

Draft for Discussion Only

Central Asian Countries Initiative for Land Management

Republic of Uzbekistan
National Programming Framework

Prepared by
Republic of Uzbekistan UNCCD National Working Group

DRAFT

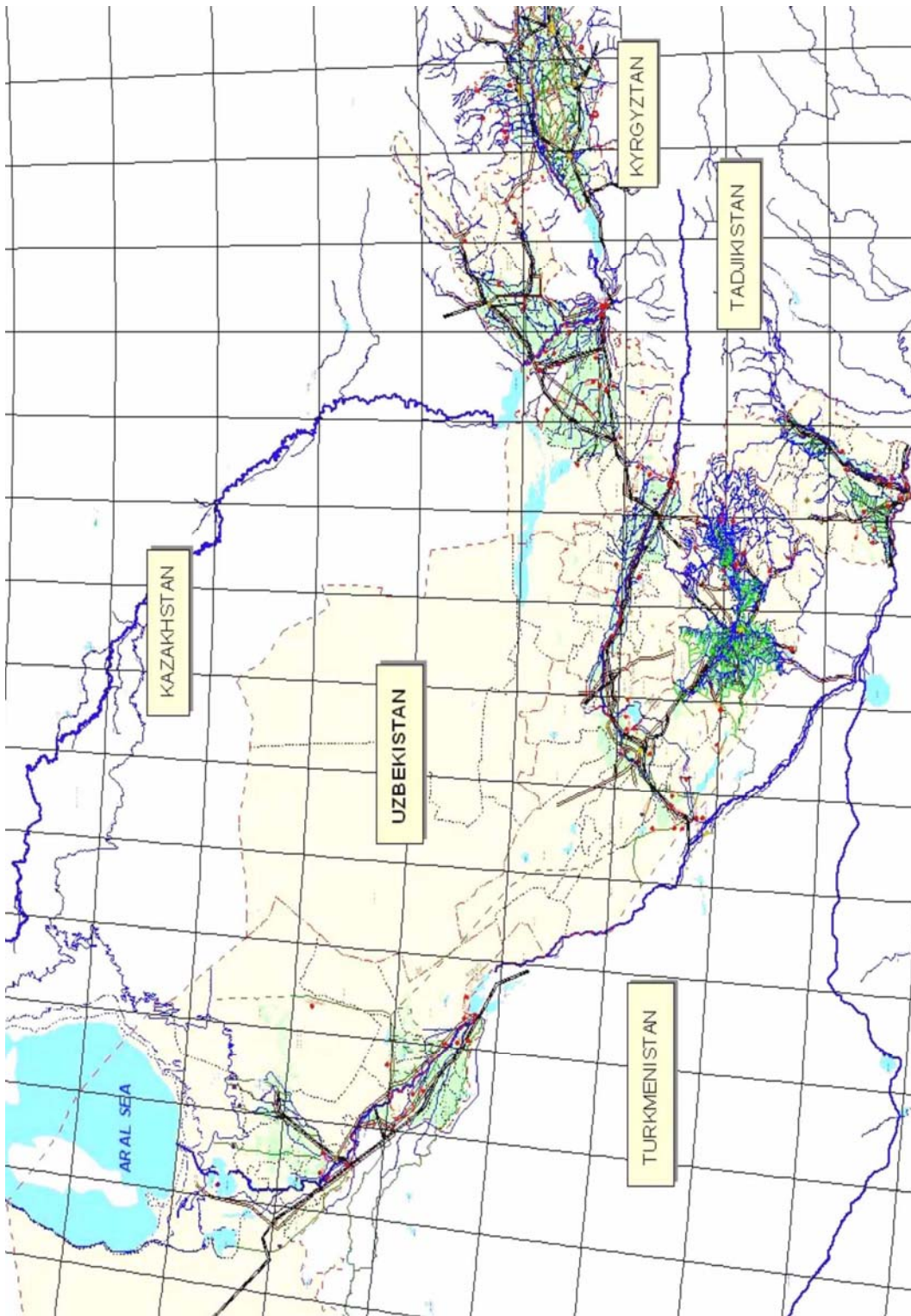
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ABBREVIATIONS

ADB	–	Asian Development Bank
BDIS	–	Basin Department of Irrigation Systems
CACILM	–	Central Asian Countries Initiative for Land Management
CACs	–	Central Asian Countries
CAREC	–	Central Asian Regional Environmental Center
CER	–	Center for Economic Research
CM	–	Cabinet of Ministers
CMPF	–	CACILM Multi-Country Partnership Framework
CIDA	–	Canadian International Development Agency
CEA	–	Country Environmental Analysis
CBD	–	Convention on Biological Diversity
CPP	–	Country Pilot Partnerships (GEF)
CDF	–	Country Development Framework
DFID	–	Department For International Development of the UK
FAO	–	Food and Agriculture Organization
FSU	–	Former Soviet Union
GDP	–	Gross Domestic Product
GEF	–	Global Environmental Facility
GIS	–	Geographic Information Systems
GM	–	Global Mechanism of UNCCD
GTZ	–	German Agency for Technical Cooperation
I&D	–	Irrigation & Drainage
IBD	–	Islamic Bank for Reconstruction and Development
ICARDA	–	International Center for Agricultural Research on Dry Areas
IFAD	–	International Fund for Agricultural Development
IMF	–	International Monetary Fund
IMS	–	Information Management System
JSA	–	Joint Staff Assessment by IMF/World Bank staff of PRSP
LIP	–	Land Improvement Project (ADB)
MAWR	–	Ministry of Agriculture and Water Resources
MEAs	–	Multilateral Environmental Agreements
M&E	–	Monitoring & Evaluation
MDGs	–	Millennium Development Goals
MEES	–	Ministry of Environment (Ecology) and Emergency Situations
MIS	–	Management Information System
MTS	–	Mashina/Tractor Station/Facility (Tractor Park)
NPF	–	National Program Framework
NAP/CCD	–	National Action Plan to implement the Convention to Combat Desertification
NPRS	–	National Poverty Reduction Strategy
NPSD	–	National Program for Sustainable Development
NCSA	–	National Capacity Self Assessment to Implement Global Ecological Conventions
NEAP	–	National Environmental Action Plan
NGO	–	Nongovernment Organization
Oblast	–	Administrative region
OP15	–	Operational Program on Sustainable Land Management of GEF
OSCE	–	Organization for Security and Cooperation in Europe

PDF	–	Project Development Facility
PRSP	–	Poverty Reduction Strategy Papers
Raion	–	Administrative district
RU	–	Republic of Uzbekistan
SDC	–	Swiss Development Cooperation
SFR	–	State Forestry Resources
SLM	–	Sustainable Land Management
SMEs	–	Small and Medium Enterprises
SPA	–	Strategic Partnership for UNCCD Implementation in CACs
SRAP-CD	–	Sub-regional Action Plan for CACs on Combating Desertification and Drought Technical
TACIS	–	Assistance for the Commonwealth of Independent States (EU)
UNCBD	–	UN Convention on Biodiversity
UNCED	–	UN Conference on Environment and Development
UNDP	–	United Nations Development Program
UNCCD	–	UN Convention to Combat Desertification
UNFCCC	–	UN Framework Convention on Climate Change
UNEP	–	United Nations Environment Programme
UNESCO	–	United Nations Educational, Scientific and Cultural Organization
VAT	–	Value Added Tax
WARMAP	–	Water Resource Management and Agricultural Production
WARMIS	–	Water Resource Management Information System
WUFMAS	–	Water Use and Farm Management
WB	–	World Bank
WEMP	–	GEF project on Water and Environment in the Aral Sea Basin
WG	–	Working Group (CACILM)
WISP	–	Welfare Improvement Strategy Paper
WSSD	–	World Summit on Sustainable Development
WMO	–	World Meteorological Organization
WHO	–	World Health Organization
WUA	–	Water Users Association

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EXECUTIVE SUMMARY

1. The Central Asian Countries Initiative for Land Management (CACILM) is a multi-country program designed to combat land degradation through the promotion of sustainable land management approaches (SLM) that will result in stabilized/improved ecological integrity and better rural living standards in the Central Asian countries (CACs). CACILM is a multi-country and multi-donor partnership, which was formed to facilitate the development of National Programming Frameworks (NPFs), which clearly outline priority areas for program interventions, and promote coordinated investments among donors and national governments to advance SLM in the region. The NPF has been designed and written by the Uzbekistan National Working Group, assisted by the CACILM partnership. The NPF is an all-inclusive program of projects and activities for SLM in Uzbekistan. It is anticipated that the CACILM partnership will assist the countries in providing partial financial support for the NPF, including GEF co-financing for the SLM Programs.
2. Since achieving independence and increasing interaction with international conventions as a member of the global community, Uzbekistan has gained a wealth of experience implementing environmental conservation and land management programs. The NPF builds on lessons learned and increased capacity over this timeframe. It addresses needs not adequately addressed in other programs, and it enhances coordination and mainstreaming, which have been identified as high needs for the success of SLM.
3. In all five CACs, multi-stakeholder Working Groups researched and developed the CACILM NPFs, and facilitated their endorsement by the relevant national governments. NPFs define and describe the problems of land degradation specific to each country (Parts I and II), they analyze the natural and human-made causes of land degradation in the unique historical and cultural contexts of each country (Part III), and they propose a comprehensive program to address underlying causes of land degradation through the introduction and promotion of SLM approaches (Part IV).
4. The NPFs include criteria and benchmarks for monitoring, which are necessary so that the concepts and interventions of sustainable land management can be put into practice. NPFs assign priorities for SLM which will be mainstreamed into sectoral plans and budgets; this will contribute to general priorities of national development.
5. The priority problems of land degradation and SLM identified in Uzbekistan (Part II) include: (i) strengthening capacity at local, regional and national levels; (ii) increasing the level of knowledge and awareness of the public; (iii) improvement of infrastructure and market mechanisms; (iv) integration of policies of sustainable land tenure into national and local strategies and systems of planning; (v) improvement of the system of land inventory, monitoring and evaluation; (vi) restoration of agroecosystems and the improved practice of the use of arable lands; (vii) forest preservation; (viii) pasturelands preservation and management; (ix) targeted research; (x) integrated resources management and improvement of water quality; and (xi) mitigation of consequences associated with the drying of the Aral Sea. These problems have impacts which are not limited to the national borders, but which affect ecosystems of neighboring countries and have global implications.
6. In addition to the described ecological impact of these problems, the NPF addresses socio-economic impacts of land degradation in Uzbekistan. The condition of the environment has a direct impact on the standard of living and health of the population, especially socially vulnerable segments of the population. Major impacts are: (i) a decrease in productivity of agricultural crops and a reduction of areas under crops as a result of salinization and land degradation; (ii) a decrease in efficiency of animal industries and fisheries in connection with the reduction of biodiversity caused by disruptions to the ecosystem; (iii) deterioration of the quality

of foodstuffs as a result of the pollution of water and soil; and (iv) increase in the level of disease of the population, especially among women of child-bearing age. The negative impacts of land degradation on rural populations increase their vulnerability and drive increasing pressures to further exploit land resources for short-term gain without providing adequate incentives for long-term sustainability.

7. Priority geographic areas include: highly degraded areas of the country concentrated along the Amudarya River (Bukhara, Navoi, Kashkadarya), the delta (Khorezm, Karakalpakstan), as well as the Syrdarya River basin (Syrdarya, Djizak and the Ferghana Valley); the densely populated Ferghana Valley; and the broad Aral Sea region.

8. Therefore, the NPF presents a strong rationale for addressing land degradation as a serious problem in the country which threatens key areas of densely populated rural people and key agricultural areas. It impacts living standards, health, and food security. It should be addressed not only for the ecological benefits (which will have global, as well as local, positive ecological impact); but also to improve livelihoods of the population of the country, particularly rural populations who are particularly vulnerable to degradation of the lands on which they rely for sustenance.

9. The overall goal of the NPF in Uzbekistan is to combat land degradation through the strengthening and mainstreaming of sustainable land management approaches (SLM) among all land management stakeholders. Attaining this goal will result in stabilized/improved ecological integrity and better rural living standards in Uzbekistan. This goal complements the shared goals of the other four Central Asian Countries (CACs) participating in CACILM.

10. Uzbekistan's vision for the end of the ten-year NPF includes the following: (a) strong institutional and human resource capacity among all land management stakeholders to actively engage and participate in coordinated approaches to improving sustainable land management; (b) a strong policy, regulatory, and economic incentive framework designed to facilitate and integrate sustainable land management practices in all sectors within the context of the country's sustainable development plan; (c) improved ecological viability of degraded ecosystems whether agricultural land, pasturelands, forests or critical areas such as the Aral Sea, with resultant local and global benefits; (d) improved economic productivity of land, managed with SLM approaches, and improved livelihoods of population groups directly dependant on the land, (agricultural land, pasturelands, forests, or the Aral Sea region); and (e) a robust and capable monitoring and evaluation system for SLM, including improved capacity to undertake targeted research for further SLM activities.

11. The National Program (Part IV) proposes a series of comprehensive capacity-building and investment projects to be implemented over the ten-year lifetime. The Program's overall goal and outcomes will be pursued through specific technical assistance and/or investment projects grouped into seven program areas, namely: (1) capacity building, including (a) strengthening the enabling environment and (b) integration into land-use planning and management; (2) sustainable agriculture, both in (a) rain-fed areas and (b) irrigated areas; (3) sustainable forest and woodland management; (4) sustainable pastureland management; (5) targeted research; (6) integrated resource management; and (7) mitigation of the negative consequences of the Aral Sea crisis. In addition, a program for national coordination and management will be required to oversee the implementation of CACILM.

