekistan has undertaken the design of the National Action Plan to Combat Desertification with the support of the UNDP/UNEP. The Plan has been designed by a group of professionals from relevant agencies jointly with the Main Administration for Hydrometeorology under the Cabinet of Ministers of the Republic of Uzbekistan (Glavgidromet) acting as the governmental implementing agency. The programme design began with a broad discussions of the structure and fundamental provisions of the Action Plan with various ministries, departments, public organizations and NGO, which permitted to involve a wide range of experts and leading scientists of Uzbekistan. Such a broad representation guaranteed an interdisciplinary approach to the Action Plan design and was a part of the Government's efforts to attain sustainability of development in the Republic of Uzbekistan.

The NAP includes the following sections:

- Conditions and background of the background of the design of the National Action Plan as well as the international, legal and institutional frameworks.
- Natural conditions – contains a description of the geographic location, climate, surface water and soil, flora and fauna as well as natural climatic zones.
- Social and Economic conditions and resources of Uzbekistan – contains an analysis of the current status and all types of resources as well as the main trends in economic development.
- Desertification – defines factors, its causes and interaction of climate and desertification as well as its connection with the desertification of the Aral Sea, and the economic and social implications of desertification for the Republic of Uzbekistan.
- National Action Plan to Combat Desertification – identifies specific measures to be taken, the role of governmental agencies, public institutions, local authorities and NGO in their implementation, and the role of inter-regional and international co-operation in desertification control.
- Implementation of the Action Plan. The project will be implemented over a long period of time, with a detailed annual monitoring of its implementation. Progress achieved in implementing the Action Plan will be reviewed and the Plan amended, if necessary, to incorporate changes

required for introducing new approaches and responding to the changing conditions.

From this moment on, interventions for the next phase will be designed and planned to ensure implementation of the Action Plan.

National Action Plan to Combat Desertification

An analysis has identified the main desertification problems, solution of which should be achieved through the National Action Plan to Combat Desertification and Mitigate Drought.

Desertification control includes activities that are part of a comprehensive development of land resources in dry, semi-dry and dry sub-humid areas in ther interests of the country's sustainable development. These activities are the following:

- Prevent or reduce the scale of land degradation;
- Restore partially drained lands;
- Restore lands affected by desertification.

Thus, the strategic goal of desertification control is to create conditions enabling a sustainable development of Uzbekistan.

Noteworthy, that the problem of sustainable development embraces a wide range of issues on a number of which independent programmes and projects are being designed, indirectly connected with desertification control.

The National Action Plan to Combat Desertification includes the following three main sections:

- Interventions to combat desertification;
- A system of monitoring the state of the natural environment;
- Research, pre-project and project works.

The National Action Plan to Combat Desertification provides for a harmonious combination of environmental and economic problems and includes conceptual provisions prioritized as follows:

- Establishing a network of environmental stations;
- Arranging the monitoring of desertification processes based on Geographic Information Systems;
- Obtaining comprehensive geographical information;
- Analyzing and assessing the environmental situation at all economic levels;

- Including desertification monitoring into the single state environmental monitoring system;
- Designing desertification criteria with the aim of grading desert lands according to the extent of their degradation;
- Electronic mapping of desertification to be used for environmental zoning;
- Improving land organization in order to prevent its degradation and secure environmentally and economically wise crop patterns based on landscape and environmental norms;
- Establishing a legislative framework securing the introduction of standards and norms of land use. Developing economic mechanisms of a sparing nature use;
- Improving both the surface and deeper layers of degraded rangelands and hayfields;
- Restoring ploughland fertility;
- Restoring vegetation on ploughlands withdrawn from agricultural use;
- Preventing soil erosion by wind and water;
- Introducing water-saving technologies in farm crop cultivation and watering of rangelands;
- Using alternative energy sources (wind, sun, etc) and establishing on their basis local energy-saving stations in the areas that have suffered from desertification;
- Restoring forests and growing them on lands of the state reserve and other territories suitable for it;
- Fixing sands to protect rangelands, populated areas and economic facilities;
- Conducting hydro-engineering and biological re-cultivation of lands affected by the technogenic impact with the aim of using them for economic, recreation or sanitary purposes;
- Undertaking reclamation of lands affected by secondary salinisation;
- Liquidating technogenic soil pollution;
- Planting greenery in cities and towns with the use of biologically treated wastewater;
- Providing water supply in areas of extreme desertification and those deprived of water;
- Arranging environmental education and public awareness campaigns regarding desertification problem in Uzbekistan;
- Developing a system of protected territories

All plans of economic development of Uzbekistan including the agro-industrial complex, mining, and location of enterprises, populated areas, communications and other facilities should take into consideration

environmental protection against desertification and improvement of the environmental situation.

