

MINISTRY OF NATURE PROTECTION OF TURKMENISTAN

**TURKMENISTAN: CAPACITY BUILDING
STRATEGY TO IMPLEMENT THE UN GLOBAL
ENVIRONMENTAL CONVENTIONS**

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This edition is the final paper prepared within the Ministry of Nature Protection of Turkmenistan project "Turkmenistan: National Capacity Building Needs Self Assessment" (NCSA). It summarizes the results of the thematic reviews and cross assessments of national capacity building needs of Turkmenistan for the purposes of implementation of three global environmental conventions of Rio de Janeiro, and namely, UN Convention on Biological Diversity, UN Framework Convention on Climate Change and UN Convention to Combat Desertification. Given the results of the above mentioned assessments and the mutually intensive effects of these conventions, the project developers concentrated their attention at searching the ways for creation of synergism, i.e. integration of efforts at the national level in order to facilitate implementation of the country's commitments arising from the three global environmental conventions and improve the prospects for the sustainable development. Such approach to the document development led to identification of factors restraining the growth of national capacity of the country for implementation of these conventions and the factors promoting this capacity building, as well as allowed to find the ways for elimination of the existing constraints. Thus, there has been developed an action plan - *National Capacity Building Strategy for Implementation of Turkmenistan's Commitments Arising from the UN Global Environmental Conventions*.

The Strategy includes general requirements and strategic focuses for the national capacity building, while every strategic focus suggests the certain measures with indication of main executors including ministries, departments and organizations, dates of completion and sources of financing, as well as mechanisms of the Strategy implementation monitoring.

This edition will probably be a useful guide to decision-makers in the area of biodiversity conservation, global climate change, desertification combating, as well as to experts in the field of nature conservation and nature use, specialists of research institutions, teachers of higher education and secondary schools, and to interested public.

Figures - 2; Tables - 1; References - 22 titles; Appendices - 2 (12 pages.)

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INTRODUCTION

Uniqueness of geographical position of Turkmenistan, its natural and climatic conditions, rich diversity of nature and necessity of conservation of this diversity for the current and future generations served to be the important prerequisite for ratification of three global environmental conventions of Rio de Janeiro, and namely, Convention on Biological Diversity (CBD), UN Framework Convention on Climate Change (FCCC) and UN Convention to Combat Desertification (CCD). The availability of rich natural and labor resources becomes the basis for creation of principally new, highly efficient economy with the developed market institutes guaranteeing political and economic stability of the country, high standard of living. The necessity of resolving the problems of environment conservation and rational, sustainable use of natural resources has been raised to the rank of state policy and it is one of the most important provisions of the national environmental conception [1–5, 19].

The project of Ministry of Nature Protection of Turkmenistan “Turkmenistan: National Capacity Building Needs Self-Assessment” was aimed at developing the action plan for efficient implementation of Turkmenistan’s commitments arising from the Rio de Janeiro conventions.

The main goals of the project comprised:

- active participation of Turkmenistan in the global environmental management;
- keeping up of efficient implementation of Turkmenistan’s commitments arising from UN conventions concerning Biological Diversity, Climate Change and Desertification Combating;
- development of capacity building strategy to implement these three conventions.

To achieve these goals the following steps were taken:

- assessment of the national capacity building needs to implement three multilateral environmental conventions of Rio de Janeiro;
- identification of factors restraining the growth of capacity to implement the conventions and those factors that ensure this growth;
- development of the strategic action plan to strengthen the existing mechanisms of implementation of global environmental conventions at systemic, institutional and individual levels;
- intensification of the dialogue, information exchange and cooperation between the parties concerned in order to promote public awareness in the key problems of global environmental management and in urgency of these problems solution for the future development of Turkmenistan.

The NCSA project was implemented on a stepwise basis:

1. There has been performed the assessment of needs for the national capacity building for each of three thematic areas such as biological diversity, climate change and desertification/soil degradation including the complex inventory, analysis of the country’s capacity for implementation of commitments arising from the conventions on Biological Diversity, Climate Change and Desertification Combating, as well as the determination of priority problems of the country, the factors restraining the capacity building and the development of recommendations for building up the capacity in the area of protection of global environment in consideration of these three international conventions [22].

There has been made the analysis of environmental strategies, legislation, socioeconomic and scientific potential of the country, mechanisms of management, coordination and control related to implementation of global conventions, the state of environmental expertise, personnel training and ecological education, as well as participation of the civil society in solution of environmental

problems, in implementation at the national level of international environmental conventions such as CBD, FCCC and CCD.

2. The cross analysis has been made in respect of information received in the process of drawing up the thematic reviews on biological diversity, climate change and desertification / soil degradation. This analysis resulted in identification and explaining of successes and gaps / shortages in implementation of programs; identification and stating of foundations common for all three abovementioned thematic areas; stating of cross-cut problems; assessment of implementation of global environmental conventions; determining of general needs of the country for the national capacity building; developing of complex practical recommendations on enhancement of this capacity and concentration of human, material and financial resources for fulfillment of priority environmental measures.

3. The development of National Capacity Building Strategy to Implement Commitments of Turkmenistan Arising from the UN Global Environmental Conventions has been done based on integral, complex approach to assessment of the national capacity building needs. For this purpose the "cross assessment" was carried out at the systemic, institutional and individual levels to appraise the national capacity building needs common for all thematic areas – biological diversity, climate change and desertification / soil degradation. In the course of this strategy development the special attention was paid to seeking for possible areas of the Rio-de-Janeiro conventions synergism, i.e. integration of efforts to facilitate their implementation and to improve the prospects of measures taken by the country to secure the sustainable development. The Strategy defines responsible executors – ministries, departments and organizations, the terms of implementation and the sources of financing, formulates the expected results of these measures fulfillment. For implementation of the Strategy as a whole, the mechanisms of its monitoring were specified. For achieving the goals of the Strategy, fulfilling the commitments of the country arising from the Rio-de-Janeiro conventions the coordinated activity of all parties concerned, including ministries, departments and all groups of the society is stipulated.

Implementation of the project of Ministry of Nature Protection of Turkmenistan "Turkmenistan: National Capacity Building Needs Self-Assessment" was financed by GEF and UNDP in Turkmenistan. The national professionals from the line ministries and agencies, as well as the independent international experts, representatives of commercial and non-government organizations took part in development of the project. The work was done in conditions of complete openness, in consideration of previous experience of environmental conventions implementation. The results of the project implementation were widely and consistently discussed in all the velayats at specially organized workshops, meetings, round tables with participation of representatives of ministries, departments, organizations and the leading experts of the project.

1. ANALYSIS AND ASSESSMENT OF IMPLEMENTATION OF TURKMENISTAN'S COMMITMENTS ARISING FROM THE RIO DE JANEIRO CONVENTIONS

1.1. Socioeconomic potential of Turkmenistan and the goals of global environmental conventions

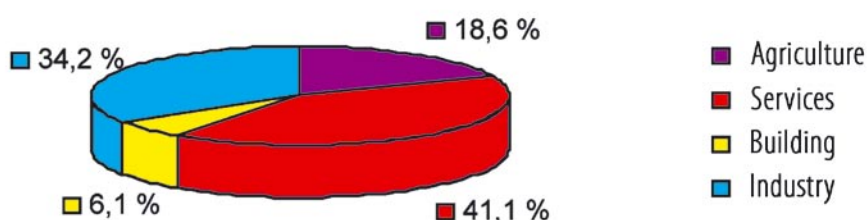
Sustainable development and growth of the main sectors of modern economy are inseparably linked with achievement of harmony in interaction of the society, industry and environment. The National Program "Strategy of Economic, Political and Cultural Development of Turkmenistan until 2020" and the measures taken in the country in accordance with the goals of this national program have provided the objective prerequisites for efficient realization of the requirements of the UN conventions - CBD, CCD and FCCC.

The stable surplus of the balance of payments of Turkmenistan within the last years has been contributing to the increase of reproduction rates, implementation of large-scale social and environmental programs in the state. Annually, the State Budget of Turkmenistan appropriates up to 5% of financial resources for environmental purposes. Turkmenistan pays at due time its fees to the relevant structures that manage the mechanisms of global environmental conventions financing.

1.1.1. Macroeconomic situation in Turkmenistan

Earlier, before gaining the independence, Turkmenistan mainly produced raw commodities; its agrarian specialization conditioned the high share of agriculture in the economy - 40%, and in industry the share of mining branches prevailed. In 1999–2004, the total share of industry in GDP accounted for 33% on average. The share of mining production in the added value of the industry reduced twice due to the growth of light and food industries (up to 30%). The share of agriculture in GDP in 2004 stood at about 19%, construction – over 6%, services – 41% (Fig.1.1) [8, 21].

Fig. 1.1. Structure of GDP of Turkmenistan, 2004



The stable growth of investments is a notable contribution to the sustainable development of the economy of Turkmenistan. The investment policy of the country stipulates:

- state regulation of the investment process and fulfillment of priority tasks in main directions of socioeconomic development;
- introduction of new resource-conservation and environmentally safe technologies;
- construction of new enterprises and upgrading of the existing ones;
- strengthening of social orientation of the economy development to create conditions for the higher employment;
- gradual leveling of socioeconomic development of the regions.

The economic reforms boosted the GDP growth rates, and within the last years Turkmenistan has been holding the leading position in the world by this main indicator of economic progress of a country. In 1991–2004, the GDP production per capita increased 4.5 fold. In 2005, GDP per capita by the purchasing power parity amounted to US\$7.500 [21]. According to the UNDP data (Global Human Development Reports), in 1995, Turkmenistan was on the 103rd place by HDI (human development index), and in 2003, the country posted the 97th place. In classification of the World Bank, Turkmenistan has been moved from the group of low-income countries to the group of middle-income countries.

1.1.2. Demography

Turkmenistan possesses a big human potential. As of the beginning of 2006, 6746.5 thousand people (available population) lived in Turkmenistan; there were 22 cities (including 13 towns), 78

human settlements. Population density was 13.73 people per 1 km². Average annual growth of the population in 2005 was 3%. In total quantity of the population the urban citizens made up 47.3% and rural citizens - 52.7%. The reproduction of the population with its high natural growth is characteristic for Turkmenistan. People under the able-bodied age account for about 32.7%, able-bodied population – more than 61.2% and the population of pension age - approximately 6.1%. High share of young people is a good basis for the stable growth of the labor resources and the population. People of Turkmenistan have a high level of literacy. According to the results of complete census of 1995, in Turkmenistan the level of literacy among people at the age of 9-49 was 99.8% [21].

1.1.3. Employment and standard of living

The labor resources of Turkmenistan are represented mainly by the population of the able-bodied age. The aged people and the teenagers make less than 2% of total potential labor force. Prevailing tendencies in the employment structure condition the reduction of economically active population. In 2005, it stood at 80%, against 80.2% in 2004 and 84.9% in 1991. In many respects it may be explained by increase of the number of women being at maternity leave to take care of children under three years old, and by the growth of well-being of the families, when women can afford not to work and stay with children [21].

Traditional use of natural resources by the population of Turkmenistan is mainly connected with the development of agriculture, as about 53% of the population live in rural area and 49% of labor force is engaged just in this sector of the economy.

The major part of irrigated lands of the country is used for grain and cotton growing (see the Table). Vast desert- semi-desert territories are the main basis for cattle and sheep and goat breeding. The total arable land in Turkmenistan in 2004 amounted to 1915.4 thousand hectares. In comparison with 1991, it increased nearly 1.6 times. Out of total arable land area, 49.6% are occupied by grain crops and leguminous plants (of which 94.9% are sown by wheat), over 32.5% - by industrial crops (of which 99.1% - by cotton), 16% - by fodder crops, 1.9% - potatoes and vegetables, melons and gourds [8].

In agriculture, the enterprises of non-state sector prevail. In 69% of human settlements the agricultural enterprises are represented mainly by farmers' associations of mixed form of ownership. The main form of labor organization is the long-term and short-term intra-farm leaseholding of land for growing of wheat, cotton, rice and other crops. In 21% of human settlements the private farms prevail and in 10% - subsidiary farms of enterprises and organizations. Growing of agricultural products at personal subsidiary farms and at the garden-suburban plots provides the households with additional cash income and increases foodstuffs consumption. By the beginning of 2006, over 94% of cattle, 99% of poultry, 82% of sheep and goats, 76% of camels, 75% of horses were in the private sector.

Areas under Agricultural Crops and Perennial Plants (all categories of farms) in thousands of hectares [8, 21]

Cultivated Crops	1991	1995	2000	2004
Grain-crops and leguminous plants	240	657	760	950.3
<i>of which wheat</i>	115	552	741	901.6
Cotton	602	563	619	617.7
Vegetables	28	23	17	18.3
Melons and gourds	36	24	8	8.1
Potatoes	3	6	9	9.9
Forage crops and other	326	221	71	311.1
TOTAL	1235.0	1494.0	1484.0	1915.4

The irrigated agriculture (93.6% of total consumption), animal husbandry (0.3%), communal sector, mainly the households (2.7%), industry (3%), pasture irrigation (0.3%), fishery (0.1%) are the main water consumers. Need in water annually increases due to accelerated development of the economy and growth of the absolute number of the population.