12. Each of the seven program areas will consist of one or more specific technical assistance or on-the-ground investment projects. Each of these projects will develop its own Project Design and Monitoring Framework, and will be evaluated according to its own set of criteria and established indicators measured against a baseline. A set of Project Briefs has

already been prepared for the projects scheduled for implementation starting in Phase 1 (Inception) and can be found in Appendix 4.

I. INTRODUCTION

A. Rationale

13. The Republic of Uzbekistan is a double land-locked country, centrally located in the Eurasian continent. Almost 80% of the country's area is comprised of deserts and semi-deserts. Since it has a dry, continental climate (with precipitation mainly in the winter months), agricultural output is almost fully dependent on irrigation (some 95% of the land under cultivation is irrigated). The high dependency on irrigation (and the institutional insufficiencies that characterize the country's approach to managing water), combined with the natural tendencies towards desertification, combine to create some of the most severely degraded lands in the world. The Government of Uzbekistan recognizes land degradation as one of the main challenges to the global environment and the country's own sustainable development in the 21st century.¹

14. Of all the CACs Uzbekistan is perhaps the most vulnerable with respect to water resources and irrigated agriculture, since it possesses the highest share of irrigated areas, the most numerous rural population (more than 14 million) and the highest population density 49.6 person per km² (maximum 646 persons per km² in Andijan Oblast). Therefore issues of degraded agricultural lands take a high priority under CACILM. Agriculture depends on rational water resource use as more than 95% of agricultural output in Uzbekistan is produced on irrigated lands. In the country, about 20% of electric power consumed and 70% of the MAWR budget is spent for pumping irrigation. At the same time water demand is increasing but availability is not.

15. After the disintegration of the Soviet Union, Uzbekistan inherited a system of irrigation that included not only a powerful network of water reservoirs, dams, pumping stations, canals and other structures, but also a great number of ecological problems, all connected with the unsustainable management of natural resources. Approximately 80% of the sources of the Amudarya and Syrdarya Rivers, and also the local water sources supplying irrigation water, originate in neighboring countries, and this fact generates multiple conflicts of interests.

16. Agriculture is the key economic sector in Uzbekistan, making up about 33% of gross national product (GNP), accounting for 38% of employment, and about 40% of export income. Perhaps more importantly, 60% of the total population of 25.6 million live in rural areas. Agricultural land occupies 28.5 million hectares (or 63% of the total area). This includes 23.4 million hectares (or 52%) that can be considered poor or low-productive pastureland, and 4.2 million hectares of irrigated land. The republic is the sixth largest producer of cotton in the world, and cotton alone makes up approximately 25% of the income from export. However, there is a decreasing capacity for growing crops in the fields due to soil degradation and salinization, affecting approximately 50% of irrigated land in the Republic as a whole. This in turn affects the living standards of the population, most of all those societal groups that are most vulnerable.

¹ Land degradation is broadly defined by GEF in Operational Program 15,¹ as "... any form of deterioration of the natural potential of land that affects ecosystem integrity either in terms of reducing its sustainable ecological productivity or in terms of its native biological richness and maintenance of resilience." Land degradation is the result of natural and anthropogenic activities leading to intensive degradation of natural land potential as well as to the deterioration of the integrity and sustainability of natural ecosystems. This is most frequently observed in Uzbekistan in agricultural areas through yield reduction, increase in application of fertilizers and other inputs, as well as in the reduction of measures to mitigate drought and other potential natural disasters. In the natural environment this has frequently resulted in an increase in erosion and sediments downstream, the deterioration of drinking water, habitat and biodiversity loss. Land degradation, land erosion and excessive cultivation also result in atmospheric CO₂ accumulation and contribute to climate change.

17. In recognition of the critical importance of land resources to the nations ecosystems, economy, and well-being of the population, Uzbekistan has acceded to UNCCD and other conventions and instruments on combating land degradation described below.

B. Overview of the NAP and other relevant Environmental Action Plans

18. Since achieving independence, the Republic of Uzbekistan has shown a high level of achievement in the implementation of the obligations accepted under the global conventions, particularly in carrying out research and preparing necessary action plans. Among the most significant documents produced are the National Environmental Action Plan 1999-2005 (NEAP, 1998), the National Action Plan to Combat Desertification (NAP, 1999), the National Strategy and Action Plan to Preserve Biodiversity (1999), the Concept and Strategy for Sustainable Development (2000), the Review of Effectiveness of Ecological Activity (2001), and the Agenda for the 21st century (Agenda 21). Currently, the next phase of the National Environmental Action Plan (NEAP) for 1996-2010 is being developed.

19. Recognizing the necessity of strengthening of battle against processes of desertification, the permanent representative of Republic Uzbekistan to the United Nations on behalf of the Government of Uzbekistan signed the Convention to Combat Desertification (UNCCD) on December 7th, 1994. On August 31st, 1995 the Oliy Majlis of the Republic of Uzbekistan ratified the UNCCD. UzHydroMet is responsible for the coordination of activity in the field of the battle against desertification including interaction with international organizations on these issues, and preparation and implementation of action plans.

20. The aim of the UNCCD NAP is to ensure implementation of the integrated guidelines for land management processes, which are meant to prevent desertification and to mitigate its negative consequences. In accordance with Government Policy the NAP in the Republic of Uzbekistan was developed and approved by the Deputy Prime Minister in 1999 with the assistance of specialists of scientific institutions and the Republic's Ministries.

21. One of the key strengths of Uzbekistan's NAP is that it analyzes the processes of desertification in the country from a scientific viewpoint. It scrutinizes the nature of land degradation and the role of anthropogenic factors on the fragile ecosystems in the region. The dynamics of desertification in Uzbekistan, its causes and consequences are presented thoroughly and true to fact. However, the social and practical conditions of rural communities living in the areas subject to desertification are not thoroughly examined. The NAP does not pay sufficient attention to the involvement of local populations in decision-making processes, especially when the latter concerns the problems related to land degradation and desertification. There is also a lack of well-established connections between the NAP and the process of national planning and budgeting; this limits the possibility of developing and implementing investment projects and technical cooperation. Thus, the NAP can be considered as national report rather than a development program.

22. The implementation of national strategies, programs and action plans on environmental protection, biodiversity preservation, climate change, the battle against desertification, and also sectoral programs and projects of regional cooperation which have been implemented in the country since the late 1990s, provide a basis for the development of uniform approaches of environmental preservation and management. In 2000, a National report on combating desertification in the Republic Uzbekistan was completed in which activity on the performance of UNCCD was analyzed. However an annual evaluation and subsequent determination of future activities on UNCCD is necessary.

23. The problems of desertification and drought are transboundary problems. Consequently joint actions of the CACs are necessary for the development and implementation of projects to

combat desertification. With this purpose the Subregional Action Plan (SRAP, Havana, 2003) has been developed and accepted for the CACs. Priority areas of subregional cooperation are: monitoring and evaluation of processes of desertification; creation of an early warning system and mitigation of consequences of droughts, improvement of water use in agriculture; battle against erosion, salinization and water-logging; agro-forestry, management of forest resources and riparian zones; preservation of pastures; preserving biodiversity and wildlife management; development of ecotourism; and increasing the economic capacity of local communities.

24. The national strategy and action plan on the preservation of biodiversity was approved by presidential decree in 1998. Besides measures for the creation of a network of specially protected territories, the decree adjusts the balanced protection of wildlife and emphasizes the necessity of ecological education. The NEAP (1998) contains rules of law and general recommendations for sustainable development and the necessity of including nature protection into general reforms in political, economic and social areas.

25. The overall achievement of the principles of sustainable environmental management depends on the development of national capacity in this area. For the implementation of national activities on capacity-building and comprehensive integration of global environmental concerns in the strategy of nature protection and programs, GEF has initiated a national self-assessment of capacity-building needs (NCSA) for the effective implementation of programs geared towards meeting the objectives of the Rio conventions. This initiative has been completely supported by the Government of Uzbekistan. With the technical support of the UNDP, Uzbekistan has started the realization of the NCSA led by the Center on Hydrometeorology in the Cabinet of Ministers.

26. The National Program for CACILM described in Part IV of this document is based on the UNCCD National Action Plan as well as other environmental action plans described above. Lessons learned in the implementation of these plans have been incorporated into the design of the national program.

C. Central Asia Countries Initiative for Land Management

27. Realizing the necessity of establishing effective frameworks for cooperation on the UN Convention on Combating Desertification (UNCCD) in the CACs, the Global Mechanism (GM) of UNCCD laid the foundation for a Strategic Partnership within the framework of UNCCD in the Central Asian countries. In 2001 in Geneva, an agreement on strategic partnership among GM, ADB, and UNCCD was signed by the German Technical Cooperation Agency (GTZ) and Canadian International Development Agency (CIDA) to render assistance to Central Asian countries; in June 2003 the Swiss Agency for Development and Cooperation (SDC) and International Center of Agricultural Research in Dry Areas (ICARDA) joined. The aim of CACILM is to develop, first of all, coordinated, integrated and integral approach to aid Central Asian countries (CACs) in their accomplishment of the UNCCD and to facilitate the development of a comprehensive National Program for SLM.

28. In accordance with the CACs' request, ADB has guided the development of the CACILM partnership and the development of the National Programs. The NPF forms an umbrella framework for the countries to undertake activities aimed at SLM. These activities, will lay the foundation for sustainable management systems for agriculture, pastures, and forestry in the region; by carrying out political, legislative and institutional reforms along with investments in order to improve land resource management practices, which will be both economically and environmentally beneficial for the CACs. In addition to the obvious benefits to the CACs themselves, wider regional and global aims will be also attained under CACILM such as the following: 1) protection, conservation and restoration of the structure and functional integrity of eco-systems; 2) reduction of carbon dioxide emissions and increase of carbon absorption; 3)

stabilization of run-off forming zones, especially in order to prevent soils from erosion and water bodies from silting.

29. In mid-2003, the Sub-regional Forum on Partnership Development was held in Tashkent in order to assess opportunities to advance the process of development of UNCCD in the CACs. The main result of the Forum was creation of Tashkent platform for activities in order to accomplish UNCCD, which calls for the following: (i) mainstreaming issues of land degradation into planned national sustainable development programs and within frameworks of cooperation with donor organizations; (ii) assistance for inter-sectoral coordination aimed at well-balanced implementation of the initiatives within the framework of the land degradation issue; (iii) development of a strategy to raise resources, which makes use of the unique opportunity granted by GEF; (iv) agreement on the establishment of Working Groups (WGs) to develop partnerships in order to accomplish UNCCD goals in each of the Central Asian countries.

30. The Uzbekistan Working Group (WG) consists of key interested Ministries, departments, scientific research institutions, and donor organizations. The head of the WG is the National Coordinator of UNCCD in the Republic of Uzbekistan. WG activity is aimed at initiation and coordination of activities in the field desertification and combating land degradation. Since the initiation of CACILM, the WG has been taking an active part in all the programs and projects concerned, which have been aimed at NPF preparation. Other stakeholders have been welcomed into the process, with consultations held periodically to ensure broad awareness and inclusion. A list of members can be found in Appendix 3.

II. SITUATION ANALYSIS

A. Macroeconomic Situation

31. Since achieving independence in 1991 Uzbekistan has encountered economic difficulties similar to those of other CIS countries, such as, (i) the loss of markets and subsidies from the former Soviet Union, (ii) destruction of the system of trade and payments, (iii) hyperinflation and decrease in manufacturing marked by a sharp reduction of incomes and employment, (iv) growth of poverty, and (v) increasing social and economic pressures. The transition to a market economy in Uzbekistan has achieved only limited progress. State enterprises have been supported by a system of credits guaranteed by the state, and through multiple rates of exchange, using the resources received from the state system of purchases for cotton and grain, the low prices for energy suppliers, and the state monopoly on the extraction of gold. Real growth of GNP over the period 1996 to 2003 reached 2.5% per year. However the absence of movement in the direction of a market economy has led to essential losses of economic efficiency and a decrease in living standards.

32. One prominent feature of Uzbekistan is a high rate of population growth that continues to be one of the highest among the CIS countries. Annually in the Republic, approximately 650,000 children are born, driving the annual increase in population to 2.3%. Though the economy of Uzbekistan has experienced some recession, many parameters of human development have remained stable or even have improved. The labor force comprises almost 50% of the population and annually grows by more than 300,000. Life expectancy is growing, and maternal and infant death rates have decreased. However, the imperfect structure of industrial production and an insufficient level of economic development temper these achievements, resulting in a low level of monetary incomes for the population.

33. Agriculture provides more than 3.1 million people with employment, or 33.3% of total capable population of the country. In addition, about 3 million dehkan farms are engaged in agricultural production on small plots. In spite of the fact that employment in agriculture it is

expected to decrease by 15% in 2005-2010, this sector will be the main one which absorbs more than one-fourth of 300,000 young people entering Uzbekistan's labor market annually.

34. According to data provided in the LSS² about 70% of the poor live in rural areas. Here the level of poverty according to WB estimates is as high as 30.5% in comparison with 22.5% in cities. Rural families obtain the largest part of their income from farming. Low income from agricultural production and a tense situation on the labor market increase the vulnerability of the poor. Living standards are tightly connected with the potential of utilizing land resources. An important factor for family welfare is the possession of a cultivated plot of land. However access to such a plot cannot always prevent a family from falling into poverty. More than 60% of families receiving state allowances do possess land. However, productivity of the land is often insufficient for maintaining profitable agricultural activities, as the yields from plots are low due to land degradation and/or limited water supply.