Desertification control in Uzbekistan and conservation of natural resources are tasks of a nation-wide magnitude that can be successfully accomplished only with direct and active participation of administrative organizations, legislative and executive bodies, NGO and local population.

iv) 4 Coherent and functional legal and regulatory framework

Analysis of legislation on environment and related spheres

The Constitution of the Republic of Uzbekistan guarantees the environmental safety of its citizens. The nature protection legislation has created an economic and social background for the environmental safety, based the universally accepted environmental protection principles and a wise use of natural resources.

Approximately 100 legislative acts directly or indirectly related to environmental protection and use of nature have been passed in Uzbekistan since independence.

The main act regulating environmental relations is the Law of the Republic of Uzbekistan on the *Protection of Nature* enacted on December 9, 1992. The Law establishes a legal and organizational framework for preserving the environment, rationally using natural resources. And protecting ecological systems, natural complexes and individual bodies, and guarantees people's right to a favourable environment. It aims to ensure a stable development of the Republic of Uzbekistan as regards environmental protection and social security, including preservation of biological diversity, people's health and cultural heritage. The Law defines the fundamental principles of nature protection and the powers of public agencies and departments.

The Law of the Republic of Uzbekistan on *State Sanitary Surveillance* was enacted on July 3, 1992. It regulates public relations in ensuring people's sanitary and epidemiological safety, guarantees their right to a favourable environment, defines sanitary requirements to various economic activities, and bans activities abusing sanitary standards, norms and rules as well as having a negative impact on the environment.

The Law of Uzbekistan on *Water and Water Use* was enacted on May 6, 1993. It regulates water relations, rational water use for domestic and economic purposes, water protection against pollution and depletion as well as consumer and citizens' rights in this area.

The Law of the Republic of Uzbekistan on *Especially Protected Natural Territories* was enacted on May 7, 1993. It defines a general legal, environmental, economic and organizational framework of the establishment, management and protection of unique natural ecosystems.

The Law of the Republic of Uzbekistan on *the Protection of the Atmosphere* was enacted on December 27, 1996. It regulates the activity of public agencies, enterprises, institutions, public associations and citizens in the area of protection of the atmosphere.

The Law aims to preserve the natural composition of the atmospheric air as well as to prevent and reduce the harmful chemical, physical, biological and other impact on it. Uniform quality norms are being established throughout

Uzbekistan for assessing the condition of the atmospheric air. Standards of atmosphere protection are being introduced, which determine its protection regime and methods of monitoring its condition as well as other protection requirements.

The Law introduced compulsory charges for polluting the atmosphere.

The Law of the Republic of Uzbekistan on *the Protection and Use of Fauna* was enacted on December 26, 1996. It regulates relationship in the area of protection, use, restoration and reproduction of wildlife to ensure conditions for its existence, preservation of species, and integrity of the natural communities and habitat.

The law established that wildlife is state property protected by the state.

The Law of the Republic of Uzbekistan on *the Protection and Use of Flora* was enacted on December 26, 1997. It regulates relationship in the area of protection and use of vegetation growing under natural conditions as well as wild plants cultivated for their reproduction and preservation of their genetic fund.

The Law says that vegetation is state property protected by the state.

The Laws: *On forest, On ecological expertise , On radiation safety* and *Land code of the Republic of Uzbekistan* have been also enacted.

Enactment of aforesaid and other laws was accompanied by the adoption of regulatory acts refining law provisions. The Government has passed decrees regulating the use and protection of various types of natural resources and containing provisions, rules and instructions to this area.

Abuse of nature protection entails criminal, administrative, civil (financial), disciplinary and property amenability, which is reflected in the Criminal Code, the Administrative Code, Civil Code and the Labour Code of the Republic of Uzbekistan.

Apart from that, environmental acts contain specific norms of environmental amenability not included into the aforesaid types of legal amenability.

Adaptation of current legislation or enactment of new laws

Uzbekistan like many other countries in transition, has inherited a grave environmental situation, outdated technologies polluted environment. Improvement of this situations requires implementing a number of measures and interventions such as:

- Creating and improving legal, economic and organizational conditions and e regulatory framework for the use of natural resouirces as well as administrative measures to prevent abuse of environmental norms;
- Creating a legislative and regulatory framework permitting to assess the state of the natural environment and identify its ecological reserve and

possibilities of regulating its condition and sustainable use of natural resources;

- Creating a scientific and engineering potential, which will permit to introduce nature conservation technologies in the economy, exclude a possibility of using "dirty" technologies and create an environmentally friendly production (especially when joint ventures are established);
- Incorporating ecological principles into the system of norms and standards as well as the budgetary and taxation systems;
- Involving specialized banking, investment and financial structures in funding interventions (projects) on rationalization of nature use and specialized nature protective activities;
- Creating conditions to attract foreign capitals and the capital of legal entities and individuals for funding the expenditures on environmental protection, and solution of environmental and social issues;
- Introducing international standards of quality of the environment, production technologies and output;
- Developing a uniform system of indicators of territorial capacities with due regard for the permissible technogenic impact, withdrawal of natural resources and other factors, violation of which may lead to irreversible environmental changes;
- Establishing and improving a system and mechanisms of economic incentives for saving resources and energy and preventing human-induced impact on the environment.