The stable tendency of production growth remains in such priority branches of the national economy as oil-and-gas, power engineering, chemical, textile and food industries, transport and communication. The industry of services becomes more adequate in the country. In recent years, the gross output growth exceeded by 14-15 percent on average the rates of the population growth, which is an important criterion of the economic growth sustainability.

In the industry, the leading role belongs to the fuel-energy complex where the significant increase of hydrocarbons production is projected. By 2010, oil production would increase to 48.0 million tons, gas – to 120.0 billion m³. By the year 2010, the natural gas export would increase to 100 billion m³ [3]. The volume of investments to the oil-and-gas complex by 2010 will increase 5.7 times compared to 2005, and will amount to US\$3.6 billion. Out of this amount the share of direct foreign investments will account for over 75%.

1.1.4. Economic mechanisms of environment protection

Strategy of financing of measures connected with implementation by Turkmenistan of international environmental conventions / agreements until 2020 is aimed at rational use of the existing finances and search for new sources of financing [4]. Sources of environmental measures financing include:

- State Budget;
- State Fund of Nature Conservation;
- Own funds of economic entities;
- State Development Funds of economic branches;
- Off-budget Environmental Funds;
- Grants of international organizations.

When preparing the annual State Budget, the country's investment program is developed, within which the financing of measures on environment protection and rational use of natural resources is envisaged for each of the ministries and departments.

The strategy of economic development stipulates the following mechanisms of state control in ensuring the rational nature use:

- licensing the particular volume of discharge/emission of environment polluting substances, or any other environmentally adverse activity;
- penalizing (administrative payments, user's payment, payment for excessive emission or discharge, fines for non-observance of environmental legislation, for the damage to environment, etc.);
- environmental insurance of the objects of higher danger;
- tax concessions and other privileges to the legal entities and citizens introducing low-waste and waste-free technologies and productions, etc.;
- increasing of amortization norms for main industrial environmental funds;
- encouraging prices and extra charges for environmentally safe production;
- preferential crediting of enterprises, institutions for the activities favorable for nature.

Financing and other support of low-waste and waste-free production should be the most important form of encouragement of environmentally safe behavior and reduction of threat to environment. Furthermore, the emerging mechanism of environmentally safe vital activity and rational nature use imply the aggregation of instruments mentioned above and those that are called on to regulate behavior of all entities of public relations – manufacturers and consumers; to provide attraction into the nature conservation activity of mainly the off-budget funds.

Consequently, the economic mechanisms of guaranteeing the nature protection and the rational use of natural resources should in future constrain the environmentally dangerous productions and induce activities preferable from the point of view of environmental interests of the state and the society as a whole.

1.2. Nature conservation strategy of Turkmenistan

Nature conservation strategy of Turkmenistan is aimed at guaranteeing the high-quality environment in conditions of intensive industrial development of the country, at ensuring the environmental safety. Solution of the problem to achieve these goals is under attention of the government, as the health and welfare of people depend on state of environment, and this issue is reflected in the national development programs. Over the years of independence, the political, economic, social and environmental tasks were performed in accordance with the large national programs such as "10 years of stability", "Grain", "New Village", "Health", "Education", National Program of President of Turkmenistan Saparmurat Turkmenbashi "Strategy of Socioeconomic Reforms in Turkmenistan for the period to 2010" and National Program "Strategy of Economic, Political and Cultural Development of Turkmenistan until 2020", etc.

The National Environmental Action Plan of President of Turkmenistan Saparmurat Turkmenbashi (NEAP) has become the integral part of the national development programs designed for the periods until 2010 and 2020 [5,19]. This NEAP is a multi-profile program document formulating the main principles and provisions of environmental policy, defining environmental priorities of Turkmenistan. It suggests actions / measures for fulfillment of 14 priority national environmental tasks united into seven blocks: water resources; land resources; air; state of environment at Turkmen Zone of the Aral Sea Disaster; oil and gas complex and energy; biological diversity, natural and cultural heritage. About 130 priority measures are suggested in the NEAP for the period throughout 2010, of which 93 are the investment projects. The total cost of "implementation" of all investment projects stipulated in the NEAP equals 48.4 trillion manat, of which the purely environmental measures make 7.6 trillion manat.

One of the most important indicators of efficiency of the environmental policy of Turkmenistan is the active international cooperation: signing and implementation of conventions, other bilateral and multilateral international agreements; coordination in respective activities of ministries and departments, solution of problems related to this implementation in compliance with international legal environmental norms.

Turkmenistan has ratified the basic environmental conventions such as UN Framework Convention on Climate Change, UN Convention on Biological Diversity, UN Convention to Combat Desertification, Vienna Convention for Protection of Ozone Layer and Montreal Protocol on Substances Depleting the Ozone Layer, Basel Convention on Control of Transboundary Transfer of Hazardous Wastes and Their Disposal, Convention (Aarhus) on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Framework Convention for Protection of Marine Environment of the Caspian Sea; has signed the Ashgabat Framework Convention on Protection of Environment for Sustainable Development of Central Asia, expressing thereby its readiness for cooperation in solution of environmental problems for sustainable development. Turkmenistan systematically and successively carries out the wide-scale economic, social and environmental measures aimed at the capacity building and ensuring the dynamic development of the country. Today, Turkmenistan makes an important contribution to the solution of environmental challenges of the world community. The national environmental policy in full measure corresponds to the principles and goals of the "Agenda 21" conception adopted at the Earth Summit in Rio de Janeiro in 1992.

According to commitments arising from the environmental conventions ratified by Turkmenistan, the fundamental strategic principle implies the priority of solution of environmental problems such as integration of environmental requirements into all spheres of life, accomplishment of environmental assessment and state environmental expertise of all types of activities, improvement of the national environmental legislation, participation of citizens in discussion of legal acts drafts, in decision-making with regards to nature conservation, further development of international cooperation in the area of environment protection, etc.

These and other strategic objectives related to implementation of the provisions of international conventions are successfully performed now. In recent years, the large environmental

projects have been implemented with the assistance of international organizations. In the course of these projects implementation the important action programs have been developed: Biodiversity Strategy and Action Plan for Turkmenistan, National Action Program to Combat Desertification, and Technical Assistance to Central Asia Countries in respect of their Commitments to Prevent Global Climate Change, etc.

Thus, the national environmental strategies and international nature conservation agreements are fulfilled by Turkmenistan purposefully and at adequate organizational level. However, the strategic focuses of environmental practical actions of the country require further development and improvement of the legal base, and strengthening of material and technical provision of the structures related to nature conservation and rational use of natural resources.

Turkmenistan actively cooperates with the international organizations in implementation of large environmental projects. With the support of Strategic Partnership Agreement (SPA) the Central Asia Countries Initiative on Land Resources Management (CACILM) has been developed in Central Asia for the CCD implementation. Currently, the SPA includes Global CCD Mechanism, ADB, Canadian International Development Agency (CIDA), German Association on Technical Cooperation (GTZ), Swiss Development Cooperation Agency (SDC), International Fund of Agriculture Development (IFAD), International Center of Agricultural Researches of Dry Areas (ICARDA) and UN Development Program (UNDP).

The experience of our country shows that for the purpose of further improvement of environmental strategy, and increase of efficiency of global environmental conventions implementation it would be expedient to seek for the ways of further strengthening of cooperation with international organizations, use more actively the international experience in consideration of national and natural peculiarities of Turkmenistan, and consider the possibility of joining to other international conventions.

1.2.1. Management, coordination and control related to implementation of the Rio de Janeiro conventions

The progress in fulfillment of the environmental strategy objectives of the country depends in many respects on the efficiency of the management mechanisms applied for implementation of international agreements, the mechanisms of coordination and control of activities in this area. In 1999, according to the Decree of President of Turkmenistan, the State Commission to Guarantee the Implementation of Commitments of Turkmenistan Arising from UN Environmental Conventions and Programs was established with the aim of coordination of activities of ministries and departments. It comprises 7 Working Groups and the National Center for NEAP Implementation. The State Commission functions to:

- organize development of national programs and action plans on environment protection and rational nature use issues, in compliance with the UN environmental conventions and programs;
- participate in development of legal and regulatory acts on nature use and environment protection;
- draft national reports on implementation of commitments arising from the UN environmental conventions and programs;
- prepare proposals to reflect Turkmenistan's position at conference sessions of the UN environmental conventions parties and international programs related to environment protection and rational nature use;
- coordinate activities of ministries and departments within the framework of UN conventions and programs on rational nature use and environment protection.

In its activities, the State Commission cooperates with the Council of Agricultural Complex that in line with the number of other important functions defines the science-based policy of the agrarian sector aimed at all possible development of scientific and technological progress, wide introduction of scientific achievements, high technologies and advanced experience into production; develops proposals and recommendations for developers of the general strategy on socioeconomic development of this sector. The environmental aspect of the Council's activities is of paramount

importance for environment protection and the water-soil resources in particular. The organizational chart in the area of environment protection management and coordination is shown in Fig.1.2.

The NEAP Center within the structure of the State Commission was established in December of 2003 to develop and perform the projects suggested in the NEAP, control the fulfillment of a complex of environmental measures, analyze the performance indicators. For the purpose of the NEAP implementation the Ministry of Economy and Finance and the Ministry of Nature Protection are empowered to 1) provide assistance in attracting domestic and foreign investments and budget funds for financing of this program; 2) coordinate activities of ministries, departments and khyakimliks in implementation of the NEAP. The Deputy Chairmen of Cabinet of Ministers of Turkmenistan and the State Commission for UN Environmental Conventions and Programs conduct control over the NEAP implementation.

Ministry of Nature Protection of Turkmenistan is the authority pursuing the government policy and inter-agency control in the area of environment protection and rational nature use. The Ministry coordinates the convention-based environmental activities of ministries and departments, environmental programs and projects and prepares materials to be considered at the meetings of the State Commission. The structure of the Ministry includes five regional departments of nature protection; Caspian Ecological Service "Kaspekogozegchilik" ("Kaspekokontrol"); National Institute of Deserts, Flora and Fauna; Service for Forest Seed Farming and Natural Parks Protection; 8 state nature reserves and 14 sanctuaries.

The National Institute of Deserts, Flora and Fauna (NIDFF) of Ministry of Nature Protection conducts and coordinates fundamental and applied research work in the area of flora and fauna preservation, as well as in the issues of desertification combating, environment protection, monitoring and rational management of natural resources. The Center of Ecological Monitoring within the NIDFF structure functions to conduct observations of the environment pollution and implement a complex of measures directed on environment conservation and rational use of its resources. In 1997, the Center to Combat Desertification was established at the NIDFF to coordinate and carry out the measures required for implementation of Convention to Combat Desertification. The Center is equipped with the advanced computer and telecommunication facilities, the Geographical Informational System (GIS) software.

The Caspian Ecological Service "Kaspekogozegchilik" accomplishes the state control and monitoring of water area and adjacent coastal zone in the Turkmen sector of the Caspian Sea.