35. The decrease in productivity of agricultural lands and the reduction of areas under cultivation due to salinization and land degradation (to which are subjected about 53% of the irrigated areas of the country), has a direct impact on the standard of living of the population. Many dehkan farmers are compelled to use degraded land, which aggravates the situation and increases their vulnerability. Almost a quarter of the population of the country (more than 6 million people) feels the negative influence of polluted water.

36. The majority of agricultural producers are confronted by a lack of material resources, especially agricultural machinery. There are problems connected with access to financial and other resources, and the absence of commodity facilities working on the market. The conditions of the state for issuing credit to farmers are strict, and access is limited. A particular problem is the purchase of fertilizers. Farmers use a grade of fertilizer which does not demand large monetary investments or the precise application of agro-technology. The application of fertilizers which are not labor-intensive leads to a decrease in employment, and, as a consequence, to decrease in incomes of all types of land users.

37. All these factors create financial limitations on the ability of farmers to invest in the appropriate working of their land, application of appropriate agro-chemicals, and to maintain irrigation and drainage. As a result, farms with poor land quality and with inadequate access to irrigation water (in downstream areas) sustain significant losses of crop yields that lead to a decrease in incomes, and aggravate rural poverty. Without sustainable investments into reconstructing irrigation and drainage, and improvements in the management of land and water resources, the current level of poverty will likely worsen.

38. The poor condition of the land has a direct impact on the living standards of those who depend upon that land for their livelihoods. Maintenance and repair of farm infrastructures are expensive activities, requiring the attraction of skilled workers and special techniques. Under these conditions, poor families fall into a "poverty trap", where they lack the means to improve land quality, preventing them from having any meaningful income. Consequently, low income prevents them from investing in land reclamation activities.

39. The growth of poverty in rural areas brings additional pressure on the agricultural labor market, which is unable to ensure employment for youth entering the labor market each year. Female-headed households are particularly vulnerable. The majority of unemployed women in rural areas do not have professional skills and are capable of taking only low paid jobs. Due to

² In 2003-2004 with the support of the ADB, the GoU produced "Strategies for improving living standards among the population of Uzbekistan" (Living Standard Strategies, or LSS). In June 2005, with support of the WB, the GoU prepared "Strategies for improving the population's well-being." which is the equivalent of a PRSP.

traditions and gender misbalance, which is especially strong in rural areas, women have less access to decision making on land and water use issues.

B. Trends in Land Degradation

40. Land degradation is common everywhere in the country, but the most affected areas are concentrated along the Amudarya River (Bukhara, Navoi, Kashkadarya), the delta (Khorezm, Karakalpakstan), as well as the Syrdarya River basin (Syrdarya, Djizak and the Ferghana Valley). The densely populated Ferghana Valley, with a poverty level at 28,6%³ (2000), suffers from water logging and flooding of croplands and villages, and has very poor water access. The most obvious degraded region of the country is the Aral Sea region.

• Unsustainable Agricultural Practices

41. Over-irrigation and water loss: Excessive discharge of irrigation water and infiltration in the foothill zone results in flooding and water logging downstream lands, and deterioration of the quality of surface and groundwater. Midstream and downstream, it results in excessive root zone humidification, development of anaerobic soil processes and leaching which involves aluminum, iron, manganese and other metals in circulation. At present the areas where the groundwater table is below two meters amounts to 30-32% of the total area of irrigated lands, and in some regions it ranges from 42-84% (Ferghana valley) to 92% (downstream Amudarya). The affected soil area increases with time.

Table 1: Water Use⁴

Process	Degree of Degradation
Water shortage	Water availability doesn't exceed 80%
Water losses	Water loss on a section between main canals system and fields is about 50-60% of all water to be delivered.
Water use efficiency	On average it is 0.37 ranging from 0.27 to 0.43
Water quality	Excess of permissible limits for drinking water supply: Classes II and III of river flow pollution. Growth of river mineralization from 0.8 to 1.5 at 2.4-3.0 g/l maximum in some months (downstream)

42. Soil erosion is the dominant problem of agro-ecosystems seriously impacting on soil functions. For each hectare of erosion carries away up to 80 tons of the most fertile top soil layer for the season. Over 50% of farmland suffers from wind erosion and about 800,000 hectares are subject to water erosion due to human activity (poor land leveling, poor irrigation practice, etc.) Irrigation erosion is widespread everywhere but most intensively it shows in Surkhandarya, Samarkand, Tashkent and Kashkadarya Oblast.

43. Compaction and crust forming soils damage the structure and texture of soil, restrict air and water regimes and considerably worsen productive soil capacity. More than 51% of irrigated lands of the country are characterized by moderate to high degrees of soil compaction and crust formation; water permeability of soils in Syr-Darya, Djizak and Kashkadarya steppes and other regions have decreased by 5-8 times.

44. Soil salinization is a naturally occurring process in drought-prone regions of the country, affecting a huge area in the midstream and downstream Amudarya and Syr-Darya basins. Secondary salinization takes place in conditions of high groundwater levels and poor drainage. Over-irrigation and high water loss from canals and irrigated fields produces a fast rise of the groundwater table and salt accumulation in the root zone. At present areas of secondary salinization are more than 2,279,000 hectares, i.e. 53% of irrigated lands of which 47% falls at

³ "Living Standards Assessment" (LSA) by the WB, and UNDP Survey "Links of macroeconomic policies and reduced poverty scale in Uzbekistan", 2003

⁴ Uzbekistan Drainage Project, Final Report, World Bank, 1999.

moderate and high salinization. Agricultural lands of Karakalpakstan, Khorezm and Syr-Darya Oblasts are subjected to the most intensive salt accumulation. Comparative analysis shows that the trend of soil salinization over a 10 year period has a stable nature: the area of saline lands has increased by 0.574 million hectares, more than 45% of which are soils of moderate and high degree of salinization.

45. Soil Fertility: in the RU, yields of cotton and wheat are low, and production net cost is high. For the last 12 years cotton productivity has regularly dropped. Though for last years productivity of wheat has increased from 2.3 tons up to 4.2 tons per hectare, however, it considerably below potential. Levels of productivity of other crops, including fruits, vegetables and potatoes, which are not restricted by state contracts, increase considerably.

46. Soil pollution: by agrochemicals represents a serious threat to ecosystems. Under current conditions soil pollution is slightly lower than it was before the 1990s due to: 1) statutory expansion of the wheat areas has reduced the cotton monoculture system and, hence, requirements in agricultural chemicals; and 2) their utilization is also restricted by a lack of funds for their purchase. At the same time, however, soil pollution is continuing: about 54% of surveyed soils are polluted with pesticides. Pesticides pollution occurs from waste water of various sources: pollution of field water flows; air pollution through pesticides spraying; and direct application of chemicals to control algae and other organisms in water.

Table 2: Soil Erosion⁵

Process	Degree of Degradation
<i>Soil erosion</i>	About 800,000 hectares are subject to irrigation erosion. More than 2,364,000 hectares of irrigated lands suffer from wind erosion. Due to erosion specific loss of humus layer amounts 80 t/hectares for season.
<i>Soil compaction</i>	More than 51% of total area suffer from soil compaction and structural failure
<i>Soil salinization</i>	Over 58% of land reserve suitable for irrigation is subjected to natural salinization. About 53% of sown areas suffer from secondary salinization of which more than 1.08 million hectares is classified by moderate and high degrees of salinization
<i>Reduction of organic substance and soil organisms</i>	More than 40% of total area is occupied by soils of the low fertility owing to decrease of organic substance by 30-40% and loss of soil micro flora.
<i>Soil pollution</i>	About 54% of surveyed soils are polluted with pesticides; more than 80% have the increased content of magnesium chlorate. Around industrial cities (Chirchik, Almalyk, Angren, etc.) heavy metals pollution occurs.
<i>Soil fertility</i>	The areas of moderate and low fertility are 45% and 27% accordingly. Only 27% of irrigated area is represented by soils of good quality and high cultivation which are located in regions with high population density

- **Overgrazing**

47. Unlimited grazing of cattle on desert lands causes destruction of the fragile soil humus layer and frequently annihilates vegetation completely, initiating processes of erosion and desertification. Especially hazardous water erosion impacts sloping lands where there is weakly developed plant cover and high irregularity of natural vegetation. Other special hazardous phenomena (landslides, mudslides, etc.), promote the formation of frequent mudslides and the deflation of soil cover. At present eroded soils of piedmonts and lowland cover approximately 8% of the total land area.

⁵ NEAP, 1999

48. Overgrazing results in excessive breaking-up of light sandy soil down to the formation of barkhan sand dunes, as well as the degradation of vegetation as a result of regular eating away and destruction of seedlings. Annual grazing in the same spring-and-summer season inevitably leads to degradation of plant cover. At present out of more than 16.4 million hectares of grazing lands, 73% are subject to degradation owing to cattle overgrazing, the impact of human factors and climate fluctuation.

49. Human-caused impacts (mining, etc.) contribute significantly to pasture grazing and destruction of low productive desert phytocenosis in the vast areas. Around settlements there is intensive vegetation cover destruction. Degraded pasture areas extend near settlements and around wells (35-40%). In a radius 2-3 to 5 km from wells the native desert vegetation undergoes strong changes as a result of overgrazing, and a radius of half a kilometer around it is overgrazed completely.

50. The greatest reduction in pastures efficiency is noted in Karakalpakstan (25%), Navoi (28%) and Bukhara (20%) Oblasts. In Kungrad, Ellikala, Beruni and Gijduvan districts it exceeds 30%. About 10 million hectares of pastures require radical improvement.

Table 3: Overgrazing⁶

Process	Degree of Degradation
<i>Overgrazing</i>	The areas of pastures subject to overgrazing and man-made damage are 7,356,000 hectares; on the average loss of forage capacity is estimated at 21%. As a whole about 10 million hectares pastures require land-reclamation.

- **Deforestation and Forest Degradation**

51. Limited forests and the increased extent of deforestation provide for high vulnerability with respect to forest resources. Forest resources are important for protection, erosion-prevention, and recreation functions, which are necessary to maintain biodiversity. Forests are a natural long term carbon sink. In Uzbekistan the technical potential of CO₂ flow estimates are 2.53 million per year; 0.58 million tonnes are created as result of forestation on State Forestry Land and 1.95 million tonnes in agricultural areas through potential CO₂ deposition by protective forest plantations.⁷

52. Forest protection and development of forest plantations on agricultural land and State Forestry area has high environmental, economic and global significance. The increase of forestry productivity and forest-growing will facilitate the reduction of greenhouse gas emission by means of CO₂ flow increase. Therefore arable irrigated land has the highest potential to increase flow and terms of CO₂ deposition as compared with forest ecosystems in the mountains, valleys and river plains and desert zone of the country.

53. The level of deforestation in foothill and mountain zones (Tashkent, Surkhandarya and Samarkand Oblast and Ferghana Valley) is determined by the degree of complexity and interaction of natural and human factors. Plowing of steep slopes and intensive grazing at high elevations and low protective cover by grassy vegetation entails intensive water erosion and loss of soil structure. Landslides and mudflows, and the formation of frequent mud streams aggravate erosion processes and result in washout and deflation of soil covering.

54. General forest uprooting to use lands for agriculture aggravates erosion processes and land degradation. For the last few years shrubby plantings have been cut down for agriculture in Bukhara, Ferghana and Kashkadarya Oblast and Karakalpakstan. Especially great losses

⁶ NEAP, 1999

⁷ NS FCCC, 2001.

occurred at a Bukhara shelter belt where shrubby plants have been cut down on the area of more than 150,000 hectares, which previously protected zones of economic activities from sand dunes and wind deposits. It has resulted in intensifying processes of wind erosion and drifting of sands that irreversibly damage these valuable ecosystems.

55. Riparian forests, from the point of view of absolute volume of loss, have suffered more than other types. The reduction of tugai forests threatens the disappearance of rare and endangered animal and birds species, which they depend on. At present areas of desert tugais retain in a form of small narrow strips and separate patches along desert river valleys. Their total area is over 1,660,000 hectares, and they serve as important corridors for wildlife.⁸

Table 4: Deforestation⁹

Process	Degree of Degradation
<i>Deforestation</i>	Only 5.3% of forest covered area is predominantly concentrated in a desert-sandy zone (84%). There is widespread of light forests (1.2 million hectares), burned-out forests, cutover patches, glades and lost plantings (0.98 million hectares) on forest uncovered lands and shortage of plantations in irrigated zone. The area of flood-plain and tugai forests of Central Asia was reduced 10 times because of vegetation uprooting and water flow management.

- **Aral Sea**

56. The drying of the Aral Sea and Amu Darya delta led to the most significant damage of ecosystems and is considered to be the largest human-made disaster in Uzbekistan. The present condition of these regions symbolizes the largest problem resulting from national practice of water use and agriculture in the country and the region. It is known, that the environmental disaster in the Aral Sea zone has considerably strengthened susceptibility of the local population to negative influences of the problems connected with the spheres of economy, public health services and social protection. At present the Amudarya delta area (about 700,000 hectares) does not function as an ordinary river-delta ecosystem. Clear salinization processes accompany changes in soil profile and land cover. There is a simplification of delta vegetation cover structure by overgrowing of extensive areas by helophytes. As a result of the flow reduction into the delta and Aral Sea, more than 50 freshwater lakes have dried out; tugai forest area has been reduced by half, the marsh area has decreased by 6 times.

58. The exposure of the Aral Sea bed and the reduction of areas under vegetative cover resulted in considerable changes to local climate, which has become more arid and continental, and has affected degradation and biodiversity. Wind speeds have increased and desertification processes are extended. The current condition represents the largest problem resulting from national water use and agriculture practice in the country and region.