Incentives should not contradict nature protection laws, and penalties should secure strict observance of environmental protection requirements.

The development of legislation should proceed with due regard for the comprehensive approach to the economic growth, human development, environmental protection and nature use regulation, and secure the following:

- Availability of coordinated and sufficiently strict national environmental norms, especially in provinces and districts with a high concentration of pollutants resulting from economic activity such as energy generation, construction, chemical production, etc., which should be meet the international environmental requirements and standards;
- Due consideration for environmental factors in line policy, plans and programmes at the regional, national and local levels;
- Inter-departmental and inter-regional coordination of consideration and solution of environmental problems common to various economic sectors at the national and regional levels;

- Introduction of amendments into the legal and regulatory framework based on the outputs of studies of the current impact on the environment with the aim of reducing, limiting and preventing any negative impact;
- Formulation of documents specifying the rules of conducting public and line environmental audits, as well as plans and programmes of economic development regulating the issue of permits for producing environmental impacts. The Law on Environmental Assessment, the Law on Environmental Monitoring, the Law *on Regional Development*, the Law *on Tourism* and the *Food Law* will be drafted;
- Guaranteed access of the general public to environmental information and participation in addressing environmental issues;
- Phased introduction of international environmental standards by using intermediary standards. To this end feasible schedules and plans of introduction of these standards should be designed for enterprises and industries with due regard for the cost of health protection as well as environmental and social situations;
- Establishment of a mechanism to regulate inter-departmental and inter-regional differences on issues of decision-making regarding the use of natural resources.

v) Effective participation of actors in defining national priorities

National Action Plan describes the roles of the Government, local communities (*mahallas*), land users and the mass media, and outlines the available and required resources.

With due regard for their potentialities they collect and analyze short- and long-term data, and coordinate their exchange to ensure systematic monitoring of land degradation in susceptible areas to better understand and analyze desertification and drought processes and overcome their repercussions.

The National Plan includes interventions, some of which are in the process of implementation:

- The general public is involved in developing, coordinating and implementing the plan; consultations and co-operation with local authorities, state agencies and NGO are underway;
- A mechanism for implementing the National Action Plan to Combat Desertification will be designed, which will involve representatives of ministries, departments, institutions and mass media;
- An analysis of the current status of the environment is conducted to assess causes and consequences of desertification and identify priority tasks;
- Technical and financial programmes are being designed.

Besides that, it is necessary to:

- Promote a comprehensive use of water catchments areas as well as conservation and effective use of land and water resources;
- Consolidate the network of data collection, assessment and early warning about climate, meteorological, hydrological, biological and other factors;
- Drafting agreements in support of Action Plants in the course of international cooperation including financial and technical assistance.

Success of desertification control largely depends on raising public awareness.

- Involving local communities in the development and implementation of local and regional action plans through consultations, promotion of ecological education, etc.;
- Consulting with local communities on problems related to the implementation of projects on a broad use of natural resources, construction of industrial enterprises and transportation routes in desertification susceptible areas;
- Designing engineering and financial projects and programmes including proposals on the support required by these programmes from foreign investors.

The National Action Plan to Combat Desertification stipulates for:

- Establishing a National Desertification Control Centre under the Glavgidromet;
- Publishing scientific articles on problems of desertification control;
- Publishing colorful booklets and posters disseminating the latest information on desertification control;
- Designing local (territorial) action plans to combat desertification, their ratification by local authorities and control of their realization;
- Developing and introducing environmental mechanisms encouraging nature users to take measures for desertification control.

Local authorities

The main tasks of local authorities in implementing the Convention and the National Action Plan to Combat Desertification should be the following:

- Raising public awareness of the processes of degradation and desertification as well as the aims and provisions of the Convention and the tasks of the NAP;
- Collecting the data on desertification processes;
- Participating in the implementation of new technological projects on restoring land productivity;
- Securing maximum public participation in this work;
- Taking measures to improve the economic conditions and sustainable development at the local level;
- Introducing projects on alternative energy sources and income generation.

Non-Governmental organizations

The Convention attaches a great importance to the participation of non-governmental organizations (NGO) in implementing its main provisions at the local level.