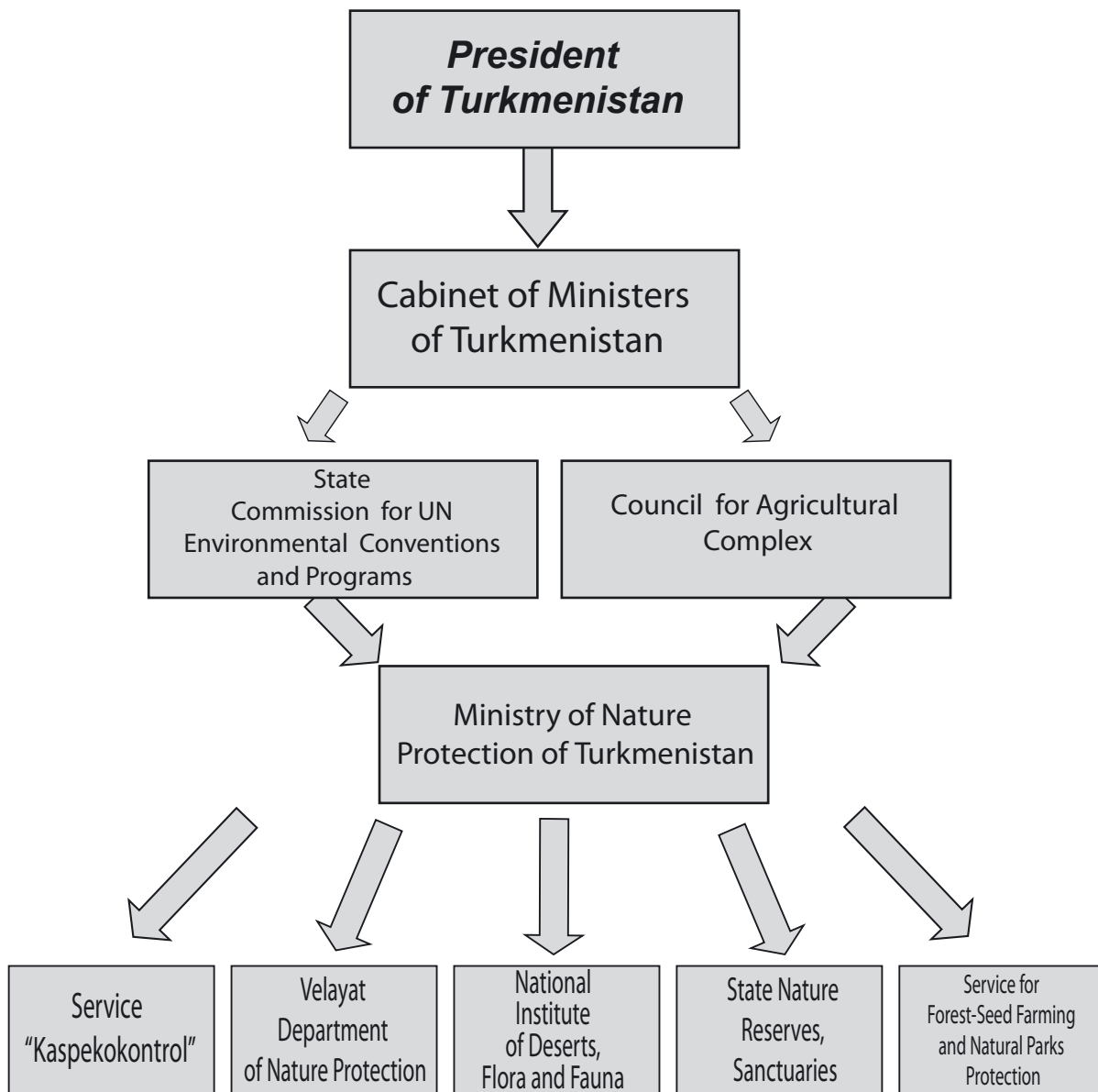
The subdivisions of Ministry of Nature Protection of Turkmenistan examine the observance of norms of maximum permissible emissions (MPE, MPD and MPC), provide the environmental impact assessment for the new construction projects, approve ecological passports and regularly control implementation of measures for environmental safety. At a lot of large enterprises of power engineering and chemical and oil-and-gas industries there are specialized ecological laboratories to control emissions and discharges into environment.

Thus, Turkmenistan has the system of government executive bodies responsible for protection and rational management of environment, fulfillment of respective international agreements, such as Convention on Biodiversity, Framework Convention on Climate Change and Convention to Combat Desertification. At the systemic level, together with ministries and departments directly involved in environment protection, the following bodies work to create conditions for fulfillment of obligations of Turkmenistan arising from the international conventions: Mejlis of Turkmenistan elaborating and adopting legal acts, Ministry of Economy and Finance of Turkmenistan elaborating and regulating financial and economic policy of the country, Ministry of Justice of Turkmenistan providing legal guarantee to activities of executive authorities and assisting in further development of the democratic constitutional state, Ministry of Foreign Affairs of Turkmenistan fulfilling foreign policy functions and coordinating relations of Turkmenistan with other states, international organizations.

As it was mentioned above, the State Commission for UN Environmental Conventions and Programs, being an inter-agency structure, coordinates and controls activities of ministries, departments and organizations concerning the environment protection and rational use of nature. At the same time, for the purpose of efficient and complex solution of issues of conservation and sustainable management of natural resources at institutional level it would be expedient to establish

coordinative centers on global international environmental conventions (and in the FCCC Center - the CDM unit) to implement CBD, CCD, FCCC. This will promote the efficiency of coordination of executive structures activities, monitoring and assessment of state of natural resources; strengthen the material and technical base of research work in environmental area and, which is very important, increase their level.

Fig.1.2. Organizational Chart of Coordination of the Rio de Janeiro Global Environmental Conventions Implementation



Analysis of environmental activities in the country shows that development of the young independent state with rapidly growing economy requires regular perfection of the mechanism of management and coordination in such not a simple matter as the environment protection.

To create adequate conditions for efficient interaction in the management at all levels, it is necessary to:

- improve legal framework;
- improve the mechanism of management, coordination and control;
- establish coordination centers on global environmental conventions;
- establish a national subdivision of CDM;
- establish a uniform information system and database;
- develop mechanisms of economic incentives for environmental activities.

1.2.2. State environmental expertise

State environmental expertise, being the function of Ministry of Nature Protection of Turkmenistan is carried out in compliance with the laws of Turkmenistan "On State Environmental Expertise" (1995) and "On Nature Conservation" (1991), as well as according to the Decree of President of Turkmenistan of 13th November, 1996 № 2864 "On Procedure of State Environmental Expertise Conduction" [10] and State Standard TDS-579-2001 "Environmental Impact Assessment of Projected Economic and Other Activities in Turkmenistan" (EIA). These and other legal and regulatory acts are called on to form and strengthen the ecological legal order, contribute to improvement of management in activities related to nature protection, life and health of people of Turkmenistan, as well as improvement of coordination and control in these areas.

State environmental expertise is based on the following principles:

- retaining the adequate environment quality as an integral condition for environmental well-being of citizens, environmental safety of the objects to be examined;
- balance of ecological, economic and social interests;
- thorough consideration of public opinion, when preparing a conclusion of the environmental expertise ;
- provision of objectivity, complexity and scientific justification;
- provision of legitimacy and publicity ;
- observance of norms and rules of international agreements on state environmental expertise, etc.

In compliance with the law of Turkmenistan "On Nature Conservation" the designing, placing, construction, reconstruction, upgrading of enterprises, facilities and other objects, as well as their commissioning, exploitation and abandonment must be carried out in accordance with environmental safety requirements.

Turkmenistan takes respective measures now to improve the quality of environmental expertise. According to the Regulation on this expertise, the customers of the objects to be examined should submit to the expertise bodies the following documents: description of environmental situation on the territory; statements on 1) examination of observance of legal and international requirements, 2) assessment of alternative decisions, sources and types of environmental impact, 3) assessment of possible environmental, social and economic effects, when implementing the alternative chosen; as well as proposals to feasibility studies to be carried out at the stage of designing and draft list of environmental conditions of a project fulfillment at the stages of designing, construction and operation.

1.2.3. Legal framework

In compliance with the Constitution of Turkmenistan, a harmonious system of environmental legislation has been created, the main objective of which is the legal security of environmental policy of the state aimed at environment protection, rational use of natural resources and improvement of ecological situation. The prevailing legislation provides for Turkmenistan the appropriate legal possibility to join to the international environmental agreements and programs and implement obligations arising from these agreements and programs. For this purpose, the necessary legal, organizational, economical and social conditions have been created; the environmental policy of President of Turkmenistan aimed at ensuring the environment protection, rational use of natural resources and improvement of environmental situation is the favorable basis of these conditions.

The Constitution, according to which the state is responsible for the safety of environment, makes the foundation of the environmental legislation. This legislation stipulates a variety of forms of land ownership and defines the right of exclusive property of the state to the forest fund, water resources, especially protected natural territories, flora and fauna, mineral and other natural resources. The issues of ownership for natural resources are reflected in the Civil Code (1998) and in the law "On Ownership" (1993).

In accordance with the law "On Nature Conservation" (1991), the conservation of nature, the

rational use and reproduction of its resources, and the environment improvement are the national tasks and the duty of each of the citizens.

The issues of certain environment components protection are regulated by the special legal acts: the law "On Air Protection" (1996), the Forest Code (1993), the laws "On Flora Protection and Management" (1993), "On Fauna Protection and Management" (1997), "On Hunting and Hunting Area Management" (1998), the Regulations on State Committee for Fishery (1991 and 1996), the law "On Natural Resources" (1992), the Water Code (2004) and Land Code (2004), the law "On Hydrocarbon Resources" (1996). The relevant articles of the Criminal Code (1997), the Code on Administrative Delinquency (1984, later amended), the Civil Code (1998) are aimed at ensuring the environment protection and rational use of natural resources. In particular, they envisage criminal liability for environmental delinquency, administrative sanctions for violation of law in the aspect of environment protection and civil liability in a form of compensation of damage brought to environment, etc. [10].

1.2.4. Scientific and technological capacity to implement the UN global environmental conventions

The law of Turkmenistan "On State Scientific and Technological Policy" is aimed at creating more favorable conditions for development of science and technology through the improvement of forms of scientific and technological activities, using the scientific achievements in manufacturing, in social and cultural spheres of life of the society due to the principles of international environmental agreements [10].

The Higher Council for Science and Technology under the President of Turkmenistan (HCST) is the state body that provides forecasting of the development of science, engineering and technologies and introducing of achievements of the national and world science into production with the observance of environmental requirements and provisions of NEAP, as well as attestation of research and teaching staff of higher qualification, establishing of scientific-educational informational system necessary for efficient management and coordination of research work, information exchange and development of international cooperation, including implementation of commitments arising from the Rio conventions.

Scientific and technological policy of the country is aimed at using the scientific and engineering potential, developing intensively the industry and agriculture based on extended environmental scientific researches, implementation of large national projects on prevention of land resource degradation; at improving land and water resources management, using rationally bio-resources, combating desertification, minimizing its adverse effects, etc. [6, 7].

For the purpose of efficient management and coordination of work in the area of science and technology, as well as proper provision of research activities of SRI and higher schools with information, the HCST implements with the support of the NATO Research Committee and TACIS Program "Tempus" the project on establishment of national research and educational network with the high-speed access to Internet. The system will allow establish the uniform electronic network with the research and educational database, including environmental one, with the access to the world informational database making possible the exchange of scientific and technological information.

The analysis of the scientific and technological capacity of the country shows that its efficient use in implementation of the country's commitments arising from the Rio conventions is directly connected with further development of scientific capacity of research institutions and higher schools, improvement of mechanisms of planning, coordination and financing of scientific researches, with the integration to international and regional environmental research programs and with the necessity of strengthening of the material and technical base of SRI and higher schools.

1.3. Staff training, environmental education

The environmental education efficiency is one of the main tasks in the educational system of Turkmenistan. In 1999, the "National Program for Education and Upbringing of Children of Preschool Age" was adopted in Turkmenistan. It was developed in compliance with the International Declaration on Child's Rights, the Constitution of Turkmenistan and the law "On Education". For knowledge popularization the traditional forms of extracurricular work is widely used including the Day of Environmental Knowledge, thematic parties, contests, poster competitions, lectures on environmental subjects, in organization of which the specialists of local environmental bodies and representatives of non-government organizations take part. Further updating of programs for environmental education and training, introduction of the subject "Ecology" into the school curriculum is the important component of the national capacity building to implement the Rio conventions.

The subject "Doctrine of Saparmurat Turkmenbashi on Nature Conservation" is in the curriculum of the higher school of Turkmenistan. It considers the main concepts of ecology, interaction of man and nature, rational nature management, nature-conservative conventions and participation of Turkmenistan in solution of global and regional environmental issues. Teaching of the course "Sacred Rukhnama" that presents people's traditions and customs of rational nature management developed on the basis of the centuries-old experience of relations between a man and nature was included into the curricula of secondary and higher schools [1, 2].

Continuous environmental training in the system of higher education is provided in a form of special courses teaching, graduation papers writing. According to the existing system of training of environmental specialists, the graduator should possess the necessary knowledge and skills in the area of nature management and nature protection as well as the capability to joint activities with specialists of related branches of science and practice for the purpose of solution of urgent environmental problems. To use the experience and scientific potential more appropriately it is necessary to enhance the level of cooperation of research institutes and higher schools [12, 20].

1.4. Public awareness and participation in the conventions implementation

Articles of the Rio conventions concerning education and increase of awareness of the population are closely connected with the Convention (Aarhus) on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters that was ratified by Turkmenistan in 1999.

Ministry of Nature Protection of Turkmenistan arranges the following measures along with the other state structures, non-government environmental organizations and mass media to increase public environmental awareness:

- weekly radio and television programs;
- issuing of monthly bulletin "Nature Bulletin";
- publishing of scientific and popular scientific articles in newspapers, journals "Revival", "Problems of Desert Development", "Science and Technology in Turkmenistan", etc.;
- contests, round tables, photo-exhibition, conferences and seminars, mass environmental events.

Efficiency of works connected with the implementation of commitments arising from the conventions is determined by the enhancement of rights for participation of civil societies in the process of decision-making in environment protection, the rise of the level of environmental awareness and training of the population. Recently, the activities of non-government environmental organizations have essentially become more intensive with the adoption of the law "On Non-government Organizations" (2003). Public Association for Nature Conservation of Turkmenistan is one of the oldest and most competent non-government organizations. It arranges environmental actions in the aspect of awareness and education of the population: trainings, round tables and meetings with the local population, etc.[15].