59. Aerosol transport of salts and dust from the dried bed of Aral Sea is the main socio-economic and ecological threat in delta of Amudarya and Kyzylkum desert adjoining the sea. The surface of saline lakes and solonchaks is a source of salt carry-over. The integral wind erosion takes up a mix of sand and dust from the huge areas and carries it to the areas located over a distance of more than one hundred kilometers.

⁸ National Strategy and Action Plan on Biodiversity Conservation, 1998

⁹ NEAP, 1999

Table 5: Desertification of Coastal and Aquatic Ecosystems Connected with Aral Sea¹⁰

Parameter	Unit	Value
Total area subject to erosion	million ha	21
- on Uzbekistan area (Karakalpakstan)	million ha	4
- without vegetation	million ha	0.5
Annual sand and salt transport	million tonne	75
Usual precipitation in a form of sand and salt	kg/ha/year	520
Aral region area directly subject to deflation	km ²	42,000
Maximum distance of salt-sand-dust transport	km	1,000
Agricultural lands subject to erosion	million ha	2
Currently used irrigated areas subject to the erosion, and located directly in the Aral region in Karakalpakstan	million ha	0.5
- already high saline irrigated areas (unusable for normal crops any	one million ha	0.1
- unsaline areas	million ha	0.03
- low productivity areas to be used	million ha	0.37
Pastures subject to degradation	million ha	> 1

C. Stakeholder Analysis

60. For the purposes of CACILM and the NPF, stakeholders have been differentiated into two broad groups: (i) institutional stakeholders who participate in sustainable land management as part of their governmental responsibilities, and who have influence and/or decision-making authority over land management activities at local, sub-regional, and/or national levels; and (ii) and primary stakeholders who are directly or indirectly impacted by land degradation, and who may be the beneficiaries of (or will participate in other ways in) SLM program interventions.

61. It is also useful to break-down stakeholder groups into the levels at which they participate in land management: (i) at the national level, major stakeholders include government agencies, ministries and institutions, design and research institutes, and NGOs; at the regional and district level they include regional and district khokimiats, basin departments of irrigation systems established on the basis of the MAWR in 2003; regional branches of the MAWR and their local divisions, and organizations in charge of land improvement and water facilities; at the local level they include agricultural producers and their associations; citizens' self-governing bodies; NGOs, and populations whose income depends on agricultural production.

62. Other stakeholders (mostly, on local level) do not formally relate to government and conduct independent economic activity in the area of agricultural production or machinery and input supply for farmers. However, in the conditions of the state order system which covers over half of agricultural production, efficiency of these organizations directly depends on the government policy towards land and water use. These include, construction organizations, input suppliers, and agricultural procurement organizations.

• Institutional Stakeholders in land management

63. Ministry of Agriculture and Water (MAWR) is the government body in charge of agriculture and water management. Major functions of the MAWR in the area of land and water include the development of the water and land improvement strategy, coordination of water organizations' activities, protection and rational use of water resources taking into account specifics of economic development of Uzbekistan; ensuring operation of major and inter-farm canals, collectors, water reservoirs, hydrotechnical facilities, pump stations, wells, power

¹⁰ GTZ, 2004

transmission facilities, transformer sub-stations and other utilities which are on the MAWR balance sheet, keeping the water cadastre and state account of irrigated lands, certification of hydro-melioration network and facilities etc. MAWR is financed from state budget and revenues from activities of subordinate enterprises.

64. The MAWR has regional and district branches and structural divisions that ensure operation of large irrigation and drainage systems. The Regional Branch of the MAWR is a government body at the local level, which implements agrarian policy aiming at improved efficiency of agricultural production, irrigated soil fertility and rational land and water use. The RB is financed from the state budget and economic activities of subordinate divisions.

65. Basin Department of Irrigation Systems (BDIS) were established in accordance with the resolution of the Cabinet of Ministers of the RU in 2003 on the basis of the existing structure of water organizations on central and local levels. There are ten basin departments in the Republic. Major objectives of BDIS are: (i) organization of target and rational use of water resources; (ii) implementing common technical policy in water sector; (iii) organization of timely and uninterrupted water delivery to users; (iv) rational water resources management in the basin area; and (v) ensuring reliable accounting of water resource use.

66. State Committee for the Protection of Nature (Goskompriroda) ensures control of the fulfillment of legislation relating to environmental protection, develops and implements nature protection arrangements. The Labor, Employment and Social Security Departments are structural divisions of khokimiats and the Ministry of Labor and Social Security. They organize casual labor arrangements for unemployed, including renovation, restoration and purification of irrigation and drainage systems.

67. The State Committee for Land Resources, Geodesy, Cartography and State Cadastre performs the following functions: (i) organizes land evaluation; (ii) conducts systematic research on a variety of land cadastre information, publishes it and disseminates it to stakeholders; (iii) ensures operation of automated land information system; (iv) defines composition, volume and technical requirements for land cadastre information; (v) organizes the state land cadastre in districts and cities; and (vi) provides satellite images, plans and map information such as topographic data required for maintaining the land cadastre.

68. The Republican Water Inspection controls rational and effective use of water resources and observation of the schedule and volumes of water off take from ground and groundwater sources. The Republican Water Restoration and Operation Agency is responsible for purchasing special equipment and machinery for water facilities. The Republican Irrigation and Drainage Council is inter-institution and inter-regional government body which coordinates irrigation and drainage activities in the RU. Members of the Council are heads of large water enterprises, deputy khokims of regions in charge of water issues.

69. The Scientific and Information Center at Intergovernmental Coordination Water Commission (SIC ICWC) - based on the analysis of Central Asian water resources data develops proposals and recommendations for rational water distribution amongst countries in the region. The Scientific and Production Center SANIIRI develops scientific and practical recommendations for irrigation issues. The Center for Hydro-meteorology of the RU (Uzgidromet) monitors hydrology regime of rivers, lakes and water reservoirs, keeps water cadastre and monitors the state of agricultural crops.

- **Primary Stakeholders in land management**

70. Agricultural producers are users of agricultural lands working in shirkats, on private farms and/or on garden plots. There are three types of agricultural producers: (i) families employed in shirkats (agricultural cooperatives) and leasing land plots (average plot size is 5

hectares; (ii) dehkan growing agricultural produce at small house plots (0.1 hectare); (iii) farmers possessing large land plots which were allocated to them on the long term lease terms. The number of dehkan farmers currently exceeds 3.5 million, i.e. more than 14% of total country population. Large agricultural producers and farmers specialize in the cultivation of cotton and wheat. The main producers of vegetables and fruit (more than 80%) are dehkans. Absence of water, land degradation and droughts adversely affect vulnerable agricultural producers engaged in cultivation of vegetables and fruit. Other vulnerable groups are small farmers who cannot conduct profitable activities on land subject to degradation, because of the lack of financial means. One more population group especially dependent on land quality are agricultural producers, working in trailer sites of an irrigation network and/or removed from an irrigation network. The land on such sites demands a lot of water, in particular for flushing out salts, and lack of water leads to deterioration of soil fertility.

71. Republican Association of Dehkan and Private Farms incorporates dehkan and private farms, as well as small agricultural processing enterprises and advocates their interests in government and other organizations. Major objectives of the Association include: (i) systematic study of efficiency of land use by dehkan and private farms, submission of proposals to khokimiats for additional land allocation or withdrawal; (ii) assistance in providing seeds, fertilizers and other inputs for farmers, on the basis of contracts; (iii) supply of advisory and methodological assistance to dehkan and private farms and organization of training for members of dehkan and private farms on advanced agricultural technologies, rational and efficient land and water use. The Association has a Support Fund for Dehkan and Private Farms, functions of which include financing to programs relating to the introduction of new agricultural technologies.

72. Water Users' Associations (WUA) – associations of newly established private farms and other entities and individuals, which provide chargeable services for water distribution and operation of on-farm irrigation and drainage systems. WUA is a relatively new type of NGO in the area of land and water use. As of April 2005, 887 WUAs have been established in the Republic of Uzbekistan. WUAs provide services on the basis of contracts in the area of 2.8 million hectares. Actually, WUAs have functions which earlier were performed by shirkats (collective farms). Generally, WUAs are headed by representatives of former shirkat administrations. Farmers in 50% of cases do not participate in the election of newly established organizations. All decisions on the establishment and operation of new organizations, including the development and adoption of charters and regulations, list of members, financing volumes, the procedure for and amount of farmers' fees and payments, are made by administration based on the current government norms and decisions.

73. Cattle herders are inhabitants engaged in the cultivation of large horned livestock and sheep breeding. Cattle breeding in the republic is concentrated in a zone of intensive agriculture and partially in desert territories. Desert pastures make up 81% of all pasturable territories. To farmers the land is allocated for cattle breeding at the rate of for 1 animal of 0.3 hectares in moist areas and not less than 2 hectares in arid zones. The biological efficiency of pastures and their fodder capacity constantly decreases. This has caused a reduction of cattle (44%), destruction of vegetation for fuel (25%), infringement of a vegetative cover for the construction of roads, power lines, industrial complexes, mines (1%), reduction of water sources (15%), and encroachment by mobile sands (10%).

74. Women: Problems of women continue to grow in rural areas and they are directly connected with land degradation. The economic, social, ecological and organizational causes of land degradation lead to unemployment and population shift from rural areas, especially among men. The departure of the men creates an additional burden for women. Frequently women are compelled to run the garden plot while simultaneously caring for the household and large family.

The majority of rural families in Uzbekistan have many children. A lot of time for conducting housekeeping and care of children is required. Besides rural women answer also for processing of a garden site and care of pets. In the agricultural sector the woman are engaged basically in unskilled manual labor. Frequently they can find only seasonal work on weeding and gathering cotton.

75. Young families: One of the most vulnerable social groups in rural areas are the young families which have separated from their extended families. As a rule, such families receive land for the construction of houses, but it is located in the distant territories far from extended family members. Their personal plots are unirrigated. These families experience complexities concerning obtaining enough water even in periods when water is not scarce, and during the periods of water scarcity they are put in an even more complex position.

76. Makhallyas – citizens' self-governing bodies – councils of citizens of villages, kishlaks, auls and city neighborhoods. Citizens' council is the supreme self-governing body which has the right to advocate population's interests and make decisions on its behalf, acting in the corresponding territory. The council's authorities include organization and solution of all issues relating to the population's activities and land improvement in the corresponding territory, including issues of development of social infrastructure, supply of drinking water and natural gas, participation with government bodies and economic entities, in solving issues of land plot allocation for setting up dehqan and private farms and buildings; organization of khashars for land improvement, construction of social infrastructure facilities including those for purification of irrigation and drainage systems etc.

77. Environmental Non-government organizations – generally operate in the form of NGOs and public funds. NGOs ensure public control and monitoring of the environment state, organize environment protection arrangements and actions. There are 86 non-government ecologic organizations in the RU. The largest NGO is Republican Charity Fund "ECOSAN" which has branches throughout the country. NGOs are designed to be a linking chain between stakeholders at all levels and understand importance and necessity to improve the living standards of population. They focus on sustainable development, public awareness and involvement in SLM arrangements.

D. Policy, Legal, Regulatory, and Institutional Barriers and Constraints

78. Legislative framework: Since Uzbekistan's independence, the country has adopted more than 100 acts on the protection of natural resources and the environment. However the insufficient links between these pieces of legislation are a peculiarity of the current legislation that limits their coordinated effectiveness. Measures to prevent and mitigate land degradation are insufficiently integrated and legislatively fixed under the more limited term 'desertification' in the national strategy of development and other political documents. In addition, factors of ecological risk are not considered during the acceptance of economic decisions. The laws on the protection of land resources lack a sufficiently precise definition of the problem, and also lack clearly defined mechanisms for control and authority between operating and supervising bodies, including the activity of public organizations.

79. Another substantial drawback is lack of legal provisions for encouraging land protection. There are no mechanisms for the stimulation of both the legal responsibility and the involvement of all stakeholders in the protection of land resources. No decision was made on who shall be responsible for losses caused to land resources and cover the costs. There are no criteria established for fixing pollution penalties, which were set up on the level that reflects the financial capacity of enterprises polluting the environment and approximate costs of clean-up. Actual levies are low and do not cover expenses associated with maintaining land resources.

80. Though problems of land degradation and desertification control are addressed in legal acts, the legislation is poorly enforced. This results from the lack of adequate financial support for law enforcement, low political activity and lack of legal knowledge amongst citizens, and lack of capacity among local administrations.

81. Policy Framework: General government policy is aimed at the creation of a socially oriented market economy. This entails such government functions as formation of a legal basis for reforms, privatization of state property, agricultural reforms and establishment of a market infrastructure, ensuring reliable social guarantees for environment protection, implementation of which is possible only upon keeping the economy controlled. At the same time, political changes and economic problems resulting in inappropriate preventive measures in infrastructure and degradation of agricultural base, restrict these changes and reforms in management organizational structure. This leads to reduced yield, slow development, low export receipts and negative impact on the whole living standard of rural population.

82. Analysis of the policy framework for SLM concludes that the progress on the transition to market reforms in agriculture is beginning to have a positive impact on the mind-set of farmers. The reforms have demonstrated that the private farmer-proprietor and dehkan farmer comprehends his interest in treating land resources in such a way as to obtain the best economic result, which is an improvement over the central-administration controlled method of farm management.

83. At the same time it is necessary to note, that while the gradual pace of market reforms has allowed for the maintenance of stability in the country, it has led to a delay that is reflected in economic parameters in agriculture. In particular, for the last 10-12 years the productivity of cotton has decreased everywhere in all areas of the country by 20-30%. To restore the efficiency of farmland even up to the former level, would require ten times more than what has already been spent for inputs, construction and maintenance of the land.