The establishment of environmental NGO in Uzbekistan characterizes increasing public awareness. The first environmental organizations were formed in Uzbekistan in the 1980s (“Eremurus” Club – 1982, “Ecologist” Association – 1987, Union for the Protection of the Aral Sea and Amudarya - 1988).

Most of them are based in two regions: in Tashkent and Tashkent province (“Ecologist” Association and associated organizations, for instance, “Eremurus” school club; Association of Tashkent Environmental School Clubs; “Chirchikdarya” Association) and in Nukus, Karakalpakstan (Union for Protection of the Aral Sea and Amudarya, Farmers Centre, Present Centre, Wild Nature of Aral Sea Littoral and others). There is one organization in the Fergana

Valley (Association for Ecologically Clean Fergana) and in Samarkand Province ("Green Wave" School Club).

At present an Association of NGO of the Aral Sea basin is in the process of formation. It will focus on problems of preserving and restoring the Aral Sea and its tributaries.

At the national level organizations involved in environmental studies are represented by the Uzbeki Zoological Society, the Geographic Society and the Botanical Society. Besides that, there is the International Institute of Biological Diversity of Central Asia (Biostan) and the Kazakhstan-Central Asian Zoological Society.

These organizations are active in the area of environmental education, biodiversity conservation and data exchange, and on a smaller scale – in environmental lobbying, health care and scientific research. As a rule, these organizations have an amorphous structure, are not officially registered, and have a weak material and financial base.

As regards communications, the NGO are equipped with e-mail facilities, and sometimes with fax-machines. The total number of NGO members in Uzbekistan is 700 persons.

The "Ecosan" International Foundation has been established on the instruction of the Government of Uzbekistan. It tackles problems of health and sanitation. There is also the "Aral Sea Fund" engaged in raising funds and conducting public awareness campaigns.

Another category of organizations is mahalla communities, similar to Community Based Organizations (CBO).

The NGO including the "Mahalla" Foundation established under a governmental decree will undoubtedly play an active part in involving mahalla committees and other local self-governmental bodies in implementing the Convention in the Republic of Uzbekistan.

The meeting in Wagadugu established RIOD, an international NGO network for co-operating desertification control efforts. At present RIOD unites NGO from over 100 countries representing all parts of the world. RIOD includes co-ordinating structures of various levels, from the global down to the national ones (in some cases to sub-national level). Continents have been divided into several regions including Asia, which is further divided into sub-regions. One of them is Central Asia since 1996. The national RIOD network is developing

Representatives of NGO of Uzbekistan, at the invitation of various UN agencies, attended several international meetings, including INCD-10, 1 sy Conference of the Parties, etc. This testifies to the growing authority of Uzbekistan's NGO in the international community.

A good relationship has been formed between governmental agencies in Uzbekistan, authorized to carry out work on desertification control, and NGO, both at international meetings and within the country.

There are strong contacts with organizations in the neighboring countries, in Central Asia, Asia and the whole world.

International conferences, workshops and other working meetings related to UN CCD implementation, attended by representatives of the NGO of the Republic of Uzbekistan

Global meeting of RIOD. Dakar, Senegal, August 1999.
Global Major Forum "Cities and Desertification":
1st – Rome, Italy, October 1997 (Coordinator of NGO Working Group);
2nd – Bonn, Germany, May 1999.
UNEP-RIOD Consultations on the Problem of Synergies between the RIO Conventions. Nairobi, Kenya, November 1998.
Interregional Workshop on NAP elaboration in the NIS countries, Almaty, Kazakhstan, October 1998.
Regional Workshop *"Wind Salt Migration in the Aral Sea Basin",* Tashkent, Uzbekistan, 1998.
Conference of the Parties to the UN Convention to Combat Desertification:
1st – Rome, Italy, September-October 1997;
2nd – Dakar, Senegal, November – December 1998;
3rd – Recife, Brazil, November 1999 (Coordinator of the Open Dialog Session NGOs - Governments).
Interregional Conference on Implementation of the UN Convention to Combat Desertification in the NIS Countries, Tashkent, Uzbekistan, June 1997.
Asian Ministerial Conference on Implementation of the UN Convention to Combat Desertification:
1st – New Delhi, India, August, 1996;
2nd – Beijing, China, May, 1997.
International Workshop *"Deserts of Central Asia–Preservation and Development"*, Tashkent, Uzbekistan, 1997.
RIOD- CIS Conference on Implementation of the UN Convention to Combat Desertification and RIOD Development in the CIS Countries – Co-chairman of the Coordination Body, Issyk-kul, Kyrgystan, May, 1997.
International Negotiation Committee of the United Nations Convention to Combat Desertification:
INCD-9: New York, NY, USA, September, 1996;
INCD-10 (1): New York, NY, USA, January,1997;
INCD-10 (2): Geneva, Switzerland, August, 1997.
Afro-Asian NGO Forum on South/South and North/South Cooperation, Hyderabad, India, December, 1996.
IFAD-CCD International Forum: Integrated Local Area Development Programmes in the Implementation of the Convention to Combat Desertification, Rome, Italy, June, 1996.