Analysis and assessment of the work with the community on the issues of environment and rational natural resources management shows that the existing potential is used insufficiently for implementation and improvement of this work, and in this relation it is recommended to enhance activities in information of the community and, particularly of the decision-makers, through the wide use of capability of mass media for popularization of main provisions of the Rio conventions and conduction of explanatory work among the population; to widely involve the population to implementation of environmental measures; to extend publishing activities in the area of environment protection (issuing of brochures, pamphlets, methodical materials, journals, bulletins, calendars).

2. PRIORITIES IDENTIFIED IN THE PROCESS OF THEMATIC AND CROSS ASSESSMENTS OF NATIONAL CAPACITY BUILDING NEEDS AND THEIR ANALYSIS

The thematic reviews and identification of “cross” priorities common for all three thematic areas or three Rio conventions are aimed at providing the concentration of financial and material resources of the national capacity at most important directions of environmental activities. Determining of factors restraining the capacity growth and those promoting this growth at three thematic directions makes it possible to develop the coordinated approach to implementation of the global conventions at local, national and international levels [22].

The experts carried out the national capacity analysis and assessment in accordance with the “Guide for Self-Assessment of Country Capacity Needs for Global Environmental Management” (Washington: GEF, 2001) issued by GEF after consultation with the Secretariats of CBD, FCCC and CCD. For the stepwise reviewing of materials and identifying of top-priority environmental measures there have been used the matrices 1) for defining the priorities and 2) for determining the capacity growth constraints. Then, the priorities, the factors restraining the capacity growth identified within the analysis and assessment of the whole information collected in the course of thematic reviews, as well as the measures aimed at elimination of the constraints have been grouped, classified according to categories (or levels) such as systemic, institutional and individual. *This was the most important part of the project development being of exclusive interest for understanding of deep essence of the assessment of the country’s needs in the national capacity building necessary for successful implementation of the global conventions, since just at these levels there might be identified the factors for elimination of which the strategic action plan has been developed within the project.*

At the systemic level the set of priorities, in addition to legal base, management and coordination, includes monitoring and control of implementation, as well as cooperation at international and national levels. Monitoring and control of implementation will allow to adjust at due time the implementation of objectives within the whole period of work in respect of the conventions. International cooperation provides the opportunity to use the best foreign achievements and experience in fulfillment of priority environmental objectives.

Institutional level covers such priorities as scientific and technological capacity; modernization of production objects and equipping of industries with modern technologies and equipment; normative standards; utilization of industrial and domestic wastes and discharges; equipping of scientific and educational institutions with adequate technical facilities, including analytical devices and equipment; economic incentives and market mechanisms.

Priorities of individual level are connected with the process of changing of prevailing opinions and behavior models, improving of professional skills mainly through transfer of knowledge and skills through education, including the education at the job place and concerned participation in the measures, etc. The solution of problems at this level will largely support the government structures in fulfillment of the requirements of the Rio conventions; it will also allow to find the incentives to promote the activities of all groups of the civil society.

Common priorities of capacity building for implementation of UN global environmental conventions are considered at the three levels presented below:

Systemic:

- strategy of improvement of environmental legislation;
- management, coordination and monitoring;
- cooperation at the international level;

Institutional:

- coordination centers on Rio conventions and CDM;
- cooperation at the national level;
- scientific and technological capacity;

- uniform informational system and database;
- advanced technologies and equipment;
- sustainable use of natural resources;
- economic incentives for environmental activities;

Individual:

- increase of the level of environmental education;
- public awareness and involvement of communities into environmental activities

The thematic assessments of priorities in the national capacity building and their cross analysis resulted in identification of common priorities for three global conventions. As a result, the goals, priority strategic directions and measures have been defined, for the fulfillment of which, first of all, the financial, material and human (personnel capacity) resources should be attracted.

Common goals in national capacity building for implementation of Rio conventions

As a result of development of the project there have been defined the most important goals for the national capacity building that will allow to purposefully and efficiently observe the requirements common for all three UN global conventions:

- legal framework;
- cooperation, management, coordination and monitoring;
- research and technological potential;
- sustainable use of natural resources;
- rise of the environmental education level;
- public awareness and involvement of the community into the environmental activity.

Within these six goals, the next section of this document substantiates the necessity of introduction into the action plan of strategic directions covering certain measures aimed at eliminating the constraints of national capacity building – the Capacity Building Strategy to Implement Commitments of Turkmenistan Arising from UN Global Environmental Conventions (Appendix 1).

3. NATIONAL CAPACITY BUILDING STRATEGY TO IMPLEMENT TURKMENISTAN'S COMMITMENTS ARISING FROM THE UN GLOBAL ENVIRONMENTAL CONVENTIONS

Comprehensive analysis and assessment of the country's capacity building needs resulted in identification of most important aspects of the activity concerning the implementation of the Rio conventions. The Strategy of capacity building was developed in consideration of these aspects. The Strategy includes the priority goals for the national capacity building, which in their turn split to strategic focuses including the scheduled measures with indication of responsible executors and co-executors, the date of completion, the financing sources and the envisaged results (See Appendix № 1). Timing of implementation is conditionally subdivided into three periods: short-term (x - under 1 year), medium-term (xx – from 1 to 3 years) and long-term (xxx – from 3 to 5 years) periods from the moment of Strategy approval.

Goal 1. Legal framework

Strategic Focus 1.1. National environmental legal framework capacity building

The country's commitments arising from the Rio conventions are reflected quite profoundly in the legislation of Turkmenistan. As it has already been mentioned above, they are successfully implemented owing to the existence of all necessary political, organizational, legal, economic and social conditions. The policy of President of Turkmenistan aimed at conservation of nature, rational use of its resources and improvement of environmental situation is a favorable basis for these conditions.

In the meantime, the analysis of environmental legislation of the country during development of this project showed that the essential part of legal and regulatory acts concerning the nature conservation was adopted in the first years of independence of Turkmenistan. The environmental and socioeconomic situation of the present time, the onward march of the national legal system development, as well as the provisions of international agreements, to which Turkmenistan has joined, require the development of new environmental legal acts and revision of those earlier adopted.

In this connection, it is suggested:

- to develop proposals on bringing to compliance the national environmental laws and other legal acts, including the laws "On Nature Conservation", "On Specially Protected Natural Territories", "On Flora Protection and Management", "On Air Protection", "On Fauna Protection and Management", "Forest Code" adopted in 1991-1997 with the new environmental and socioeconomic situation emerged as a result of consistent fulfillment of market reforms, and with changes in the national legal system and provisions of UN global environmental conventions;
- to draft laws and regulatory acts, including environmental ones, stipulating the following goals:
 - further improvement of water and land resources protection and rational management, increase of soil fertility, pasture and forest productivity;
 - efficient management of energy resources;
 - ensuring biological safety and expedient use of genetically modified organisms (GMO);
 - protection of selectionist's rights;
 - development of territories for recreational ecotourism purposes;
- to approve Standard Regulation "On National Parks of Turkmenistan".

Strategic Focus 1.2. Environmental standards

Further improvement of environment monitoring and ecological control stipulates the necessity of developing the science-based environmental standards that would allow to unify requirements to environment quality, to provide rational regulation of all types of activity related to thematic areas such as biodiversity conservation, climate change and desertification combating.

It is recommended to introduce the system of complex environmental licenses in Turkmenistan for regulation of a wide range of industrial impacts on environment and for encouragement of technological innovations in the long-term perspective. Gradual improvement of the system of licensing will favor further development of environmental policy of the country in new socioeconomic conditions. Introduction of the system of environmental licensing in Turkmenistan in consideration of its national and climatic peculiarities will bring the significant environmental benefit to the state as a whole and to the large industry, allow to reduce expenses and will improve the international cooperation in the area of protection of global environment at the national level.

In accordance with the provisions of Kiev Protocol (2003) to Aarhus Convention it would be expedient to develop the national Register of Emissions and Pollutants Transfer (REPT) – an inventory list of pollutions coming from industrial objects and other sources, including at least 86 pollutants such as greenhouse gases, pollutants of acidic rains, ozone depleting substances, heavy metals and certain carcinogens such as dioxins. This will contribute to improvement of recording and reporting on emissions and pollutants transfer, and urgent making of decisions to minimize their negative impact on environment and to prevent such impact on it [13, 14, 17, 18].

In connection with the facts just cited for substantiation of intended measures in this area, it is recommended to consider the necessity of development and approval of

- State environmental standard of EIA in the oil and gas industry;
- Uniform environmental standards of analytical control and environment monitoring;
- National system of GHG inventory;
- Planting stock standards (seedlings, saplings);
- National Register of Emissions and Pollutants Transfer (REPT);
- System of complex environmental licenses in Turkmenistan.

Strategic Focus 1.3. Improvement of the economic stimulation mechanism

Carrying out of environmental measures based on economic stimulation of the activities of various organizations and local communities inducing them to be rational in natural resources using allows in addition to solution of environmental problems to increase the responsibility of concerned people, their participation in measures taken by environmental organizations, create additional job places. Efficient mechanism of economic stimulation can also solve a number of other important issues of conservation of natural and cultural heritage, involvement of local communities to tourist activities, raise of economic interest and, as a consequence, increase of well-being of people living at the territories near nature reserves, finding of alternative sources of income for them.

To improve further the mechanism of economic stimulation and solution of environmental problems through the approaches related to this mechanism it will be necessary to draft and adopt the relevant legal documents governing the activities mentioned in previous paragraph and other types of activities of governmental and commercial structures, non-government associations and local population. Mechanisms of environmental sponsorship, privileged and differentiated taxation need to be improved.

In this connection, it is recommended to include the following measures into the Strategy:

- development of legal documents regulating environmental activities of government and commercial structures, non-government organizations and local communities;
- development of ecotourism and development of tourist routes to the monuments of nature and culture;
- development of Regulation on new categories of SPNT;
- development of a draft legal act regulating the way of economic stimulation of the rational use and protection of land;
- development and application of economic incentives in forestry activities;
- revision of norms of payment for forest exploitation.

Goal 2. Cooperation, management, coordination and monitoring

Strategic Focus 2.1. International cooperation

International environmental cooperation of the country is exercised mainly within implementation of a number of environmental conventions, including the Convention on Biodiversity, Convention on Climate Change and Convention on Desertification Combating, being the crucial instruments of such cooperation. Implementing its functions as a party that signed these conventions, Turkmenistan also participates in multi- and bilateral dialogues with other states concerning the development of drafts of new international legal documents. Cooperation with authoritative international organizations such as UNDP, UNEP, UNESCO, GEF, TACIS, European Union, World Bank, etc. is an important moment of environmental activities of our country.

For further development of international environmental cooperation it is recommended:

- to sign Protocols to Framework Convention on the Caspian Marine Environment Protection (Protocol on the Caspian Sea Protection against Pollution from Surface Sources and from Onshore Activities; Protocol on Regional Cooperation to Combat Oil Spills in Case of Emergency; Protocol on Environmental Impact Assessment in Transboundary Aspect; Protocol on Biodiversity Conservation);
- to consider possibility of joining to the following international legal documents: Ramsar Convention on Wetlands (1971); Bonn Convention on Migratory Species (1979); Cartagena Protocol on Biosafety (2000) – an integral part of Convention on Biological Diversity; Kiev Protocol of 2003 to Aarhus Convention;
- to ratify Amendments (Copenhagen, Montreal and Beijing) to the Montreal Protocol on Ozone Layer Depleting Substances;
- to stimulate international cooperation on sustainable forest management.

Strategic Focus 2.2. Improvement of cooperation at the national Level

To improve the inter-branch and inter-agency cooperation in the country it is recommended:

- to develop programs of inter-agency environmental coordination;
- to intensify activities of working groups of the State Commission with regard to implementation of Turkmenistan's commitments arising from UN environmental conventions and programs;
- to develop a network of expertise, expert associations and experts training on international agreements.

Strategic Focus 2.3. Improvement of coordination and management of complex implementation of the Rio conventions

Realization of environmental strategy of Turkmenistan aimed at implementation of international agreements provisions in many respects is determined by the efficiency of management and coordination in the area of activities of individuals and legal entities. Currently, the country has the system of government and non-government institutes able to coordinate environmental measures and manage them. However, the current developments, the necessity of making synergic decisions aimed at uniting the efforts for implementation of international conventions bring about the need of further improvement of coordination of their implementation and management.

To achieve this goal it is proposed:

- to establish:
 - (a) CBD, FCCC Coordinating Centers, while giving the relevant status to the existing NAPCD Center;
 - (b) national body on Clean Development Mechanism (CDM) within the structure of the FCCC Center;
 - (c) research and methodological Forest Center;
 - (d) national system of land resources monitoring of Turkmenistan based on the existing structures for the long-term planning and sustainable management of these resources with the following objectives: timely identification of changes and assessment of the land resources condition, forecasting

of this condition and development of recommendations on prevention and elimination of negative effect of anthropogenic impact; improvement of methods of remote zoning, technologies of land monitoring; provision with information needed for the state land cadastre management, rational land management and land utilization, control over land use and protection;

- further improvement (revision and modification) of NAPCD to harmonize it with international agreements, national environmental laws and programs.