84. The introduction of market economics cannot completely solve the problems of insufficient expenditures for environmental protection and support of viable agriculture. In order to solve these problems, the government must accept responsibility for the function of overseeing that the needs of all sectors of agriculture are met through its own budget as well as international sources of financing.

85. Institutional Framework: One of the main problems limiting sustainable rural development is weak coordination between sectors, and the absence of adequate mechanisms of cross-sectoral partnership and cooperation, especially between the state institutes and the public. Access to information and data exchange amongst agencies is conducted in compliance with the approved regulations and charters. However, coordination between sectors and general areas associated with land management and monitoring is poorly developed. There are no mechanisms of inter-sector partnership and cooperation, especially between government and public institutions. This considerably restrains data dissemination to all stakeholders and requires institutional improvements at all management stages.

86. State management in the area of land use, geodesy, cartography and state cadastre is based on legislative acts and resolutions, and ensures a structural and legal basis for commitments relating to the implementation of common government policy, land control and protection. However, fulfillment of statutory and contractual commitments by institutional entities is inadequate and does not meet the requirements of primary land users. The current management structure and technical capacity are not effectively used. It is necessary to evaluate the requirements and constraints of organizations in activities for land degradation control and land resources management.

E. Current Status of Monitoring and Research Programs

87. State monitoring of the natural environment is one of the main information systems necessary for effective land and water resources management. The coordination and implementation of state monitoring in the RU is defined by a Decree of the Cabinet of Ministers. In accordance with the Regulations on State Monitoring of the Natural Environment (SMNE), monitoring is provided by the organizations in the following table:

Table 6: Organizations Responsible for Environmental Monitoring

Organization	Area of responsibility
State nature control committee of the Republic of Uzbekistan (Goskompriroda)	Monitoring pollution sources and monitoring land ecosystems
Center on Hydro-Meteorology of the Republic of Uzbekistan (Uzhydromet)	Monitoring atmospheric pollution, pollution of surface water, soil and background monitoring; monitoring agricultural lands; hydro-meteorological and climatic monitoring.
Ministry of Agriculture and Water Resources (MAWR)	Monitoring quantity and quality of irrigation and collector-drainage water
State Committee on Land Resources, Geodesy, Mapping and State Cadastre	Monitoring of land pollution
State Committee of the Republic of Uzbekistan on Geology and Mineral Resources	Monitoring of groundwater pollution and dangerous geological processes
Ministry of Health	Sanitation and hygiene monitoring of the natural environment.

88. Coordination activities of the ministries, departments and administrative bodies involved in monitoring the natural environment is provided by Goskompriroda. Corresponding services, ministry and departments involved in environment monitoring have technical resources, observation station networks, and trained personnel. They regularly collect, synthesize, and summarize information about environment conditions and prepare annual reports and information booklets, which are submitted to State nature control committee for formulation of a regular national report on environment conditions.

89. It is important to note that at this stage, coordination between organizations conducting the monitoring is insufficient due to the absence of a unified information system of data collection, analysis, presentation, and distribution. There is not one central repository for information, such as a Republican-level information-analytical monitoring center. A lack of management tools, effective information systems and baselines of correct data complicates decision-making within government.

SLM Research

90. One of the policy priorities for Uzbekistan is to increase educational capacity on issues of sustainable land management. Special attention is being paid to the development of scientifically-practical research in the field of management of natural resources and preservation of the environment. The center on Science and Technology unites research of various organizations and institutes under the State Scientific and Technical Program "the Problem of Environmental Preservation, Sustainable Wildlife Management and Maintenance of Ecological Security" where about 50 institutes collaborate on more than 110 grants. The greatest volume of research is carried out by the Academy of Sciences of the Republic of Uzbekistan, Uzhydromet, and Minvodkhoz. For any given problem, a commission of experts advises and conducts scientific research efficiently, thereby avoiding duplication of efforts.

91. However, economic problems of the transition period and a consequent decrease in budgetary appropriations have led to the deterioration of the resource base for carrying out research and full-scale experiments. There is a shortage of financial resources for

modernization and/or replacement of obsolete and broken technical equipment, and for the maintenance of software products and technologies (such as GIS and Remote Sensing). There is also limited material support and insufficient internal resources of key organizations, which limit opportunities for adaptation of the newest approaches and methods of research. Weak capacities of the basic institutes/organizations complicate the improvement of systems of communications and intersectoral cooperation.

F. Current Land Management Practices – Strengths and Weaknesses

Table 7: Comparative Analysis of Existing Approaches with “Good Practice”

Existing Approach	Good Practice
Sustainable Agriculture	
Soil treatment system leads to fertility decline:	Soil treatment system promotes good soil fertility:
Tillage disturbs the vital functions of soil organisms, interferes with soil structure, increases unhealthy crust formation, and decreases moisture and air capacity.	Conservation agriculture with resource saving technologies preserves habitat and vital function of soil biota and improves soil structure.
Treatment of moist soil over a long period with heavy agricultural machinery compacts the soil and creates a “sole shoe.” As a result, 36% of arable land has soil density more than 1.5 g/cm ³ and about 60% of soils have a compacted profile. As a consequence, water permeability is decreased, and deep root growing and access to nutrients are limited.	Deep plowing for the elimination of over compacted sole shoe (once in 4-8 years) with consequent transition to methods of conservation agriculture. Tools of conservation agriculture support soil cover, biological methods of soil treatment, and direct sowing of cover crops have direct benefits for farmers.
Lack of crop rotation and prevalence of cotton and wheat monocultures; a minimum of legume crops. Organic crop residues removed and straw is burned, worsening the habitat for soil organisms, decreasing organic matter in the root zone, increasing the risk of spreading weeds and disease. As a result, 30% of fields have very low organic content in the topsoil.	Crop diversification and rotation, obligatory cultivation of legume crops, particularly perennial Lucerne, preservation of crop residues in the field, application of green manure creates a favourable habitat for live soil organisms, provides structure formation, enriches the root zone with organic matter, and creates conditions for the elimination of weeds, diseases and pests.
Low rates of organic fertilizer and reduction to 20-30% rate of mineral fertilizers, ignoring micro fertilizers, fertilizer application does not meet nutrient needs of the plants for optimal yields and does not provide for the preservation of fertility.	Reasonable mineral and organic fertilizer application rates, providing for optimal crop yields, appropriate methods for fertilizer application in accordance with crop requirements in different vegetation phases which leads to the preservation of soil fertility.
Low level of biological crop protection, ineffective use of some types of pesticides and herbicides. Low application rates of some chemicals due to their deficit and high cost, lead to crop losses, diseases and pests.	High level of biological crop protection, reasonable application of chemicals (pesticides, herbicides, toxins), cautious approach to reduce environmental pollution which decreases pests and diseases.
Poor field leveling (mostly done manually) leads to salinization in fields, does not provide uniform irrigated areas and reduces irrigation water efficiency.	Laser leveling, creating a ideal plane surface, provides uniform field moistening and high irrigation efficiency.

Existing Approach	Good Practice
Ineffective on-farm water management, water losses due to seepage, exceeding recommended irrigation rates, lack of water conservation technologies and irrigation methods, poor condition of I&D infrastructure particularly of the on-farm network, insufficient funding for I&D maintenance, weak monitoring services. Annual land abandonment of 20,000 hectares due to salinization.	Wide use of water conservation technologies and irrigation methods, strict observation of irrigation standards in accordance with crop requirements, qualitative monitoring of land conditions, I&D infrastructure efficiency, on-time repairs and cleaning of farm drainage network. Use of soil conservation methods in conjunction with good drainage systems provides a reduction of collector-drainage water.
Low level of knowledge and farmer experience (according to FAO TCP UZB 2901) creates difficulties in rational and effective land resource management.	Farmer field schools increase knowledge and experience of agricultural producers, bring up qualified farmers, capable of keeping own farm at high level.
Water resources management:	Water resources management:
A typical condition of existing water management practice is low use efficiency. High water losses between the main canal and fields of up to 50-60% ¹¹ . Efficiency of irrigation workers is very low: 0.3-0.5 ha/day with manual work 70-90% .	The best water use practice has been achieved through use of water conservation technologies and irrigation methods, the high qualification level of irrigators that gives reduction of water losses and drainage water volume from irrigation fields.
Poor technical conditions and irrigation and drainage service create soil salinization and water logging problems. Saline areas in the country have increased.	Service and maintenance of I & D systems results in minimal water losses in transport to field. Adequate drainage eliminates water logging and salinization.
Return water mismanagement from irrigation causes pollution of surface waters mainly in the downstream portion of the Amudarya and Syrdarya Rivers.	Improvement of return water management, and control of its reuse, working out specific measures for the elimination of discharge into rivers.
Insufficient management and lack of funding of measures for operation and maintenance of irrigation systems. This is a serious problem for providing sustainability of operation & maintenance.	Confirmation of activity of the technical service of I&D system as a priority for implementation by WUA members and administrative organs in specific locations and within MAWR structures.
Sustainable Forest and Woodlands Management	
Low pace of forest rehabilitation, slow replacement old vegetation with young, cutting of forest resources for fuel, uncontrolled cattle grazing, lack of funding for wide-scale forest restoration, creation of forest plantations and weak capacity of forestries. At the existing pace of desertification it will take 30-40 years to replenish.	Targeted financing for forest restoration, control and conservation, strengthening of institutional and regulating frameworks, the adoption of support and stimulation mechanisms in order to reduce the potential of losing CO ₂ sinks and to preserve the protective functions of forests and maintain healthy forest environments.
Sustainable Pasturelands Management	
Pasture mismanagement leads to pasture losses: cattle over-grazing-44%, cutting vegetation for fuel-25%, disturbance of vegetation due to infrastructure expansion-1%, reduction of water sources-15%, mobile sands encroachment-10%. Under the influence of these factors, the following consequences are observed: land surface exposure, and the degradation of territories around villages and wells.	Rational pasture use, based on increasing the productivity of fodder plants by the introduction of salt tolerant and highly productive species from other places, Multiple methods of seed farming and the application of rational technologies of pasture cycling and pasture-use criteria (seasonal) for the creation of sustainable fodder production and preservation of pasture resources.

¹¹ EC-Tacis WUFMAS, 1999

G. Lessons Learned – Current and Recently Completed Projects

92. Uzbekistan's participation in UNCCD and other conventions has provided broad opportunities for bilateral and multilateral experience-sharing through corresponding national, sub-regional and international institutions. Representatives of the RU actively participate in Conferences of the Convention Parties, international seminars and symposia on desertification and drought problems, cooperate with the Convention Secretariat, representative offices of UNDP, WB, ADB, UNESCO and other international organizations which provide support for combating desertification and promoting SLM.

93. With the support of international organizations, the following strategies and plans of actions have been developed which directly or indirectly relate to SLM and CACILM:

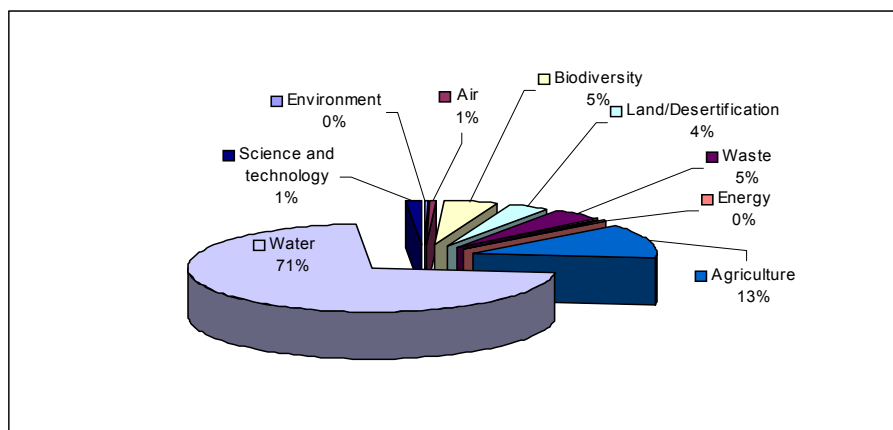
- (i) National Program for Desertification Control (1998, UNEP);
- (ii) National Report of the RU on the fulfillment of the UNCCD (2000);
- (iii) National Plan of Actions for Environment Protection (1998);
- (iv) National Strategy for Sustainable Development (1999, UNDP);
- (v) Uzbekistan – Country for Studying the Climate Change (1999, UNDP).

94. In compliance with the programs, action plans and strategies, a few projects are implemented which focus on specific regional and local plans. The most important are:

- (i) Aral Sea Basin Project (1 stage: 1997, 2 stage 2003-2010 GEF/WB);
- (ii) Strengthening of land protection institutes (1999, ADB and USA);
- (iii) Introduction of ecologically clean methods of production in Uzbekistan (1999, Japan, UNIDO, Czech Republic);
- (iv) Capacity building for ecological compatibility of enterprises (2001, Switzerland)

95. The inventory of projects of different donor agencies in the Republic of Uzbekistan is providing in Annex 1. Figure 1 illustrates the major directions of past and current donor-funded projects, and clearly shows the emphasis on water projects, and relatively small proportion of projects related to land degradation and desertification.

Figure 1: Major Directions of Donor-funded Projects in Uzbekistan



• Lessons learned

96. In recent years, the RU has made concerted efforts to combat land degradation. However, an integrated approach has been weakly developed. International experience strongly suggests a multi-dimensional approach for achieving long-term success in combating land degradation. Some donor-supported projects have adopted an integrated approach, but these

have not been adequately mainstreamed. The GoU has learned the following lessons that are relevant to future land degradation work under the NPF:

97. Institutional coordination and harmonization of plans. There is a compelling need for institutional coordination and harmonization at national, oblast and local levels for land degradation policies, legislation, programs, and budgets. Developing institutional capacity, including research capacity, to formulate and implement integrated approaches and to overcome constraints in the planning process are urgent priorities.