Annual IRAD-NGOs Consultations, Rome, Italy, June,1996.

The main areas of NGO activities in implementing the Convention and the NAP should be these:

- Participating in the design of the local action plans on desertification control;
- Raising public awareness of desertification processes;
- Maintaining contacts between governmental agencies, NGO and local authorities;
- Establishing contacts with NGO in various Asian Countries;
- Developing the organizational structure of the national NGO network.

vi) Effective support from international partners for cooperation

To prepare this report the workshops were held in Nukus town and Bukhara town. In addition to the discussing main provisions of the report exchange of opinions on local desertification problems was conducted. Local scientists and specialists took part in these events.

The Government of Finland provided financial support, while UNDP and UNSO provided organizational assistance in implementing a project in support of the NAP process in Uzbekistan.

As was defined in the Memorandum, the objective of the project was to formulate coordinated measures referring to initial funding of the process of implementation of the National Action Plan (NAP) developed in Uzbekistan.

One of the main directions in desertification control is the effort aiming to achieve co-coordinated actions. Under the project workshops were conducted in regions most susceptible to desertification. The main aim of workshops was to define regional factors of desertification threat and provision in combating it.

Certain organizational work was conducted to arrange the workshops. Topics of the workshops were formulated and reports prepared on the relevant regional problems of desertification control. Guest workshops were conducted to select regional representatives who presented regional desertification problems at the National Forum.

Regional workshops were held at universities because:

1. Universities are seats of the regional research capacity;
2. professors of the soil science, geography, crop farming, livestock breeding were involved in problems of desertification control;
3. Graduates of regional universities will work directly in the areas affected by desertification, consequently, desertification problems will be solved on the spot;
4. Public awareness and CCD education achieve a wider scale since each professor trains 20-30 graduates annually.

The representatives of UNDP in Uzbekistan, interested and non-governmental organizations, local communities took an active part in the work of the Tashkent Forum.

The Forum discussed the NAP process and listened to the reports on the implementation of the NAP at the national level. The project proposals were presented implementation of which will require financial support from international agencies. The participants of the Forum pointed to a high level of formulating the NAP with due regard for specific conditions of Uzbekistan.

Since specific terminology and activities in desertification control are hard to grasp for the general public and require popularization, relevant materials were prepared for the mass media in a popular form. The text of Convention was translated into the Uzbek language. Colorful posters employing national artistic forms were published to illustrate desertification problems.

vii) Measures taken or planned within the NAP framework

vii) 1. Adequate diagnosis of past experiences

Scientists and professionals involving in the desertification problems were gotten to take part in the preparation of the NAP. Consultations and discussions were conducted at all levels of governing with attraction of the NGOs taking part in the development of the national programmes on environment. International consultants have presented specific recommendations on the NAP preparation.

vii) 2 Established technical programmes and functional integrated projects to combat desertification

The list of priority projects included in the NAP

Early Drought Warning System

The project objective is to establish an automated information system of long-term drought prediction on the basis of standard hydrometeorological information.

Designing action plan for establishing desertification, salinisation and drought monitoring in the Bukhara province, the Republic of Uzbekistan

Assessment of actual environmental state in the Bukhara province: atmospheric air, soil, surface and underground water, biota, farming lands, rangelands, desert forests, atmospheric precipitation (dry and wet). Designing expert forecast assessment of the desertification development processes. Developing a programme for arranging desertification, salinisation and drought monitoring. Selecting and justifying nature protection measures, requiring priority investment.

Autonomous Solar Power Plant

This project intends to establish an autonomous solar power system (ASPS) at one of the facilities to show advantages and peculiarities of such systems to potential consumers. The experience of establishing and operating an ASPS will permit to find a more effective strategy of dissemination of a new power engineering technology on a market-oriented basis.

Study and assessment of the current State, development of measures to preserve biological diversity and biological resources in the Arnasay depression and the northern part of the Aydarkul lake susceptible to desertification risk

Preventing the process of destruction and degradation of biodiversity components in the studied region in the conditions of intensifying desertification.

Developing measures of desertification control in karakul-sheep breeding rangelands of Uzbekistan

To control desertification and raise productivity of rangelands it is necessary:

- To study current state of rangelands by zones as well as semi-desert rangelands;
- To identify the capacity of rangelands and their yield with due regard for the botanic composition of forage plants,
- To identify causes of desertification of rangelands;
- To develop measures aimed at prevention of degradation processes.