Strategic Focus 2.4. Improvement of the system of environment monitoring and control

Availability of all-embracing efficient information on desertification processes, biodiversity condition, including natural pastures and forests, land and water resources; on emissions of different types into environment and meteorological elements is the most important condition of guaranteeing the appropriate quality of environment and its resources management. Naturally, it is possible only with the well-established system of environment monitoring and control.

To ensure the opportunity of getting the complex on-line information it is recommended:

- to conduct monitoring and assessment of realization of Capacity Building Strategy to implement Turkmenistan's commitments arising from UN global environmental conventions;
- to increase efficiency of desertification monitoring for the purpose of periodical quantitative and qualitative assessment of pasture productivity and pasture herbage;
- to organize a group in the structure of Institute "Turkmenertaslama" to make regular inventory of pastures;
- to put into practice the regular inventory of pastures and updating of database;
- to organize and implement control of soil salinization;
- to improve the system of biodiversity state monitoring at SPNT and regular updating of information about it;
- to improve mechanism of forest and forest activities management;
- to increase efficiency of environmental control in power engineering;
- to introduce modern specialized programs for meteorological data processing.

Strategic Focus 2.5. Increase of efficiency of information supply

The most important condition for the increase of efficiency of coordination, monitoring and control of environmental measures and their management at the national level is to establish a uniform information system and electronic database on all aspects of environment protection.

Presently, a part of the state-of-environment information is kept within the subdivisions of Ministry of Nature Protection of Turkmenistan, and another part is in other ministries and departments, which is used for intra-agency needs and is not a subject of systemic use. Establishment of a uniform information system with electronic database on biodiversity, desertification and climate change within the structure of the State Commission would allow on the permanent and systemic basis to possess information about the state of all elements of environment (land and water resources, the Caspian Sea, desert pastures, biodiversity components, meteorological elements, etc.) all over the territory of Turkmenistan, to increase possibility of studying and using the international experience in all three thematic areas, etc. The adequate software support for such informational system will allow creating a database of certificates of access to information and providing the hierarchic system of information dividing into levels in accordance with requirements of different categories of structural formations (government, departmental, non-government). Application in this case of "Devinfo" software could provide a common approach to determining of the levels of development in the country and proper comparing of this information within the world community, as well as permanent improvement of the existing methodology of accounting and approach to analysis of Millennium Development Goals and the Goal "Provision of Environmental Sustainability", in particular. All ministries and departments, the activities of which may cause the threat of environment pollution, will get the opportunity to regularly replenish the database with the reliable information in the common format.

The uniform informational system will promote the wide environmental information exchange, distance holding of environmental workshops, conferences, direct communication with all groups of the civil society as well as regular monitoring and control of implementation of the recommended Strategy.

The uniform informational system with electronic database on biodiversity, desertification and climate change should include:

- database of access certificates to information (in order to prevent unauthorized access to information every ministry and department is provided with certificates of cryptographic keys);
- database of indicators in accordance with international standards;
- modern specialized program for collection, processing, analysis and establishing the database on all types of information (soil salinity and waterlogging degree, state of forests etc.);
- subdivisions for databases creation, information analysis, monitoring and assessment of the Strategy implementation;
- web-site with the environmental information for public.

To establish a basic network of the uniform informational system there can be used the existing research-educational network of Turkmenistan that unites research institutes, higher educational institutes and is connected to the European research network and through it to the Internet. This network has the necessary coverage and sufficient bandwidth for fulfillment of the objectives of informational system.

For the fulfillment of measures included in the National Capacity Building Strategy it is recommended to establish:

- in the structure of the State Commission the uniform informational system for the supply of information on international agreements implementation;
- bank of the modern specialized computer programs, including the UN program "Devinfo", for collecting, processing, analyzing the information and establishing the database for processing of all its types.

Goal 3. Scientific and technological capacity

Scientific and technological capacity is the main basis for efficient implementation of uniform requirements of the Rio conventions concerning biodiversity, desertification combating and climate change. For the enhancement of scientific and technological capacity in this area it is necessary first of all to improve the management structure of scientific and research works, their planning and coordination in the area of nature conservation. To decrease the anthropogenic pressure on environment the scientific and technological capacity in power engineering, oil and gas and chemical industries, agriculture and other industries should be aimed at enhancing the environmentally safe production based on advanced technologies, construction of new modern enterprises and reconstruction of the existing enterprises. Therefore, during the development and realization of national programs the priority trends should include the development and introduction of energy saving technologies, use of renewable energy sources and wide introduction, use of technologies for recycling of industrial, domestic and agricultural wastes and effluents. Solution of the urgent problems of biodiversity conservation and sustainable management, particularly of ecosystems of mountains and plain deserts, requires capacity building for the development of scientific and research work in the area of biodiversity conservation and desertification combating, notably for extension of research programs for forestry development, wetlands and natural pastures rehabilitation and their protection against degradation, and also of taxonomic researches of various biodiversity components.

Given the results of analysis of information on the scientific and technological capacity, it is proposed to include the following directions and measures to the Strategy of Capacity Building.

Strategic Focus 3.1. Scientific and technological capacity development

- improvement of planning, coordination and financing of state scientific environmental programs;
- further development of research work on biological diversity, particularly, on biological taxonomy, floristics and faunistics, and improvement of teaching of these disciplines in higher education school;
 - enhancement of research work in forestry to ensure sustainable forest resource management;
 - further research work in respect of climate change;
 - enhancement of studying of cultural heritage of Turkmenistan

Strategic Focus 3.2. **Energy - conservation technologies**

- development and introduction of advanced energy-conservation technologies;
- RES-based energy supply to remote human settlements.

Strategic Focus 3.3. **Recycling of wastes and effluents**

- establishment of new and improvement of existing technological base for recycling of industrial, agricultural and domestic wastes and effluents.

Strategic Focus 3.4. **Strengthening of material and technical base**

- improvement of equipping of SRI, higher schools, surveying and environmental structures;
- improvement of equipping of weather watch stations of Meteorological Service of Turkmenistan.

Goal 4. Sustainable management of natural resources

Strategic Focus 4.1. **Management of natural pastures**

Natural pastures of Turkmenistan from the ancient times serve to be the fodder base for the animal husbandry. It should be emphasized that during the centuries-old pasture exploitation their major part has been significantly degraded - by the time of gaining the state independence the natural resources inherited by the country turned out to be inadequate. In connection with further development of animal husbandry it is necessary to develop and implement a complex of measures to prevent negative anthropogenic impact on desert pastures, to increase their productivity and to restore them; to conserve land-fodder and water resources. The most important condition for realization of such possibility is ensuring of sustainable management of pasture exploitation aimed at elimination of unsystematic cattle grazing through wide use of scientifically grounded methods of pasture-turnover management. The latter is possible only with organization of well-arranged regular comprehensive geo-botanical survey of pastures necessary for certification of water sources, getting data on degraded pastures; for development of scientifically grounded practical recommendations on afforestation of degraded pastures. When applying these and other recommendations aimed at superficial and fundamental improvement of pasture, it is necessary to secure conservation of their biological and landscape diversity. For organization of pasture management, along with technologies for their restoration the natural capabilities of pastures to self-restoration should be used (i.e. combination of different methods – sowing of grass, planting of forests – with the practice of sparing exploitation, seasonal grazing and transition to a cattle-pen system of pastures, etc.).

In this connection, it is recommended:

- to establish in all the velayats the subdivisions responsible for implementation of applied work aimed at increasing the pasture productivity;
- to introduce efficient technologies for restoration of natural pastures and their sustainable management.

Strategic Focus 4.2. Prevention of land resources degradation

Efficient land management and protection, and consistent restoration of soil fertility in many respects depend on knowledge of the processes of irrigated lands degradation. However, the latter problem, solution of which in conditions of Central Asia is always urgent, remains insufficiently studied. There is a need in improvement of methodology of soil condition assessment and of studying of natural-anthropogenic character of the event under consideration; in updating of information (soil survey, geographical, cartographic information, etc.) characterizing the dynamics of the process. The database on irrigated lands degradation within the last decades was not updated. Currently, out of 2 million hectares of irrigated lands more than a half is saline and excessively damped because of the irrational water use. Crop rotation allowing to efficiently use soil fertility, prevent the land from erosion and successfully combat weeds, pests and diseases is applied insufficiently.

In this connection, it is recommended:

- to improve the agricultural system in consideration of local peculiarities of the region: further improvement of plant-growing technology – aggregate of methods of cropping, differential application of organic and mineral fertilizers;
- to introduce modern schemes of crop rotation, advanced water-saving technologies of irrigation and soil amelioration;
- to reconstruct and develop collector-drainage network, to differentially conduct flushing irrigations on ameliorated or saline lands;
- to extend the network of agrochemical laboratories in all the velayats for the purposes of monitoring.

Strategic Focus 4.3. Biodiversity conservation

While considering the measures taken for this purpose, it would be appropriate to emphasize that one of strategic objectives realized by the world community in connection with the problem of environmental crises of biosphere is the conservation of biological diversity at various levels of biosphere differentiation; at the same time it is widely recognized that the problems of biological diversity conservation do not mean the protection of rare taxons only. The strategy of biodiversity conservation should be focused on retaining of species systems (aggregates) in their spatial distribution – from ecosystem types (types, biomes) up to certain biogeocenoses and their mutually bound, linked, territorial combinations at the local level. Therefore, the maintenance of main environmental processes and ecosystems, on which the existence of the mankind depends, is one of the urgent tasks of the “Global Nature Conservation Strategy” (published in 1980) approved at the XIV General Assembly of IUCN and Convention on Biological Diversity. The common principles of biodiversity conservation were applied in development of national environmental strategies in Turkmenistan, as well as in the analysis of the collected information and assessment of the national capacity building needs for implementation of global environmental conventions performed within this project. The situational analysis and the thematic review in the area of biodiversity confirmed the reduction of species numbers and their habitats, due to anthropogenic impact on functioning conditions of the organic world, biodiversity (land degradation, its intensive development for agricultural crops, wrong farming and irrigation; fires, felling, overgrazing; uncontrolled picking up of fruit, medicinal herbs, mushrooms, plant bulbs; contamination; poaching, etc.) as well as due to natural impact (climate change, the Caspian Sea level fluctuations, etc.). The growing threat for all components of biodiversity stems from spreading of invasive alien species. This problem is becoming to be the global one. Therefore, the problem of biodiversity loss caused by invasive exotic species is now the priority of CBD, as well as of Ramsar, Bern and Bonn Conventions.

The Cartagena Protocol on biological safety adopted in 2000 within the CBD sets forward the goal of biodiversity protection from potential risks related to the existing GMO being the product of state-of-the-art biotechnologies. Therefore, the country should take measures aimed at prevention of the possibility of GMO impact on biodiversity.

Taking into consideration the stated facts and actions proposed by other strategic focuses being of mutually intensive effect it would be expedient to include the following measures into the Strategy:

- development and introduction of program on detecting and monitoring of invasive alien species;
- development of a national forest program;
- growing of rare species of trees and shrubs.

Goal 5. Increase of environmental education quality

The comprehensive and multi-stage process of increase of environmental education level needs improvement, while the specified goal should be achieved through development and implementation of programs of continuous environmental education beginning from preschool institutions. The main environmental education is provided in higher education school. Further improvement of knowledge and specialization take place in respective subdivisions of line ministries and departments. To create proper conditions for professional training at higher school and professional advancement of the staff of environment management and monitoring, expertise and audit, etc., it would be expedient to establish specialized training centers of the economic branches. This work could be done under the support of Ministry of Nature Protection of Turkmenistan.

Strategic Focus 5.1. Advanced training of environmental specialists

- increase of efficiency of advanced training of environmental specialists, including in the area of environment management and its monitoring, environmental expertise, audit, as well as forest improvement, ecotourism and information supply.

Strategic Focus 5.2. Basis for environmental education

- development and perfection of curricula on environment management and sustainable use of environment components;
- development of environmental curricula for preschool institutions, schools and higher education schools.

Goal 6. Public awareness and involvement of community into environmental activities

The joint work to inform and attract the community to environmental activities should be aimed at improving the awareness and knowledge of all groups of the civil society concerning the issues of the Rio conventions, and at enhancing the participation of the communities in environmental measures. To this end, it is necessary to efficiently use the abilities of mass media for increase of the level of environmental education, legal knowledge and popularization of modern achievements in the area of environment protection and biodiversity sustainability provision. Establishment in SPNT, on their basis, of training centers on rational using of natural resources and on ecotourism could promote the participation of the population in environmental measures by demonstrating and explaining that the destruction of nature is not only immoral, it is economically unprofitable. Knowledge of economic aspects of interrelation of nature and community, solution of environmental problems in consideration of these aspects and with wide participation of the population would promote the creation of new job places, the increase of people's well-being, their participation in environmental activities and, which is more important, would create possibility of attracting additional investment for implementation of measures on restoration of monuments of nature and culture.