98. Consistent legislative and regulatory framework. In the short term, the Land Code need to be clarified with respect to statutory responsibilities, and the Forest Code and Water Code need to be enacted. Another priority is the enforcement of the new Law on WUAs. The WUA Law contains attractive provisions concerning incentives for water users in contributing to the restoration of degraded ecosystems and for public participation. In the medium term, formulating a single land tenure arrangement and land use rights for rural communities requires further reforms to promote a long-term perspective.

99. Consistent policies to address root causes. Policy consistency at the local, oblast and national levels will be promoted through greater emphasis in understanding, identifying and monitoring the root causes of land degradation and not just addressing its symptoms. Root causes are the underlying reasons why inappropriate types of land use and management are practiced. Root causes include the socio-economic circumstances of rural land users and the social, cultural, economic and policy environment in which they operate.

100. Sustainable land management approaches. Efforts to combat land degradation, notably in land use planning, have led to the development and application of standardized, sometimes inappropriate land management or technological treatments, irrespective of the geographic, ecological, social, or economic conditions of sites. Approaches that involve an integrated and participatory approach at the ecosystem level are likely to be more effective and sustainable in the long term than capital-intensive engineering solutions. Action that addresses land degradation needs to show linkages to major national initiatives and programs that enjoy strong governmental support.

101. Data quality. Information on key land degradation indicators is often of poor quality, incomplete, overlapping, conflicting, inaccurate or based on poor methodologies. Agencies involved in monitoring and reporting land degradation trends use different definitions of land degradation or focus only on certain aspects of the problem (e.g.. soil salinity). There is a need to adopt an effective coordinated approach using standard procedures to obtain information on trends in land degradation so that decision-making can be based on accurate, timely, and universally acceptable data.

H. Development Coordination Arrangements

102. Concrete strategic actions on the preservation of the environment and rational wildlife management for the short and long-term are stated in the National Action Plan on Environmental Preservation and National Sustainable Development Strategy of the RU. Financing is provided from: (i) state budget, (ii) payments for pollution and penalties (wildlife management operated through funds); (iii) international donor support. In recent years, the role of private business has increased in ecological policy.

103. The mechanism for funding through the state budget operates through Goskompriroda and its committees, the local budget, and other public organizations. Budgetary financing also includes expenses for monitoring of the environment and other charges different agencies. National and local funds to Goskompriroda, accountable to the RU are assigned as financial resources for wildlife management through the annual programs approved by Government of

the RU. Terms and the priority of assignment are based on the investment priorities accepted in the NAP and the State program of preservation of the environment and rational use of natural resources for 1999-2005.

104. The main source of incomes of these components of the state budget are payments for exceeding the permitted standards for environmental contamination, indemnification for the harm to the environment, penalties and sanctions for non-compliance, and payments for infringement of nature protection legislation. A quarter of these receipts go to the national budget, and 75% remain where they were originally collected. Charges for environmental preservation are financed by enterprises. Capital investments of enterprises in the sphere of environmental preservation comprise 62-84%, and the rest is financed from other sources.

105. The efficiency of government financial mechanisms for SLM activities is limited and does not provide any real stimulus for the reduction of environmental contamination and achievement of global benefits. The state uses extremely weak nature protection levers for financing nature protection activity. Difficulties are caused mainly by the significant reduction of the state grants and hard financial positions of enterprises that lead to insufficient financing of nature protection programs and a weak provision of economic incentives of wildlife management. Restoration and wildlife management of Uzbekistan demand more funds than are currently allocated.

106. The analysis of program documents (UNDP, 2001, ADB, 2005, NCSA, 2005, etc.) identifies the following priority measures for improving planning and coordination for SLM: (i) development of joint programs for vulnerable sectors (forestry, water facilities, pastures), for the possibility of collaboration on nature protection to achieve ecological and socio-economic benefits at all levels; (ii) improvement of mechanisms of intersectoral coordination and public relations, with the purpose of raising awareness and participation of local communities, NGOs and the private sector in the realization of joint programs on the adaptation of international best practices of land tenure; (iii) creation of additional sources for investment in nature protection on prevention of environmental contamination and degradation; and (iv) cooperation with GEF and other international donors on technical, institutional, ecological and socio-economic priorities SLM.

III. PROBLEM ANALYSIS

A. Root causes of land degradation – formulating the problem

107. Land degradation damages soil structure and leads to the loss of soil nutrients through processes such as water and wind erosion; waterlogging and salinization; and soil compaction. Recognized proximate causes of land degradation are inappropriate land use, mainly unsustainable agricultural practices; overgrazing; and deforestation. These practices are underpinned by socio-economic factors, such as lack of land tenure security and/or water rights leading to lack of incentives to invest in sustainable land management. Such factors tend to drive land users to focus on meeting short-term economic needs, to the detriment of the environment.

108. The Uzbekistan UNCCD Working Group recognizes the need to look beyond proximate causes of land degradation in order to prevent it from continuing. Developing a comprehensive program to promote SLM requires a deeper understanding of the underlying causes of land degradation in the country and the ways in which causal factors are embedded in the economic, cultural, and political context. A problem analysis was conducted on the basis of the recommendations and approaches of GEF that were presented at a regional CACILM seminar in Almaty, Kazakhstan, in June of 2005. This approach was used at a follow-up meeting in Tashkent, Uzbekistan, during a discussion of key land degradation problems at a seminar of the

UNCCD national Working Group with broad stakeholder participation. Part III of this NPF is based on the outcome of these intense discussions.

- **Identification of Fundamental Land Degradation Problems**

109. Agricultural lands comprise 22,614 thousand hectares, or over 50.2% of the total country area. In agriculture about 83% of agricultural areas are used under cattle breeding as pastures and hay fields. More than 17% of the area is classified as forest, and other areas are settlements (0.5%), hydraulic structures and irrigation and drainage network (1.8%), industry, transport and under nature protection, health-improving and recreational purposes (4.4%), and reserve lands (17.1%), into which surface waters including the rivers of Amudarya, Syrdarya, Aral Sea and other lakes flow. Lakes and other water structures cover 6,761 km or about 1.5% of the country area. The Aral Sea, despite its present-day small size, still covers an area about 16,500 km² or 3.7% of Uzbekistan's area.

110. Based on an analysis of existing program documents, reviews and projects, the priority problems associated with land degradation that cause serious concern from the point of view of nature protection and social and economic stability were identified. The problems are directly linked with the inappropriate use of natural resources and to a low level of enforcement of nature protection legislation. Climate change trends, drought and new ecological threats connected with social and economic instability, make a serious contribution to environmental degradation and rural poverty. The main priority problems include:

- **Unsustainable Agriculture:**

- (i) Degradation of agroecosystems and the related infringements of public health
- (ii) Loss of valuable arable land (due in large part to soil degradation) and threatened quality and quantity of agricultural production
- (iii) Degradation of water resources, leading to secondary salinization of the irrigated lands and to an increase in the mineralization of water that causes problems for irrigation water as well as drinking water sources

- **Unsustainable Pasturelands Management:**

Degraded pastureland leads to loss of fodder capacity and infringement of the natural potential of dryland pastures and mountain ecosystems

- **Unsustainable Forests/Woodlands Management:**

Deforestation and losses of species variety strengthens processes of desertification, and also reduces technical potential of CO² sinks that make a significant contribution to global climate change

- **Aral Sea Crisis:**

Desertification and the loss of biodiversity connected with the desiccation of the Aral Sea and consequent degradation of land and water, violating the integrity of the natural ecosystem, and viability of the coastal and water ecosystem

111. Socio-economic impacts of land degradation problems: The condition of the environment has a direct impact on the standard of living and health of the population, especially socially vulnerable groups. Major factors of such influence are:

- (i) Decrease in productivity of agricultural lands and a reduction of areas under crops as a result of salinization and land degradation;

- (ii) Decrease in efficiency of animal industries and fisheries in connection with the reduction of biodiversity caused by disruptions to the ecosystem;
- (iii) Deterioration of quality of foodstuffs as a result of pollution of water and soil
- (iv) Increase in the level of disease of the population, especially among women of child-bearing age

112. The influence of capacity on land degradation: One of the main constraints is insufficient capacity and weak coordination between sectors. Within the framework of the NCSA, priority problems, needs and measures for capacity-building for environmental protection have been identified. Key problems in strengthening potential at local, national and global levels, NCSA have been carried: (i) increase of efficiency of joint activity of the interested participants; (ii) expansion of awareness and involving of the public and strengthening of their contribution to preservation of the environment at local, national and global levels; (iii) maintenance of coordination of intersectoral activity and interaction of the interested participants; and increase of a level of knowledge, skills and perfection of the ecological formation corresponding purposes Rio of conventions.

113. Geographic priorities: The most highly degraded areas of the country are concentrated along the Amudarya River (Bukhara, Navoi, Kashkadarya), the delta (Khorezm, Karakalpakstan), as well as the Syrdarya River basin (Syrdarya, Djizak and the Ferghana Valley). The densely populated Ferghana Valley suffers from water logging and flooding of croplands and villages, and has very poor water access. The most severely degraded region of the country is the broad Aral Sea region.

- **Causes of Land Degradation in Uzbekistan**

114. As specified in Section II, natural ecosystems in arid zones of the country are historically subjected to natural salinization and are under threat of blowing sand, dust storms and the dry winds aggravated by the lack of water resources and their pollution. In the NAP (2001) an analysis of the complex interrelation of natural and anthropogenic factors of desertification and land degradation was presented, and the defining value of anthropogenic factors over natural factors was emphasized. The analysis has been further refined by the UNCCD Working Group during the NPF preparation process.

- **Unsustainable agricultural practices**

115. Given the critical role of irrigated agriculture to Uzbekistan's economy and the livelihoods of its people, issues of degraded agricultural lands take a high priority under the NPF. Agriculture depends on rational water resource use as more than 95% of agricultural output in Uzbekistan is produced on irrigated lands. In the country, about 20% of electric power consumed and 70% of the MAWR budget is spent for pumping irrigation. At the same time water demand is increasing but availability is not.

116. The exhaustion and degradation of land causes irreversible damage to the quality of the natural ecosystem and leads to greater losses of the productivity of agricultural lands, estimated in millions of tons of unrealized production. This loss can be expressed in economic terms as 571.5 million US dollars lost from the inability to fully utilize 400 thousand hectares of land.¹² The current trend of degradation and the decrease in the regenerative ability of the ecosystem most painfully harm rural populations engaged in agricultural activity: incomes of farmers decrease, and out-migration and the level of poverty grows.

¹² at a price of \$1500 USD per ton of cotton, 2004

117. According to recent estimates, approximately 144 million US dollars per year are lost to Uzbekistan as a direct result of the Aral crisis.¹³ Annual losses of agricultural productivity are estimated at 31 million US dollars, and economic costs from the loss of agricultural lands due to high salinity, are estimated at 12 million US dollars. Tentative estimates by GEF WEMP indicate general agricultural losses of 919 million US dollars per year, from which \$529 million is attributed to the Syr-Darya basin and \$390 million to the Amu Darya.

118. Specific land degradation problems associated with arable lands (described in detail in the Situation Analysis, Part II B) include soil erosion, soil pollution, compaction and crusts forming on the topsoil, soil salinization, declining soil fertility, and inefficient water use leading to waste and shortages. Degradation effects both rain-fed and irrigated agriculture.

119. Irrigated agriculture is concentrated in the flat parts of the country as well as the foothills, and that determines the character of soil formations, level of farming standard, its intensity and difference in the capacity of agricultural lands. More than 69% of irrigated lands are located in desert and semi desert belts on non-drained areas subject to natural (or ancient residual) salt accumulation and to secondary soil salinization. The total area of irrigated lands in the country amounts 4.3 million hectares (only 0.17 hectares per capita).

120. With the development of agricultural reforms, considerable changes have been observed in the structure of irrigated lands: reduction of irrigated plough-land and perennial plantings, and growth of private plots and forest belts. Over 77.5% of irrigated area is occupied by plough-land, perennial plantings and households amount 11.4 and 7.9% accordingly. Other areas (3.2%) are distributed approximately equally between trees, pastures and hayfields and fallow lands. In 2003, distribution of land under various crops was: cotton - 41%, grain 26%, fodder - 25%, vegetables and other crops - 8%. Before independence cotton was the main crop cultivated in Uzbekistan, and it occupied 40-60% of irrigated areas. Now cotton and small grains are the dominant crops, which occupy 30-38 and 40-50%, respectively. Other crops (grain, fodder, potato, vegetables and melons) are sown and scheduled by farms.

121. Return flow (secondary flow) irrigation water is the main pollutant of the rivers. Nevertheless, due to inefficient irrigation structures and strategies, 63% of drainage water is reused for irrigation. As a result of water mineralization and toxic material contamination pollution is increasing. Disposal of contaminated return flow into desert depressions impacts negatively on desert ecosystems and habitat: soil salinisation and pollution of wetlands, loss of biodiversity, reduction of efficiency of forages and forest resources. Existing capacities of desert depressions are limited and rather insufficient for long-term utilization. Filtration loss and groundwater from irrigated areas contributes to the appearance of a large number of drainage lakes. They create ecological threats and health hazards to population and natural ecosystems.