Study of soil cover in the dried-out Aral Sea bed and making a soil map (of territories within the boundaries of Uzbekistan)

The main goal is assessing the current state of soil cover in the dried-out Aral Sea bed now undergoing desertification; identifying regional peculiarities and trends of development of primary soils in the context of desiccation of the Sea; proposing ways of their protection and use.

Developing technologies of creating reclamation forest in the dried-out Aral Sea bed and farming lands in the desert and mountainous zones, and forest plantations for growing commercial timber with the aim of increasing in productivity of these territories in the conditions of strained environmental situation

Developing forest reclamation methods to combat desertification in Uzbekistan.

Causes and consequences of desertification in the southwestern Kyzylkum desert and its control

To develop scientifically grounded recommendations for combating processes and types of desertification with the aim of neutralization and rehabilitation of initial biological and economical potential of the desert region with due regard for local geo-ecological conditions.

Rehabilitation of desert ecosystems in the Kyzylkum desert based on optimization of forest-agrarian ecosystems and formation of an environmental framework

Identifying and implementing practical measures of desertification control in the borderline area between desert and foothill ecosystems with formation of a model sustainable territory in Nuratau.

Studying the origin of secondary salinisation of irrigated lands in the Zeravshan river delta and developing methods of their control in conditions of different water content of lands

To develop comprehensive soil and land reclamation accounting methods as well as methods of improving quantitative identification and monitoring of the environmental state of different forms of saline irrigated soils.

Environmental problems of developing irrigated farming in the Samarkand province

Theoretical and methodological designing proposals on the establishment and development of an environmentally balanced production structure of irrigated farming on farms as well as creation of an economic mechanism of its implementation in a market-oriented economy for the arid zone.

Selecting and zoning (planting) arboreal plants for protection against desertification in the Aral Sea littoral area

The scale and complexity of desertification-related problems necessitate selecting and zoning (with planting of 1000 pieces) of arboreal species of acacia (Rjdinia pseudoacacia), Canadian poplar (Populus canadensis) and torangyl (Populus pruiosa) in the part of the Khorezm oasis bordering on the desert area as well as planting (500 pieces) and zoning arboreal species in settlements of the province. These measures will produce the following feasible results: protection against desertification, halting soils salinisation, reduction in ground water table, protection against dust and salt storms, conservation of water resources due to lower evaporation in irrigated farming, removal of carbon dioxide from the atmosphere, regeneration of atmospheric oxygen and increase in natural forest resources.

Using water bodies in desert areas of the Aral Sea littoral for accumulating of the energy of natural cold

It is known, that the littoral area is a region of environmental disaster and the process of desertification still continues in its certain parts (small farms and villages, livestock-breeding farms, private farms and rangelands, situated in remote desert and semi-desert locales). Desertification in theses areas, in first turn, is caused by hard living conditions, lack of qualitative drinking water, deficit or absence of electricity, lack of conditions for storing foodstuffs, vegetables and fruits in spring-summer period etc.

Regularities of desertification, its impact on biological diversity, ways of rehabilitation and optimization of desert lands in Uzbekistan

Identifying the influence and preserving biodiversity of desert ecosystems, preventing desertification, conducting rehabilitation, optimization, phyto- and forest reclamation of desert rangelands.

Developing environmental and economic models and methods of rational use of water resources with due regard for nature protection activities on farms in the Republic of Karakalpakstan

Developing and introducing mathematical models and methods of establishing water and environmental charges and fines for water pollution.

Erosion control

Logistical, economic and agro-technical measures

These measures to prevent the desertification of the top soil layer and increase the fertility of eroded lands. They are also part of the farming techniques in crop farming on eroded soils.

Crop rotation leads among the recommended measures. On most eroded soils and in the areas of strong and medium winds soil-protecting crop rotations are used, which fill the fields with crops covering the land surface during most of the vegetation period.

On especially dangerous plots (with sandy soils easily blown away) 9-metre buffer belts are used that are formed be cereal and leguminous grasses inter-spaced with cotton strips or other basic crops 30 m wide.

Of all logistical, economic and agro-technical measures aiming to protect rangelands against digression and raise their productivity, grazing regulation and phyto-reclamation are the most important ones.

Forest reclamation interventions

Forest reclamation measures include these:

- planting wind-break belts;
- planting trees along main irrigation canals and roads;
- planting vegetation capable of fixing banks, gullies and regulate run-off;
- creating terraces on mountain slopes and planting forests and fruit trees there;
- fixing sands and planting forests on them.

Hydro-engineering interventions

Hydro-engineering measures are the most capital-intensive of the entire range of erosion-control measures. They are generally conducted where forest reclamation and agro-technical measures are impossible and ineffective.