This goal stipulates measures on two strategic focuses.

Strategic Focus 6.1. **Public awareness**

- extending of possibility of using mass media to inform on the Rio conventions implementation;
- increase of the environmental education level of the population.

Strategic Focus 6.2. **Involvement of community into environmental activities**

- establishment of training centers on natural resources management and ecotourism on the basis of SPNT to promote participation of the local population in environmental measures implementation;
- development of institutes of public environmental expertise and public environmental monitoring;
- involvement of the local population in providing the services in ecotourism and solution of environmental problems and its resources management;
- expanding of participation of the community in implementation of measures aimed at solution of problems for conservation and restoration of monuments of nature and culture.

4. MONITORING OF THE NATIONAL CAPACITY BUILDING STRATEGY IMPLEMENTATION

Implementation of the Strategy is in many respects determined by the efficiency of its monitoring. Main objectives of this monitoring include:

- regular control of implementation of the scheduled measures;
- taking of measures at due time for solution of problems when objective impediments occur;
- inserting of corrections to the Strategy to increase the efficiency of the scheduled actions implementation;
- updating of the schedule;
- timely coordination of the actions of implementing structures;
- collection and analysis of the current information;
- receiving and distribution of information on the Rio conventions problems;
- preparing of recommendations on current financing;
- providing of regular reporting in the course of Strategy implementation and analysis of results of its implementation;
- further perfection of the Strategy.

Efficiency of aims and objectives achieving depends in many respects on the status and real opportunities of the structure empowered to conduct monitoring. In accordance with the Strategy, it is planned to establish within the structure of the State Commission Guaranteeing Implementation of Turkmenistan's Commitments Arising from UN Environmental Conventions a uniform informational system and electronic database for supply of information on UN global conventions implementation. The structure responsible for the management of this system and database should have the qualified staff and modern equipment to fulfill monitoring and provide information on the Strategy implementation.

CONCLUSION

This document, the idea of which is reflected in its name “Turkmenistan: Capacity Building Strategy to Implement the UN Global Environmental Conventions”, “crowns” the project of Ministry of Nature Protection “Turkmenistan: National Capacity Building Needs Self-Assessment” (NCSA) lasted from October 2004 throughout June 2007. Within this period, there was carried out, in accordance with GEF methodology (see Section 2), the UNDP/GEF-financed assessment of needs of Turkmenistan in the national capacity building (NCBNA) for implementation of measures on global environment protection and sustainable management – implementation of commitments of our country arising from Convention on Biodiversity, Framework Convention on Climate Change and Convention to Combat Desertification. According to the results of this assessment, there were prepared documents determining the priority problems, the factors restraining the growth of national capacity and those promoting this growth, as well as specifying the possibilities of capacity building in each of three thematic areas (biological diversity, climate change and desertification / soil degradation) and for all three areas as a whole.

The above mentioned methodology stipulated the performance of NCBNA at several stages. At the first stage of the project development, based on the work already done in the country and analysis of all collected information, there was performed the assessment of constraints in areas of biological diversity, climate change and desertification / soil degradation. Definite steps of the stepwise assessment in these areas, including development of detailed thematic reviews and conduction of “situational analysis”, revealed the priority problems and the factors restraining the capacity growth. Then, these factors were analyzed and redistributed, grouped by categories or levels, such as individual, institutional and systemic constraints of the national capacity building [22 and section 2 of this document]. Further, the knowledge of the level of any of capacities allowed to determine the type of the capacity to be built and indicate it in the contents of particular recommendations, measures of the developed Strategy (see Appendix 1). Experience of the NCSA project development in Turkmenistan showed that the development of thematic reviews, being an important instrument for identification of the existing difficulties and opportunities in capacity building and particularly, consolidation of efforts of the majority of key participants (ministries and departments, organizations, including non-government organizations, and enterprises) of the NCBNA process, can ensure the strategic dialogue between them and lay the foundation for further actions aimed at development of a uniform capacity building strategy for global environment protection and sustainable management at the national level.

Capacity assessment in the mentioned thematic areas made up the foundation for search of possibilities to remove the capacity growth constraints in each of these areas and ultimately to develop particular recommendations and measures aimed at the solution of this task (removal of constraints). These recommendations to the edition, or to be more exact, their development and scientific substantiation, and preparing of other materials related to the assessment, determination of situation in each of the thematic areas, constituted the main contents of the second stage of the project. Thematic reviews including the briefly formulated recommendations and the whole material of the assessment of national capacity building needs for implementation of UN environmental conventions, multilateral global agreements, have been published just recently in a form of three books in Turkmen, English and Russian languages [22].

The third stage of the project implementation covered the development of this final edition, as it has already been mentioned in the beginning of this Conclusion. The goal of the third stage was to develop the national capacity building and sustainable maintenance strategy / action plan for each of the three thematic areas and for all three areas as a whole, based on the results received at the first two stages. It should be underscored that irrespective of the degree of this strategy perfection, just due to the synergic, holistic approach implying the consolidation of efforts of concerned parties for the solution of problems of all elements of global environment this document can fully, with the exception of NEAP of the country, be singled out from the other national environmental strategies developed so far and directed on solution of problems of only one or predominantly one element of environment: biodiversity (BSAP), air (FCCC strategies), lands (NAPCD), etc.

Conditionality of this approach using, and namely, determining of possibilities of synergism (joint efforts) for the capacity building in three thematic areas allowing to solve larger problems of global environment protection and sustainable management stems from the availability of common commitments in three Rio de Janeiro conventions, their similarity, interrelation and mutually intensive effect. Such linkage of thematic areas, its understanding provides wide opportunities in determination of common and synergic possibilities for capacity building. Synergic approach to the solution of this problem would reduce material costs, exclude duplication of reporting and as a whole favor the efficiency of the work related to implementation of the conventions [22, 18]. As a consequence, at the third stage of the NCSA project implementation it was considered to be important to use an integrated, holistic approach to the assessment of national capacity building needs for implementation of country's commitments arising from the global conventions. To this end, the "cross assessment" was carried out at the systemic, institutional and individual levels, i.e. the assessment of the national capacity building needs common for all thematic areas (biological diversity, climate change and desertification / soil degradation). Based on conception of these three aspects, levels, there was evaluated the environmental policy of the country, the current national strategies, the prevailing legal base, socioeconomic and scientific and technological capacity of Turkmenistan. There was considered the situation in the institutional, administrative-organizational, structures of the country, the mechanisms of administration and coordination of environment protection and sustainable management, including the environmental expertise, as well as the issues of personnel training and ecological education, civil society participation in implementation of multilateral international agreements. Synergic / common opportunities for capacity building have been identified and common all-embracing recommendations have been suggested to raise the efficiency of implementation of Rio de Janeiro conventions in Turkmenistan.

The results of this general, cross analysis and thematic reviews included in common into this edition, the synergic approach applied in development of the document allowed to identify the factors that restrain the national capacity building of the country for implementation of these conventions and those factors that promote its growth, as well as to find the ways to remove the restraining factors - to develop the National Capacity Building Action Plan / Strategy for implementation of commitments of Turkmenistan arising from UN global environmental conventions (Appendix 1). The Strategy envisages responsible executors (ministries, departments and organizations) of particular measures, dates of their completion and financing sources, key performance indicators, as well as the mechanisms of implementation monitoring. The Strategy stipulates coordination of the actions of the concerned parties – ministries, departments and all groups of the civil society aimed at efficient implementation of the commitments arising from the Rio de Janeiro conventions. The Strategy was developed in consideration of national and natural-climatic conditions of Turkmenistan. It reflects the country's clear position for the progressive, sustainable development.

Development of this document was based on the experience gained by the country during implementation of three Rio de Janeiro conventions. From the outset of the NCSA project, the representatives of all parties concerned: key ministries, departments; organizations, including the government and commercial ones, and enterprises of the country made an important contribution to the NCBNA process and the Strategy development. The wide range of participants of this process provided a possibility of establishing the close connection of all strategic focuses with governmental programs, national environmental action plans (NEAP, BSAP, NAPCD, etc.).

Propriety of the most important provisions, measures suggested in the National Capacity Building Strategy is a good reason to believe in reality of its implementation that would improve the dialogue between key ministries and departments, all organizations, including non-government organizations, to increase efficiency of the work of State Commission on UN Environmental Conventions and Programs, achieve the inter-branch collaboration in solution of environmental problems and strengthen the general nature protective infrastructure of the country.

Solution of the identified environmental problems, removal of national capacity building constraints would pave the way for improvement of activity connected with implementation of global environmental conventions, for significant increase of environmental safety, promotion of sustainable development of the country and perfection of the health of our people.

Appendix 1. National Capacity Building Strategy to Implement Turkmenistan's Commitments Arising from the UN Global Environmental Conventions

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
Goal 1. Legal framework					
<i>Strategic Focus 1.1. National Environmental legal framework capacity building</i>					
1.1.1. Development of proposals to bring the national environmental laws and regulatory acts, including the laws "On Nature Conservation", "On Specially Protected Natural Territories", "On Protection and Rational Use of Flora", "On Air Protection", "On Protection and Rational Use of Fauna", "Forest Code" of 1991-1997, regarding the biological diversity, climate change and desertification / soil degradation into conformity with changes in the national legal system and with provisions of UN global environmental conventions	MNP	MEF, line ministries, NISSI	xxx	State Budget	Improvement of legal framework of the system of state regulation of environmental activity and natural resources using, over-all implementation of commitments arising from UN global environmental conventions - the reduction of negative impact on environment
1.1.2. Drafting of legal acts for the purpose of: <ul style="list-style-type: none"> • improvement of protection and ensuring of rational use of water and land resources, soil fertility, pastures and forests; • efficient use of energy resources; • providing of biological safety of genetically modified organisms; <ul style="list-style-type: none"> • protection of selectionists' rights, development of territories for recreational, health-improving and ecotourism purposes 	MNP, MA, MWM, MEI	line ministries and agencies	xxx	State Budget	Further development of legal framework capacity for nature conservation, increase of efficiency of measures on prevention of irrational use of water, soil-land resources, pastures, forests, energy resources. Establishment of national mechanisms of biological safety and stimulation of selectionists' activities Authorized ecotourism: increase . of recreational culture of the population, broadening of knowledge about the cultural heritage. Further development of the national environmental legislation in view of the implementation of Turkmenistan's commitments arising from international agreements and conventions

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
1.1.3. Approval of Standard Regulation "On National Parks of Turkmenistan"	MNP	line ministries	xx	State Budget, own funds	Development of national parks in Turkmenistan, new form of SPNT corresponding to international categories set by IUCN
<i>Strategic Focus 1.2 Environmental standards</i>					
1.2.1. Development of the State Environmental Standard "EIA in oil and gas industry"	MNP, SSS	MOG	xx	Own funds	Minimization of human-caused impact on environment
1.2.2. Development and introduction of uniform environmental standards for analytical control and monitoring of environment	SSS	MOG, MEI, MNP, JSC "Turkmen-dokun"	xx	State Budget, own funds	Improvement of the system of state-of-environment observation, immediate informing of decision-makers, reduction of impact on environment, improvement of the state-of-environment
1.2.3. Development of the national GHG inventory system	MNP, NISSI	SSS	xx	State Budget	Introduction of the system of GHG inventory, its improvement, perfection of GHG emissions accounting and reporting
1.2.4. Development of standards for planting stock (seedlings, nurslings)	JSC "Gyok Gushak", NIDFF, SSS	MNP, MA, JSC "Turkmen-mallary"	xx	Own funds	Approved standards for planting material – more strict requirements for its quality
1.2.5. Consideration of a possibility of development of national Register of pollutants emissions and transfer (RPET),	MNP	MA, line ministries	xx	State Budget, Own funds	Further improvement of Aarhus Convention implementation, improvement of reporting on the state of environment. Increase of social importance of information on state of environment
1.2.6. Consideration of a possibility of development and introduction of the all-embracing environmental permissions system in Turkmenistan	SC	MJ, MNP, MA, MOG, MEI, LA	xxx	State Budget, own funds	Significant benefit and economy of expenditures of the state and the industry, improvement of international cooperation
<i>Strategic Focus 1.3 Improvement of economic stimulation mechanisms</i>					
1.3.1. Development of legal documents for improvement of economic stimulation of environmental activity	MNP	MEF, line ministries	xx	State Budget	Legal documents contributing to the economic stimulation of environmental activity; introduction of their provisions into the activity