122. There are four main causes of problems connected with land and water resource degradation in agricultural areas in Uzbekistan. Large-scale development practiced in the days of the former USSR to develop irrigation in marginal lands has considerably damaged the ability natural ecosystem and available technologies to cope with its consequences. Centralized planning and the domination of the cotton monoculture also promoted the strengthening of secondary salinization, leading to the exhaustion and loss of soil fertility. The combination of these two factors has led to the water pollution, large-scale soil salinization, and as a result – the drying of the Aral Sea as little water was left over after irrigation to flow into the sea and maintain its level. As a result, the efficiency of land and water resources was sharply reduced. Unfortunately, in Uzbekistan some features of management that were peculiar to the old Soviet centralized control system have not yet changed sufficiently. For example, preference is still given to short-term economic gain to the detriment of ecological stability and quality.

¹³ approximately \$5.7 USD per capita and 1.8% of the GNP of Uzbekistan

123. The second reason is that practical mechanisms for the effective regulation of transboundary water resources and the maintenance of equitable benefit for the CACs has not been found. Disagreements among the upstream and downstream states remain, on occasion, over water resources.

124. The third reason is the negative influence of budgetary problems during the transition period for servicing and modernizing the huge irrigation and water-economic infrastructure that has essentially reduced land efficiency aggravated environmental problems. The shortage of water, especially during the recent drought (2000-2001), is a constant source of instability, both between the states, and within them. The competition for access to water can have very serious interstate consequences, especially in the context of high population growth in Uzbekistan and an increase in demand of exhausted water resources. Sustainable Agricultural development of the Ferghana Valley, for example, probably has already reached a limit in terms of the current status of water resources and irrigation infrastructure. The increase in rural population can lead, thus, to a critical exhaustion of land and water resources of the country and a further degradation of the ecosystem in the downstream regions of the region's rivers.

125. Last, but certainly not least, poverty is a key cause (as well as consequence) of resource degradation. Lack of water and financial difficulties compel farmers to apply the strategy of satisfying short-term economic interests by the use of polluted return and groundwaters, degraded pastures, etc. Such actions represent the main threat to sensitive arid ecosystems suffering from salinization and a dearth of organic substances in the soil. Thus, incidences and scales of poverty play a large role in continuing and worsening cycles of environmental degradation in areas where human populations rely on land resources for their livelihoods.

- **Overgrazing**

126. Overgrazing affects land in two major ways. It leads to the loss of the vegetative cover of rangeland or pasture in areas where livestock density is beyond the carrying capacity. High livestock density also results in soil compaction because of trampling. In both cases the soil becomes more vulnerable to water or wind erosion. Rangeland or pasture in such a condition lowers livestock growth and survival, leading to loss of income and people's nutritional well-being.

127. Overgrazing destroys vegetative cover, initiating processes of erosion and desertification. Especially hazardous is water erosion which impacts sloping lands where there is weakly developed plant cover and high irregularity of natural vegetation. At present out of more than 16.4 million hectares of grazing lands, 73% are subject to degradation owing to cattle overgrazing, the impact of human factors and climate fluctuation. The greatest reduction in pastures efficiency is noted in Karakalpakstan (25%), Navoi (28%) and Bukhara (20%) Oblasts. In Kungrad, Ellikala, Beruni and Gijduvan districts it exceeds 30%. About 10 million hectares of pastures require radical improvement

128. The main causes of degradation of rangeland or pasture are the breakdown of traditional land management protocols that regulate grazing; weak policy and institutional capacity to manage rangeland sustainably; shrinking rangeland amidst rapidly growing human and livestock populations; increased demand for other land uses such as agriculture, industry, and infrastructure development; development of settlements for pastoralists and associated unplanned land and water development; and limitations on the movements of nomadic pastoralists along traditional corridors across national boundaries.

- **Deforestation and Forest Degradation**

129. The total State Forestry Resources (SFR) amount 8,578,300 hectares. The area covered with forests is 2,374,800 hectares, thus per capita there are 0.1 hectares of area

covered by forest. Over 84% of total resources are desert forests, 14% mountain forests, and only 2% of the area is valley forest. Forests and other areas covered by natural vegetation play an essential role both in economics and in nature protection. Though Uzbekistan falls into the category of a forest-poor country, it is rich in the variety of vegetative species. As for SFR data in the country area there are 68 forest, 320 shrub species and 2,953 species of grassy vegetation. The most widespread forest species are haloxylon (60.8%), Central Asian juniper (10%), tamarisk (7%) and other shrubby species.

130. Forest resources are important to the Republic of Uzbekistan for land protection, erosion-prevention, and recreation, and are critical for maintaining biodiversity. The level of deforestation is highest in foothill and mountain zones (Tashkent, Surkhandarya and Samarkand Oblast and Ferghana Valley). Plowing of steep slopes and intensive grazing at high elevations of natural forests and low protective cover by grassy vegetation entails intensive processes of water erosion and loss of soil structure. Landslides and mudflows, and the formation of frequent mud streams aggravate erosion processes and result in washout and deflation of soil covering.

131. General forest uprooting to use lands for agriculture aggravates erosion processes and land degradation. For the last few years shrubby plantings have been cut down for agriculture in Bukhara, Ferghana and Kashkadarya Oblast and Karakalpakstan. Deforestation has resulted in the intensification of processes of wind erosion and drifting sands that irreversibly damage adjacent agricultural lands.

132. Three major causes of woodland degradation generally are over harvesting of fuel wood for energy; conversion of woodland for large-scale crop or livestock production; and uncontrolled forest fires often started to clear land or to facilitate hunting of wildlife. In forest areas, the main causes of land degradation are illegal commercial logging; and conversion of forest land for agriculture and/or human settlements and associated infrastructure. The loss of forest or woodland puts at risk the survival and incomes of communities that depend on forest products.

133. The exhaustion of natural forest resources and consequent degradation of the ecosystem, most painfully causes a decrease in their regenerative ability for use of the agricultural population. Incomes of farmers decrease, migration and the level of poverty grows. At the same time, poverty aggravates the ecological degradation, as ecological degradation aggravates a problem of poverty.

- **Problem Tree**

134. During the situation analysis, members of the Working Group and the local team of CACILM consultants repeatedly improved the architecture of a problem tree to refine its acceptability and adequacy to explain the background to the overall objectives of the NPF.

135. Fig. 1 illustrates a problem tree which reflects the current and future situation if appropriate measures to combat land degradation are not undertaken in a timely fashion.

136. Four main problems are attributed as root causes:

- (i) The legacy and difficulties of the transition period which promoted intensive development of the other three root reasons:
- (ii) Mismanagement and over-use of natural resources
- (iii) Insufficiency of economic infrastructure and market mechanisms
- (iv) Insufficient development of capacity and weak coordination between sectors

137. These root reasons render a direct influence on the three main branches of the problem tree. Each of these three branches can be expanded and presented in the form of a separate

tree. The first branch unites key indicators of degradation of ground and water resources and infringements to the integrity of the natural ecosystem. The second branch represents problems related to economic infrastructure and market mechanisms leading to the decrease in efficiency of land resources, and aggravating the problems of the rural poor. The third branch unites the weaknesses of capacity connected with insufficient development of institutional structure, a weak level of public and community involvement, both the lack of coordination and interaction of intersectoral activity, and insufficient monitoring and management of information pertinent to land degradation.

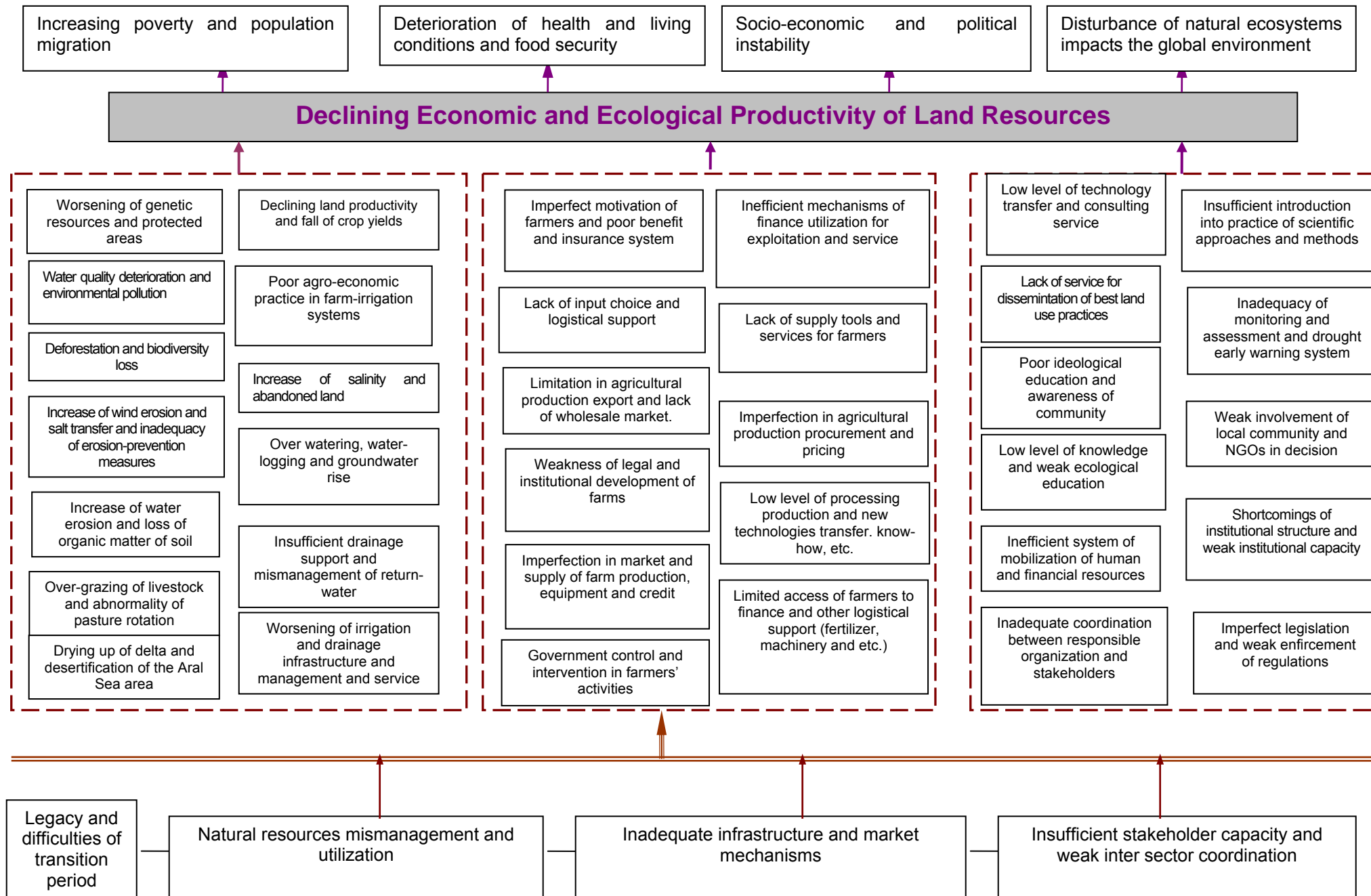
138. A further decrease in economic and ecological efficiency of land resources will lead to following negative consequences:

- (i) Strengthening poverty and negative population shifts
- (ii) Deterioration of health, life expectancy and food security
- (iii) Social, economic and political instability
- (iv) Infringement of integrity of the natural ecosystem and global environmental threats

139. Urgent measures and actions are critical for overcoming and mitigating the current trends of land degradation. The problem tree is presented on the next page.

140. At the Working Group seminar at which this problem tree was designed, members of the WG offered insights into the root causes of land degradation in Uzbekistan. They identified linkages among the natural and anthropogenic factors, principal causes (social, economic and ecological) and influences. All participants supported the key problem identified “Decrease in economic and ecological efficiency of land resources,” as addressing the purposes and problems of SLM. After general discussion the problem tree reflecting the basic root causes, influences and consequences of land degradation was drawn.

Figure 2: Problem Tree



B. Needs Assessment

141. Urgent measures are needed to change the existing situation and prevent further degradation of natural resources. The overall issue boils down to the need for the development of a comprehensive strategic program which simultaneously addresses social needs, as well as the necessity of preserving and protecting the ecosystem from degradation and exhaustion. The provision of social measures should be institutional, legislative and financial, including the creation of adequate stimulus packages and the acceptance of educational measures. Specific needs which have been identified in the problem analysis include: an increase in economic and ecological efficiency of the land by the rehabilitation of infrastructure, improvements of water management, the introduction of conservation agriculture, and measures to preserve soil and the biodiversity of fragile arid lands.

142. In an agricultural system, it is necessary to guide systemic changes towards the creation of a favorable economic environment. Reform should not be focused only on technical activities in plant cultivation and animal industries. It should be directed towards the development of an infrastructure and market mechanisms to various branches of the economy. For this purpose, it is necessary to strengthen financial reforms and measures to improve the system of contracts, and to stimulate state organizations for the preparation and realization of agricultural products. Other important measures include: liberalization of prices and the creation of private wholesale markets, services and other market infrastructures, improvement of the system of purchasing, stimulation of private trading organizations for buying and selling cotton and wheat at free market prices, specifically targeting the least privileged segments of the population. Other required measures include the creation of conditions and state support and institutions for rendering consulting services, legal consultations, and training of farmers concerning restructuring facilities and privatization.

143. According to the Ministry of Agriculture and Water of the Republic of Uzbekistan, the priority need for interventions through 2010 includes: improvement of the condition of the land, increasing water-security, and reconstruction and rehabilitation of the irrigation and drainage infrastructure. Cost estimates for these measures are 1463 billion sum from which 851 billion sum (58%) are expected from state capital investments and 351 billion sum will be covered by water-users, in particular WUA. The other 261 billion sum is expected from foreign investments. Thus, the specific cost of rehabilitation works is estimated to average up to \$1000 per hectare of irrigated land.