Hydro-engineering interventions are as follows:

- bank reinforcement;
- protection against mud-flows;
- reconstruction of irrigation network and their reinforcement with erosion-control engineering facilities;
- carsts liquidation.

Correct watering technique largely depending on the state of the irrigation network and field leveling is of major importance for combating irrigation erosion of soils. At present 2,500 km of canals and collector drains require reconstruction.

Water Conservation Interventions

Despite of the deficit of water resources in Uzbekistan, they are used ineffectively. About 40 percent of water are lost in irrigation (where about 85 percent of all water resources are used).

Under such circumstances water conservation interventions are of utmost importance and priority.

These are:

- improvement of limited water use systems (primarily introduction of more stringent estimated specific water consumption norms);
- development and implementation of economic mechanisms such as a phased-out introduction of water charges in irrigation;
- improvement of public control over the use of water resources;
- monitoring of self-evacuation wells.

vii) 3 Action programmes implemented in compliance with priority fields set out in the Convention

Recognizing the need to intensify control and take effective measures to prevent degradation of ecosystems and secure a wise use of natural resources in conjunction with the international community, the Republic of Uzbekistan signed the UN Convention to Combat Desertification and Drought on December 7, 1994. The Oliy Majlis (Parliament) ratified the Convention on August 31, 1995.

The National Action Plan to Combat Desertification in the Republic of Uzbekistan was designed as the first step to implement the Convention, with the financial assistance and technical support of the United Nations Environmental

Programme (UNEP). Leading scholars and professionals from research institutes, ministries and departments took part in the design.

The NAP contains comprehensive analysis of causes of desertification and identifies priority directions of actions to combat with them and lands degradation when anthropogenic impact and also proposes scientifically-grounded interventions for improving the state of rangelands and haylands, reducing social and economic repercussions of desertification, mitigation of drought influence under water resources deficit.

vii) 4 Linkages achieved with sub-regional and regional action programmes

The representatives of the Republic of Uzbekistan take an active part in the preparation of the sub-regional action plan to combat desertification in the Aral Sea basin. Uzbekistan has been entrusted the coordination of two directions: developing the Early Drought Warning System and desertification monitoring.

vii) 5 Effectiveness of measures in local capacity building

As a result of conducting scientific-practical seminars while the NAP preparation the State Committee on Science and Technology together with Glavgidromet and the Samarkand University conducted the international scientific seminar on desertification control. The national coordinator of CCD, scientists and professionals from the all regions of Uzbekistan took part in this seminar.

vii) 6 Partnership agreements applied

Since independence Uzbekistan has been formulating its environmental policy and made attempts to accelerate its accession to international environmental agreements. However it encountered certain difficulties caused by lack of experience and financial problems.

Uzbekistan has acceded to ten conventions such as:

1. Convention on Banning Military and Any Other Hostile Use of Means Affecting the Environment
2. Vienna Convention on the Protection of the Ozone Layer
3. Montreal Protocol on Ozone-Depleting Substances
4. Basel Convention on Transboundary Shipment of Hazardous Wastes and Their Disposal
5. UN Framework Convention on Climate Change
6. Convention on Biological Diversity

7. UN Convention to Combat Desertification in Those Countries Experiencing Drought and/or Desertification, Particularly in Africa
8. Convention on International Trade in Wildlife Species o the Verge of Extinction
9. Convention on the Protection of World Cultural and National Heritage
10. Bonn Convention on Preservation of Migrating Wildlife Species

viii) 1 Adopted financial mechanisms

Investment processes in the Uzbekistan' economics are defined by the dynamics of inner and external savings. From 1992 to 1994 investments had downtrend from 13.1 to 5.7 percent they amounted to 27,2 percent relatively gross product, since 1995 – more than 27 percent. Total volume of investments consists of state and non-state sources of projects funding.

From the viewpoint of attraction for investments Uzbekistan is characterized by the following factors:

1. stable economics development is taking place
2. state ownership has stopped to be dominant one
3. there is a real prospect of market expansion
4. there is a sufficient amount of skilled labour force
5. availability of foreign market-oriented economics

A new stage of transition from budget financing to self-financing of private sector is most seen in agriculture. The experience of many foreign countries proves an effectiveness of creation and functioning cooperative farms. During the period from 1997 to 1999 a number of farms increased from 21,4 thousands to 31,1 thousands. It is supposed that by 2005 the number of farms will reaches 93 thousands and their lands will amount to 1 million of hectares.

viii) 1.1 NAP financing

To support the NAP implementation financial assistance of international community is needed.

The initial contribution of the Republic of Uzbekistan to the UN Convention to Combat Desertification was specified by the Convention Secretariat as $ 10,500, and was paid in 1998.