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
1.3.2. Development of ecotourism and development of tourist routes to the sites of monuments of nature and culture	SCTS	MCB, MNP, LA	xxx	Own funds	Authorized ecotourism for the purpose of improvement of cultural recreation of the population, knowledge broadening on natural and cultural monuments of the country
1.3.3. Development of Regulation on new SPNT categories	SCTS	MCB, MNP, LA	xx	Own funds	The Regulation on new SPNT categories developed in consideration of national and natural and climatic peculiarities of Turkmenistan, according to the IUCN classification
1.3.4. Development of a draft of legal act regulating the economic stimulation of land rational management and protection	MEF	MA, MWM, MNP	xx	State Budget	Increase of the interest of land users and leaseholders in rational land management and protection, in maintenance of land fertility to ensure high yield crops
1.3.5. Development and application of methods of economic stimulation of forestry activity	MEF	MA, JSC "Gyok Gushak", MNP	xx	State Budget	Significant benefit as a result of rational forest management and forest areas expanding – improvement of forests conservation and their anti-pest and anti-disease protection
1.3.6. Revision of norms of payment for forest using	MEF	MNP, MA, JSC "Turkmen-mallary", JSC "Gyok Gushak"	xx	State Budget	Revised norms of forest using payment aimed at ensuring the safety and rational management of forests
Goal 2. Cooperation, management, coordination and monitoring					
<i>Strategic Focus 2.1. International cooperation</i>					
2.1.1. Cooperation with countries of the Caspian Sea zone within the CEP Program in protocol development envisaged by Article 24 of the Framework Convention on the Caspian Sea Marine Environment	MNP	MFA, SC	xx	State Budget	Signing of protocols to the Framework Convention on the Caspian Sea Marine Environment: <ul style="list-style-type: none"> • Protocol on Protection of the Caspian Sea against pollution from surface sources and onshore activities ; • Protocol on Regional Cooperation in

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
					Control of Oil Spills in Emergency Situation; <ul style="list-style-type: none"> • Protocol on Transboundary Environmental Impact Assessment; • Protocol on Biodiversity Conservation
2.1.2. Consideration of a possibility of joining of Turkmenistan to the multilateral international environmental legal acts	MNP	MFA, SC	xx	State Budget	Proposals on possibility of 1) joining to the following international legal documents: Cartagena Protocol on Biological Safety to the Convention on Biodiversity; Convention on Wetlands (Ramsar Convention); Bonn Convention on Migratory Species of Wildlife (CMS); Kiev Protocol of 2003 to the Aarhus Convention; 2) ratifying of amendments (Copenhagen, Montreal and Beijing) to the Montreal Protocol on Ozone Depleting Substances
2.1.3. Promotion of international cooperation in the forestry development	JSC "Gyok Gushak"	MNP	xxx	State Budget, IG	Expanded possibility to use the international experience for the development of forestry work
<i>Strategic Focus 2.2. Improvement of cooperation at the national level</i>					
2.2.1. Development of programs for the inter-branch coordination in the area of environment protection	SC	MNP, line ministries, LA, NGO	xx	State Budget, own funds	Increase of efficiency in the inter-branch cooperation, providing of support to implement the Strategy by all concerned parties, including non-government environmental organizations; their active participation in the process of implementation
2.2.2. Strengthening of activity of the State Commission working groups	SC	MNP	xx	State Budget	Increase of efficiency of the State Commission work: minimizing of inter-branch isolation in solution of problems related to environment, Rio Conventions implementation; expansion of possible access to the national and global informational systems of the State Commission member-structures

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
2.2.3. Development of a network of expert associations and training of experts on international agreements	MNP	line ministries, HCST, PA	xx	State Budget, IG	Efficient cooperation of experts from all sectors of the civil society. Increase of the quality of environmental expertise conclusions concerning the examined objects, ensuring of environmental safety of the activity of these objects
<i>Strategic Focus 2.3. Improvement of coordination and management of the over-all Rio Conventions</i>					
2.3.1. Establishment of CBD and FCCC coordination centers and granting of appropriate status to the existing NAPCD center	MNP	MA, SCF, JSC "Gyok Gushak", NIDFF	xx	Own funds, IG	Coordination centers on biodiversity, climate change and desertification combating within the NIDFF structure for improvement of management and efficiency of implementation of the Rio Conventions commitments
2.3.2. Establishment of the national structure of clean development mechanism (CDM) within FCCC center	MNP	SC	x	IG	Introduction into the energy production of modern environmentally safe technologies, extension of a possibility to use renewable energy sources (RES) – reduction of environmental pressure of energy production and consumption
2.3.3. Establishment of scientific methodological center for forestry	MNP	SC, NIDFF JSC "Gyok Gushak", SFNPP	xx	Own funds, IG	Scientific methodological center for forestry in the structure of NIDFF responsible for the forest monitoring, forest management, forest reproduction and protection, implementation of projects and programs on rational forest management and coordination of these activities
2.3.4. Establishment of the national system of Turkmenistan's land resources monitoring on the basis of existing structures for the long-term planning and sustainable management	MA	MNP, MWM, MEF	xx	State Budget, own funds	National system of land monitoring in the structure of MA: immediate information for decision-makers on improvement of the state of soils; comprehensive information about soil resources necessary for the development of science-based plans for the long-term measures aimed at rational management of lands
2.3.5. Improvement of NAPCD to harmonize it with the international agreements, national environmental legislation and programs	NIDFF	MNP, MA	xx	State Budget, own funds	Increase of efficiency of measures to combat desertification

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
<i>Strategic Focus 2.4. Improvement of environment monitoring and control</i>					
2.4.1. Monitoring and assessment of implementation of the National Capacity Building Strategy on the commitments of Turkmenistan arising from UN global environmental conventions	SC	line ministries	Regularly	State Budget	Assessment of progress achieved in the course of implementation of the National Capacity Building Strategy, identification of causes of positive and negative deviations from the Strategy, defining of measures to change the situation
2.4.2. Increase of desertification monitoring efficiency	NIDFF	MNP	xx	Own funds	Immediate information necessary for development and introduction of efficient measures of desertification control
2.4.3. Organization of a division in the structure of the Institute "Turkmenastlama" to conduct inventory of pastures	MA, JSC "Turkmenmallyary", NIDFF	MNP, MEF	xx	Own funds	Inventory and cartography (mapping) of pastures, issuance of static, dynamic and forecasting maps of pastures (for industrial purpose)
2.4.4. Introduction of the regular inventory of pastures and updating of the database containing the all-in information about them	MA, JSC "Turkmenmallyary", NIDFF	MNP	xx	State Budget, own funds	Obtaining of objective immediate information about the state and productivity of arid pastures
2.4.5. Organization and conduction of control over soil salinization	MWM	MA	xx	Own funds	Regular (every 3-5 years) information about the state of land resources
2.4.6. Improvement of the monitoring system for the state of biodiversity in SPNT and regular updating of information about it	MNP	MA, MO, HCST, JSC "Gyok Gushak", SCF, NGO	xx	State Budget, own funds	Regular reporting on the state of biodiversity and identification of changes in it
2.4.7. Improvement of the mechanism of forest management, forestry activity	MNP	JSC "Gyok Gushak", MA, JSC "Turkmenmallyary"	xx	State Budget, own funds	Sustainable management of forests, improvement of recording of forests and forest cultivation
2.4.8. Increase of efficiency of environmental control in power engineering	MNP	MOG, MEI	xx	State Budget, own funds	Reduction of GHG emissions into the atmosphere and fuel consumption

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
2.4.9. Introduction of advanced software for meteorological data processing	HMC	MEF	xx	State Budget	High accuracy and reliability of meteorological data, reliable short-term and long-term forecasts
<i>Strategic Focus 2.5. Increase of information supply efficiency</i>					
2.5.1. Establishment in the State Commission structure of a uniform informational system for provision of information on international agreements implementation	MNP	HCST, line ministries, NISSI, MC	x	State Budget, own funds, IG	Uniform informational system with electronic database on all components of environment, information supply for the purposes of international agreements implementation and to all line ministries
2.5.2. Establishment of a stock of modern specialized computer programs for collection, processing, analysis and formation of database for processing of all types of information (including UN Program "Devinfo")	MNP, MC, NISSI	MNP, Research institute of MWM, LRS, MWM, MA	xxx	Own funds, IG	Increase of awareness of ministries and departments about the state of land and water resources, biodiversity, including forests, efficient solution of respective problems at the high-rank level
Goal 3. Scientific and technological capacity					
<i>Strategic Focus 3.1. Scientific and technological capacity development</i>					
3.1.1. Improvement of planning, coordination and financing of the state scientific environmental programs	HCST, ME, MNP	MEF, line ministries	Xx	State Budget, own funds	Strengthening of material and technical base of SRI and higher education schools. Increase of effectiveness of scientific researches, introduction of advanced environmentally safe technologies
3.1.2. Further development of research work on climate change	MNP, HMC	HCST, NIDFF	Xx	Own funds, IG	Purposeful studying of climate change – forecasting of consequences of anthropogenic impact on climate and other elements of environment
3.1.3. Enhancement of the program for studying of monuments of nature and culture of Turkmenistan	MNP, MCB	HCST, SCTS	Xx	State Budget	Database of monuments of nature and culture of Turkmenistan; complete information about their state; certification of these monuments

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
3.1.4. Enhancement of research work in forest management to ensure sustainable forest resources management	MNP	NIDFF SFNPP	Xx	State Budget, own funds, IG	Increase of research work efficiency in issues of forest ecosystems, forest biodiversity, their flag species, their state and perspective use
3.1.5. Further development of research work in the area of biological diversity, and particularly in biological systematization, floristics and faunistics, and improvement of teaching of these disciplines in higher schools	HCST	MNP, ME, MA, NIDFF	xx	State Budget, own funds	Accumulation and transfer of knowledge in the area of floristics and faunistics constituting the scientific foundation for conservation of all components of biodiversity; collection of information about localization and state of genetic resources; reliable forecasts and summaries on the state of biodiversity. Providing of this information to decision-makers
<i>Strategic Focus 3.2. Scientific and technological capacity development energy-saving technology</i>					
3.2.1. Development and introduction of modern energy-saving technologies	MEI	MNP, line ministries	xx	Own funds	Increase of production efficiency, energy resources saving, reduction of hazardous substances emissions into environment
3.2.2. Development of RES-based energy supply to remote sites	MEI, JSC Turkmen-mallary"	HCST, MNP	xx	State Budget, own funds, IG	Autonomous energy supply to pasture livestock-breeding and other objects, development of a network of watering points, decrease of negative anthropogenic impact on natural pastures
<i>Strategic Focus 3.3. Recycling of solid wastes and effluents</i>					
3.3.1. Establishment of new and improvement of the existing technological base for recycling of industrial, agricultural and domestic solid wastes and effluents	Line ministries, LA	MNP	xx	own funds, IG	Efficient recycling of industrial, agricultural and domestic solid wastes and waste water; improvement of the state-of-environment
<i>Strategic Focus 3.4. Strengthening of material and technical base</i>					
3.4.1. Improvement of material and technical base of SRI, higher education schools, research and surveying structures and environmental structures	ME, MEF	HCST, line ministries	xx	State Budget, own funds, IG	Increase of studies quality, development of science-based recommendations on environmental safety of production, on nature conservation and its resources management

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
3.4.2. Improvement of meteorological stations equipping of the Meteorological Committee of Turkmenistan	HMC	MEF	xx	State Budget, IG	Increase in accuracy and reliability of meteorological forecasts
Goal 4. Sustainable management of natural resources					
<i>Strategic Focus 4.1. Management of natural pastures</i>					
4.1.1. Establishment in all the velayats of subdivisions responsible for conduction of applied works aimed at increasing the pasture productivity	MA, JSC "Turkmen-mallary"	MNP	xxx	Own funds	Establishment of longstanding all-the-year-round highly productive pastures, increase of their areas; prevention of overgrazing; rational use and improvement of natural pastures
4.1.2. Introduction of efficient technologies for reconstruction and sustainable use of natural pastures	MA, JSC "Turkmen-mallary", NIDFF	MNP	xxx	Own funds	Improvement of pastures, transformation of seasonal pastures into all-the-year-round ones; development of pasture protecting belts; scientific, selection-screening of new highly productive fodder plants
<i>Strategic Focus 4.2. Prevention of land resources degradation</i>					
4.2.1. Improvement of the system of agriculture with regard to local peculiarities of the region: further improvement of crop production technologies - aggregation of methods of agricultural crops cultivation	MA	MWM	xx	Own funds	Increase of agricultural crops productivity as a result of introduction of a new system of agriculture –improvement of agricultural technology. Ensuring of soil and land resources rational management
4.2.2. Introduction of advanced schemes of crop rotation and water-saving technologies for irrigation, as well as land amelioration technologies	MA	MWM	xx	Own funds	Reduction of anthropogenic pressure on agricultural lands and prevention of water and wind erosion
4.2.3. Reconstruction and development of collector-drainage network, differentiated flushing irrigation on lands under amelioration	MWM	MA	xxx	State Budget, own funds	Reduction of areas of salinization and waterlogging of agricultural lands, increase of agricultural crops yield
4.2.4. Expanding of the network of agrochemical laboratories in all the velayats for the purpose of land condition monitoring	MA	MWM	xx	Own funds	Objective, efficient assessment of ameliorative state of irrigated lands

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
<i>Strategic Focus 4.3. Biodiversity conservation</i>					
4.3.1. Development and introduction of work program for determining and monitoring of invasive alien species	SC, MNP, HCST	CAC, MA, MHMI, SCS, SCF, JSC "Gyok Gushak", NGO	xx	State Budget, own funds	Prevention of biodiversity loss and exclusion of adverse consequences of invasive alien species immigration causing threat to biodiversity
4.3.2. Development of the national forest program	JSC "Gyok Gushak"	MNP, MA	xx	State Budget, own funds	Conservation and sustainable use of forest component of biological diversity
4.3.3. Growing of planting stock of rare trees and shrubs species	MNP	JSC "Gyok Gushak"	xxx	State Budget, own funds	Wide use of planting stock of rare trees and shrubs species for maintaining of their number in biological diversity
Goal 5. Increase of environmental education level					
<i>Strategic Focus 5.1. Preparing of environmental specialists</i>					
5.1.1. Increase of the level of professional training of environmental specialists	MNP, ME	Line ministries, MEF, SCTS	xx	State Budget, own funds	Training of specialists of high qualification in environment management and monitoring, environmental expertise, environmental economy, audit, and forest amelioration, ecotourism and information supply
<i>Strategic Focus 5.2. Basis for environmental education</i>					
5.2.1. Development of educational programs in environment management, nature components conservation and sustainable use	ME	MNP	xx	State Budget	Improvement of educational programs of higher educational institutions concerning the environment management, nature components conservation and sustainable use
5.2.2. Development of environmental educational programs for preschool institutions, schools and higher schools	ME	MNP	xx	State Budget	Improvement of programs of continuous environmental education, training and bringing up

Measures	Responsible Executor	Co-executor	Date of completion	Financing Source	Key Performance Indicator
Goal 6. Public awareness and involvement in environmental activities					
<i>Strategic Focus 6.1. Public awareness</i>					
6.1.1. Attraction of mass media for highlighting of UN environmental conventions implementation	MM	MNP	xx	Own funds	High level of awareness of all groups of the civil society in UN environmental conventions
6.1.2. Increase of the level of environmental education of the population	NGO	MNP	xxx	Own funds	High level of awareness in environmental legislation, participation of people in environmental activities. Formation of environmental awareness on benefits of natural resources rational management
<i>Strategic Focus 6.2. Public involvement in environmental activities</i>					
6.2.1. Establishment of training centers for natural resources management and ecotourism on the basis of SPNT to attract local communities to participation in the environmental measures implementation	MNP	LA, NGO	xxx	Own funds	Participation of the population in environmental measures implementation and increase of environmental education level
6.2.2. Development of institutes of public environmental expertise and public environmental monitoring	NGO	MNP	xxx	Own funds	Increase of public activity in solution of environmental problems
6.2.3. Attracting of the local population to providing ecotourism services, solution of nature conservation problems and rational management of its resources	SCTS	MNP, LA	xxx	Own funds	New job places for the local population, improvement of their well-being, increase of sustainability of biological and landscape diversity
6.2.4. Participation of the civil society in the conservation and restoration of monuments of nature and culture	MCB	MNP, SCTS, NGO, CO, LA	xxx	Own funds, IG	Improvement of protection of monuments of nature and culture and their conservation

Appendix 2. **Ministries, Departments and Organizations Participating in Strategy Implementation**

Ministry of Agriculture of Turkmenistan
Ministry of Education of Turkmenistan
Ministry of Economy and Finance of Turkmenistan
Ministry of Energy and Industry of Turkmenistan
Ministry of Health and Medical Industry of Turkmenistan
Ministry of Justice of Turkmenistan
Ministry of Nature Protection of Turkmenistan
Ministry of Oil and Gas Industry and Mineral Resources of Turkmenistan
Ministry of Water Management of Turkmenistan
National Institute of State Statistics and Information of Turkmenistan - "Turkmenmillikhasabat"
Hydrometeorology Committee under the Cabinet of Ministers
of Turkmenistan (Turkmengidromet)
State Committee for Fishery of Turkmenistan
State Committee for Tourism and Sport of Turkmenistan
Close Joint-Stock Company "Turkmendokun" (Fertilizers)
Association of Joint-Stock Companies "Turkmenmallary" (Animal husbandry)
Production Association "Turkmenorimeidanlarysuvlandyrysh" (Pasture Irrigation)
Joint-Stock Company "Gyok Gushak" ("Green Belt")
Khyakimliks of velayats, etraps, cities
Non-government organizations

Glossary

Biological Diversity – variability of living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and ecological complexes, which they are part of; this includes diversity within species, between species and diversity of ecosystems [CBD].

Biological Resources – genetic resources, organisms or parts thereof, populations or any other biotic components of ecosystems with actual or potential use or value for the humanity [CBD].

Capacity building (enhancement, growth, development) – actions (plans, programs, measures) on enhancing the capability of citizens, institutions (organizations) and systems (political, economic, legal and control mechanisms) to make decisions and function in an efficient, expedient and sustainable manner [NCBNA Manual / GEF. Washington. 2001]. Capacity can mean both action and inaction depending on a desirable result. Often C.b. implies redistribution of old capacities or release of unused ones rather than creation of new capacity.

Cross analysis (in the NCSA Project) – the national capacity building needs assessment method common for all thematic areas – biodiversity, climate change and desertification / soil degradation.

Ecosystem – ecological system, a dynamic complex of environment, animal and microorganisms communities and their interacting as a functional unit [CBD].

Environmental Policy – the nature conservation policy, the policy of environment protection (see Policy) [5].

Environmental Problem (in NEAP) – adverse state-of-environment quality [5].

Environmental Priorities – see Priority.

Etrap – district, an administrative-territorial unit within the velayat.

Fauna – a pool of animal species inhabiting a certain territory.

Flora – a pool of plant species growing on a certain territory.

Genetic Material – any material of plant, animal, microbial or other origin containing functional units of heredity [CBD].

Genetic Resources – genetic material being of actual or potential value [CBD].

Global Problem - natural, natural-anthropogenic or purely anthropogenic (economic, social, etc.) occurrence affecting the world as a whole [5].

Initiative (in the NCSA Project) – measures / kind of activity (project, action plan, program) for capacity building within three international conventions of Rio de Janeiro – CBD, FCCC and CCD – and other global conventions and agreements (Cartagena Protocol on Biological Safety within CBD, Stockholm Convention on Persistent Organic Pollutants, etc.).

Integration – introduction of environmental aspects (principles, approaches, considerations) to such spheres as economic development, agriculture, transport, power engineering [5].

Khalk Maslakhaty/People's Council – permanently acting supreme representative body of people's power.

Khyakimlik – an administration body of the administrative-territorial unit (city, etrap, velayat) in Turkmenistan.

Mejlis/Parliament – state legislative body of the country.

Monitoring - 1) designed measuring, recording of environmental indicators and their observation; 2) control of the state of environment and notification on emerging (possible) critical situations hazardous or dangerous for human health and other organisms [5].

Policy – systematic complex of measures and decisions made by an organization (government, ministry, company) to achieve a certain goal.

Population – a group of individuals of the same species inhabiting the particular territory [5].

Priority – relative significance, something of great importance. In applied ecology, nature conservation and nature management P. means priority environmental problems and priority measures taken for solution [5].

Project – the measure, with the help of which the ideas and goals of the policy are turned into reality; method of problem solution. P. can be considered as “solution for a problem”.

Program – plan of activities, works.

Restraining Factors (in the NCSA Project) – everything that impedes the efficient solution of problems in thematic areas of biodiversity, climate change and desertification / soil degradation.

Species – the main taxonomic unit comprising similar organisms able to cross with each other. Names of species are usually marked out with italics [5].

Strategy – a set of interdependent decisions taken by political administration or group of statesmen in respect of the choice of goals and means for their achieving in a certain situation, when these decisions should be implemented within the powers of these statesmen (definition of Jenkins, 1978). S. means to guide or influence the activities of people for achieving the especially desired results. Often, S. is a result of a growing accumulation of decisions made during the certain period of time.

Sustainable (inexhaustible) use – the use of components of biological diversity in a way and at a rate that do not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations [CBD].

Sustainable Development - (economic) development when the mankind satisfies its current needs without jeopardizing the ability of future generations to meet their own needs (definition of Brundland Commission). Economy should meet the needs and legal desires of people but its growth should be within the limits of environmental capacities of the planet [5].

Synergism – 1) cumulative effect of efforts, which exceeds the simple sum of results of these efforts, each exerted separately to the problem solution; 2) principle, the applying (approach) of which allows unite efforts for problems solution.

Thematic Areas (in the NCSA Project) – areas of the global environment protection related to fulfillment of requirements of three international conventions – on biological diversity, on climate change and to combat desertification / soil degradation [NCBNA Manual / GEF. Washington. 2001].

Velayat – province and administrative-territorial unit within the country.

Abbreviations and Acronyms

ADB	Asian Development Bank
BSAP	Biodiversity Strategy and Action Plan
CAC	Council of Agricultural Complex
CACILM	Central Asia Countries' Initiative for Land Management
CBD	Convention on Biological Diversity
CCD	Convention to Combat Desertification
CDM	Clean Development Mechanism
CIDA	Canadian International Development Agency
CMS	Bonn Convention on Migratory Species of Wildlife
CO	Commercial organizations
EECCA	12 countries of Eastern Europe, Caucasus and Central Asia, or Group 12
EIA	Environmental Impact Assessment
EU –TACIS	European Union's Technical Assistance to the Commonwealth of Independent Countries and Mongolia
FCCC	Framework Convention on Climate Change
GEF	Global Environmental Facility
GHG	Greenhouse Gases
GIS	Geographic Informational System
GM CCD	Global Mechanism of Convention to Combat Desertification
GMO	Genetically modified organisms
GTZ	German Society for Technical Cooperation
HCST	Higher Council for Science and Technology
HDI	Human development index
HMC	Hydrometeorology Committee under the Cabinet of Ministers of Turkmenistan
ICARDA	International Center for Agricultural Researches of Dry Areas
IFAD	International Fund for Agricultural Development
IG	International Grants
IUCN	International Union for Conservation of Nature Resources
JSC	Joint-Stock Company
LA	Local authorities
LRS	Land Resources Service of MA of Turkmenistan
MA	Ministry of Agriculture of Turkmenistan
MC	Ministry of Communication of Turkmenistan
MCB	Ministry of Culture and Broadcasting of Turkmenistan
ME	Ministry of Education of Turkmenistan
MEI	Ministry of Energy and Industry of Turkmenistan
MEF	Ministry of Economy and Finance of Turkmenistan
MFA	Ministry of Foreign Affairs of Turkmenistan
MHMI	Ministry of Health and Medical Industry of Turkmenistan
MM	Mass media
MNP	Ministry of Nature Protection of Turkmenistan
MOG	Ministry of Oil and Gas Industry and Mineral Resources of Turkmenistan
MPC	Maximum Permissible Concentrations
MPD	Maximum Permissible Discharges
MPE	Maximum Permissible Emissions
MS	Meteorological Service of Turkmenistan ("Turkmengidromet")
MWM	Ministry of Water Management of Turkmenistan
NAPCD	National Action Program to Combat Desertification

NATO	North Atlantic Treaty Organization
NCBNA	National Capacity Building Needs Assessment
NCSA	National Capacity Self-Assessment
NEAP	National Environmental Action Plan
NIDFF	National Institute of Deserts, Flora and Fauna of MNP
NISSI	National Institute of State Statistics and Information of Turkmenistan (“Turkmenmillikhasabat”)
NGO	Non-Government Organization
OECD	Organization for Economic Cooperation and Development
REPT	Register of Emissions and Pollutants Transfer – inventory list of pollution coming from industrial objects and other sources
RES	Renewable energy sources
SC	State Commission to Guarantee Implementation of Turkmenistan’s Commitments arising from UN Environmental Conventions and Programs
SCF	State Committee for Fishery of Turkmenistan
SCS	State Customs Service
SCTS	State Committee for Tourism and Sports of Turkmenistan (“Turkmenssyakhat”)
SDC	Swiss Development Cooperation Agency
SFNPP	Service for Forest Seed-Farming and Natural Parks Protection
SPA	Strategic Partnership Agreement for UNCCD Implementation in Central Asia
SPCEM	Scientific-Production Center for Environmental Monitoring
SPNT	Specially Protected Natural Territories
SRI	Scientific Research Institutes
SSS	State Service for Standards “Turkmenstandartlary”
TIKA	Turkish Agency for Cooperation and Development
UN	United Nations Organization
UN/EEC	UN/European Economic Commission
UN GEC	UN Global Environmental Conventions
UNDP	United Nations Development Program
UNEP	UN Environmental Program
UNESCO	UN Educational, Scientific and Cultural Organization

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