The efforts undertaken at the 1st Conference of the Parties in 1997 permitted to reduce its annual dues to $3,600. Considering the effectiveness of the Convention, the payment of the dues started in 1999. Therefore, the Republic of Uzbekistan has already paid its dues for the 1999, 2000 and 2001.

Financial support of the Government of Finland to the NAP was $50,000.
The funding of the NAP design constituted $60,000 (UNEP).
Financial support for the National report preparation was $4,000 in 2000.
Financial support for the National report preparation was $5,000 in 2001.

Summary table of the dues paid by the Republic of Uzbekistan to the UN Convention to Combat Desertification and Drought

Years	Dues specified by Secretariat ($)	Dues paid by Uzbekistan ($)
1999	3,600	Paid
2000	2,200	Paid
2001	2,170	Paid

viii) 1.2. Technical cooperation developed

Technical cooperation within the framework of the CCD implementation is not sufficiently developed. Earlier achieved agreements with the Asian Development Bank have not fulfilled as they were defined. Together with GTZ trainings were conducted within the framework of the preparation of sub-regional action plan.

ix) Operational mechanisms of monitoring and evaluation

The main task of desertification monitoring is the evaluation of the environmental status of natural systems and lands in economic use, including identification of processes leading to land degradation and possible economic damages.

A conceptual basis of desertification monitoring is presented below:

- a system of targeted monitoring to assess land degradation is used;
- in the event of identification of desertification factors and types their summary effect is taken into consideration, and an integral indicator of desertification extent is assessed;
- economy is viewed as a factor influencing the environmental status of ecosystems, their sustainable development, destruction and rehabilitation;
- the set of tasks in addressing specific desertification issues is determined by their importance at the local level and serves as a systematic element of the environmental monitoring.

The basis of environmental monitoring is the ***Geographic Information System (GIS),*** which includes an electronic maps database, software and models of cartographic data processing including:

- weather monitoring (drought, frosts, extreme hydro-thermal conditions) conducted by the hydro-meteorological service;
- monitoring of the state of land resources: soil cover, vegetation, wildlife and ecosystems of various levels;

- stock-taking of farmlands (ploughlands, rangelands, hayfields), woodlands, lands under industrial enterprises including mines and defence enterprises, restricted areas and preserves, national parks and recreation areas.

Thereby, the tasks which are solved by the national hydrometeorological services, in particularly, Glavgidromet of the Republic of Uzbekistan and its research institutes have been given a definite priority. It is seemed a natural fact because Glavgidromet of the Republic of Uzbekistan has an observational network implementing meteorological, agro-meteorological, hydrological and ecological monitoring.

O all researches connected with desertification and drought control issues priority should be given to studying climate change and variability as well as related changes of agro-climatic and water resources, development of the recommendations on optimal use of these resources.

In Uzbekistan drought is manifested in several ways:

Threat of a drought, when accumulation of winter precipitation is considerably lower than the norm (X-I, X-II, X-III). This leads to low run-off during vegetation (IV-IX) since 80% of water resources in Uzbekistan depends on snow accumulation in the mountains in wintertime.

During the last years aircraft sounding was substituted for satellite information what has resulted in emerging new ways of desertification monitoring: identifying destroyed rangelands (toloki), watching solonchaks growth, water supply in the lakes of the Amudarya river, increase in dried-out area of the Aral Sea bed and its overgrowing.

The satellite data helps sufficiently in developing rivers runoff forecast. Using mathematical models of snow cover formation with input data of the dynamics of the rivers basin area covered by snow in winter and spring, height of seasonal snow line and ground meteorological stations will permit to define more correctly snow accumulation in mountains for a big number of basins and give exact lead time warning of expected lower river water content.

Space and aero-visual methods of observation of desertification processes take especial place in the monitoring system. Glavgidromet of the Republic of Uzbekistan has started such observations and are conducting them. Main directions of environmental monitoring of the objects most affected by desertification are as follows:

- improving the forecasting system of the Central Asian rivers runoff as primary step in drought prediction especially under deficit of water resources;
- developing observational system with use of satellite information of state of rangeland vegetation on the desert area
- monitoring the state of the Aral Sea and its littoral as regards dynamics of water bodies in the delta of the Amudarya river;

- establishing a network of monitoring stations and posts in the Aral Sea basin;
- incorporating parameters characterizing desertification into the monitoring system;
- developing new methods permitting to identify land degradation processes with the use of remote sensing methods;
- applying the GIS technology in desertification mapping;
- developing research methods based on the use of mathematical instruments in the cartographic analysis of desertification processes;
- developing a system of indicators accessible to the general public in order to involve it in monitoring.