144. Agricultural subsidies in Uzbekistan, as in many other developing drought-prone countries, are focused mainly on water resource management. During the last annual period, spending for the restoration of irrigation and drainage infrastructure systems has totaled approximately 415 to 435 million US dollars (98 to 104 dollars per hectare of irrigated territory). Specific costs for operation and servicing of water resource management equipment is estimated at 150 US dollars per hectare per year. The overall expenses for the rehabilitation of the national irrigation and drainage infrastructure according to the WB, 2000, GEF WEMP, 2002, are estimated at roughly in 23-31 billion USD.

145. The main interventions planned by the National Program include improvement of use of the land, land preservation, and increasing soil fertility. For the period up to 2010, these activities are estimated to cost 38,787,300 million sum (based on 2001 estimates) from which over 64% should be covered by the national budget, and the other 36% by state investments. However, analysis shows that the current capacity of farms and WUAs is insufficient to cover fees for service and the maintenance of infrastructure, the implementation of measures for preservation and increased land efficiency, and will require targeted foreign investments.

146. Opportunities for farmers to create WUAs are limited, and there is not enough funding to cover expenses for servicing and supporting the irrigation and drainage infrastructure, or implementing measures for protecting and improving land productivity. There is a critical need for targeted funds from the state budget and/or foreign investors.

147. To maintain a sustainable course for rural development, international support of the governmental efforts to improve the stimulation of agricultural manufacturers, with the purpose of decentralizing management and introducing competitive markets, is very important. Responsible structures of management also require the technical assistance of international organizations on deepening reforms in water management, on introducing financial and economic mechanisms in agriculture, on the improvement of agricultural processing, improving the system of marketing services, and also the improvement of legal and institutional bases of management, involving all interested participants and the public. It is extremely necessary for overcoming and mitigating the degradation of natural resources and the maintenance of economic growth, which will decrease poverty and address problems of unemployment at local and national levels.

148. An additional benefit of these joint interventions is the prevention of the further pollution of the global environment and an increase in understanding among land users of their collective responsibility for safe-guarding the economic and ecological value of the natural ecosystem.

C. Priorities

149. On the basis of the situational analysis and problem tree, and in cooperation with the Uzbekistan National Working Group, the following four priority directions of activity for the achievement of sustainable land management goals and the achievement of social and economic benefits have been identified. In addition to providing ecological benefit, these priorities give special attention to increasing the standard of living of the rural population and decreasing poverty in Uzbekistan. This interdisciplinary approach includes both national programs and pilot projects, and support for the development of initiatives of local communities.

1. Capacity Building

1.a. Capacity Building: Strengthening the Enabling Environment

Strengthening capacity at local, regional and national levels

- (i) Improvement of mechanisms of coordination and interaction between the general economic sectors
- (ii) Stakeholder involvement (NGO, local community, business of structure, etc.) in SLM and the development of mechanisms of public participation, including women and vulnerable groups
- (iii) Assistance in improvement and realization of legislative and regulatory acts
- (iv) Strengthening capacities of responsible agencies, departments and stakeholder organizations

Increase the level of knowledge and awareness of the public

- (i) Increase the level of knowledge, skills and ecological awareness of stakeholders, including local communities and farmers
- (ii) Dissemination of best practices of land tenure, including successful projects and initiatives
- (iii) Transfer and adaptation of new technologies, know-how, and approaches and methods of the best practices in land tenure

Improvement of infrastructure and market mechanisms

- (i) Assistance in deepening market reforms in agriculture
 - Development of a national program, including pilot projects in support of agricultural producers (material resources, services, etc.) in vulnerable sectors
 - Expansion of the system of processing and selling agricultural products
- (ii) Development of a system of financing and stimulation of agricultural producers
 - Introduction of stimuli, including access to financing resources and credits
 - Providing of access to markets for agricultural production
 - Improvement of access to credits, veterinary services, marketing, etc.
- (iii) Improvement of the manufacture of foodstuffs and provision of livelihoods and employment in rural areas
 - Support the development of programs on processing food crops
 - Improvement of processing of fruit and vegetables
 - Improvement of animal industries

1.b. Capacity Building: Integration into Land Use Planning and Management

Integration of policies of sustainable land tenure into national and local strategies and systems of planning

- (i) Integration of the purposes and problems biodiversity into general plans of actions and programs of development of the country
- (ii) Updating the UNCCD NAP in close communication with priorities PRSP on intermediate term and long-term prospects
- (iii) Integration of intersectoral programs into the joint program of actions on sustainable management of land resources
- (iv) Integration of social and economic aspects of the problem of land degradation into programs and projects on protection of natural resources and maintenance of sources of livelihoods of the population
- (v) Improvement of the system of planning and coordination of policy concerning preservation of the environment, to include agriculture and sustainable development
- (vi) Support synergism between intersectoral programs and sustainable development strategies at local and national levels

Improvement of system of land inventory, monitoring and evaluation

- (i) Improvement of state policy in the field of land inventory, monitoring and evaluation
 - Development of uniform approaches, procedures and periodicity of land inventory, and monitoring, in view of the needs of all stakeholders
 - Creation of an information / analytical center for monitoring, and strengthen information interchange between departments
 - Improvement of legal support

- (ii) Development of information systems and new technologies
 - Introduction of GIS technologies and remote-sensing into the practice of land management, cadastres and conducting monitoring and evaluation
 - Improvement of the system of gathering, storing and processing data, and the creation of a uniform system of bases and databanks
 - Development and introduction of an early warning system for drought and natural hazards
 - Improvement of the system of modeling, and evaluation for planning and decision-making
 - Assistance in the maintenance of software and equipment, as well as aerial photos, satellite imagery and systems of data processing for reliable functioning remote sensing at all levels
- (iii) Increase the capacity of governance structures, institutes and local community at national and local levels
 - Professional training for experts in the field of land management, for conducting qualitative and quantitative monitoring and protection of natural resources
 - Increase the contribution of scientific and industrial establishments into the system of monitoring and control of land degradation, widely involving the public and rural farmers
 - A hardware laboratory and field equipment, including field portable devices.

2. Sustainable Agriculture

Restoration of agroecosystems and the improved practice of the use of arable lands

- (i) Improvement of the management and preservation of soil vitality by introducing soil conservation systems of agriculture
- (ii) Mitigation of soil salinization and rehabilitation of land degraded by intensive agriculture
- (iii) Introduction of best agronomical practices such as crop diversification, the selection of high-yielding and drought-resistant crops, rotation of crops, etc.
- (iv) Introduction of anti-erosion and soil-protective measures and technologies on the provision of water resources
- (v) Preservation and protection agro-biodiversity and the structures promoting sustainable land tenure

3. Sustainable Forest and Woodland Management

Forest preservation

- (i) Conservation forestry and protection of mountainous forest resources
- (ii) Comprehensive forest management and expansion of the diversity of forest types
- (iii) Development of forest plantations and tree planting in irrigated oases
- (iv) Introduction of the best agronomical practices (improved crop rotations, application of fertilizers, etc.) for increase of efficiency of forest resources

- (v) Development of measures and mechanisms for the prevention of unauthorized and excessive deforestation

4. Sustainable Pastureland Management

Pasture preservation and management

- (i) Improvement of traditional pasture management systems and new systems of grazing cattle
- (ii) Restoration of pastures and improvement of rotation of cycles of fodder crops
- (iii) Increase of fodder capacity of pastures and protection/ preservation of vegetative cover and soil quality, especially in regions of ecological risk
- (iv) Rehabilitation of infrastructure and improvement of watered pastures
- (v) Improvement of the selection and expansion of breeding cattle and structure of herd

5. Targeted Research

- (i) Research into alternative water management and sustainable livelihoods in the delta ecosystem of the Amu Darya River
- (ii) Research into the application of new biotechnology in cattle breeding
- (iii) Research on the introduction and adaptation of mechanisms for the stimulation of agricultural producers in support of food security

6. Integrated Resource Management

Integrated water resources management and improvement of water quality

- (i) Restoration and improvement of infrastructure and control systems and service
- (ii) Increase efficiency of water use and interfarm management of water by water conservation, pure technologies and biological methods
- (iii) Improved basin-wide approaches for water resource management
- (iv) Protection of the territories of the sources of rivers (mountain water sources)
- (v) Improved management of irrigation return water (second use) and sewage to decrease the risk of polluting the ecosystem
- (vi) Preservation of biodiversity and the protection of the water ecosystem and riparian - marsh areas

7. Mitigation of Negative Consequences of Aral Sea Crisis

- (i) Support for stabilizing the exposed sea-bed and delta of Amu Darya
- (ii) Creation of wind-shelter and buffer strips for the reduction of wind erosion and salt and dust storms
- (iii) Improvement of fishery facilities and support of alternative livelihoods

IV. NATIONAL PROGRAM

A. Vision of SLM Program

150. According to the GEF definition,¹⁴ sustainable land management (SLM) facilitates economic growth, ecological stability and social equity, i.e. achieving a balance of land resource use for livelihoods and maintaining the functional integrity of ecosystems for future generations. Achieving harmonious interactions and links between components of ecosystems requires the adoption of a comprehensive approach to sustainable land use on various scales. Such an approach must integrate technical measures with social, economic and political measures to

¹⁴ Manual of the GEF Secretariat, 2001 GEF approach to sustainable land use

provide for the protection of vulnerable croplands, pastures and forests and the preservation of species diversity. Unsustainable methods of land use and constraints to land-use improvement must be addressed. Since barriers to sustainable land use and major causes of land degradation are closely linked with poverty and institutional deficiencies, the introduction of sustainable land management approaches will also help to decrease poverty and achieve public development goals in the country.

151. The Government of Uzbekistan is deeply concerned about the increasing social, economic and ecological consequences of land degradation. Recent calamities caused by recurring droughts have strengthened the government's political will to solve this problem. In this context, the GoU attaches great importance to the stimulation of integrated approaches to management of land resources through the introduction of best practices of land and water use, preservation of biodiversity and protection of the integrity of vulnerable natural ecosystems. Recent government programs and reform policy, as well as commitments to the Global Rio Conventions will facilitate the reduction of major hurdles in the way of economic growth, through the implementation of comprehensive reforms complemented by investment projects supported by the international community. Given the difficulties and constraints of the transitional period, this approach is seen by the GoU as the best way to move forward.

152. Uzbekistan's vision for the end of the ten-year National Program on SLM includes the following: (a) strong institutional and human resource capacity among all land management stakeholders to actively engage and participate in coordinated approaches to improving sustainable land management; (b) a strong policy, regulatory, and economic incentive framework designed to facilitate and integrate sustainable land management practices in all sectors within the context of the country's sustainable development plan; (c) improved ecological viability of degraded ecosystems whether agricultural land, pasturelands, forests or critical areas such as the Aral Sea, with resultant local and global benefits; (d) improved economic productivity of land, managed with SLM approaches, and improved livelihoods of population groups directly dependant on the land, (agricultural land, pasturelands, forests, or the Aral Sea region); and (e) a robust and capable monitoring and evaluation system for SLM, including improved capacity to undertake targeted research for further SLM activities.

153. Thus, SLM provides an unprecedented opportunity for the Republic of Uzbekistan to introduce integrated approaches for ensuring sound management of land resources, while providing for equitable social welfare and economic development, without threatening the structure and functions of vitally important ecosystems for future generations. This approach is a strategic objective of UNCCD and CACILM. The principles of SLM represent a key vision of the best possible future for Uzbekistan in its efforts to strive for economic growth and social and ecological stability. The National Program for SLM in Uzbekistan will utilize accepted best practices in SLM gleaned from experience in other parts of the world, appropriately adapted to the country's current capacity, future potential, previous history, and cultural context.

154. Section III analyzed the problems and root causes of land degradation in the country and identified strategic priorities for sustainable land management leading to improved living standards. During the process of analysis, the stakeholders reached a consensus which underpins the problem analysis and proposed priority actions. This consensus was reached gradually during consultations, discussions and workshops of the UNCCD Working Group and local and international CACILM consultants, with the involvement of the public and other stakeholders, followed by discussions at regional and local levels. The wide involvement of stakeholders validates the consensus reached, and increases the overall commitment to the proposed National Program outlined below.

155. This National Program presents a menu of projects to achieve a more productive and integrated management of land resources to reduce rural poverty and ensure sustainable ecological and economic benefits on local, national and global levels. It proposes ways to reduce constraints to stakeholder involvement, particularly of the most vulnerable population groups, addresses how to achieve fair and sustainable land and water use, and how to maintain quality of natural resources to ensure a secure environment for current and future generations. Though land degradation often results from anthropogenic impacts, human intervention under this program shall not be destructive. These interventions are carefully designed and acceptable from technical, economic and ecological standpoints in order to restore productivity of degraded lands, preserve value and output of agricultural lands and prevent from further destruction of land production capacity.

B. Overview of the Program Design and Monitoring Framework

156. The overall impact of the National Program in Uzbekistan will be a cessation of land degradation through the strengthening and mainstreaming of sustainable land management approaches (SLM) among all land management stakeholders. Realizing this impact will result in stabilized/improved ecological integrity and better rural living standards in Uzbekistan. This complements the shared goals of the other four Central Asian Countries (CACs) participating in CACILM.

157. Thus, the National Program addresses two complementary sets of outcomes; ecological as well as socio-economic. The two are inseparable in a country where a high proportion of the population earns its livelihood directly from the land, and agriculture occupies such an important place in the GNP of the country. SLM approaches will not only result in ecological improvements, but in an alleviation of the cycle of poverty/intensification of short-term land use/degradation/poverty.

158. In order to achieve the desired outcomes and overall impact, a comprehensive program of targeted projects has been developed in broad consultation with stakeholders, and with the endorsement of the Uzbekistan National Working Group. The expected outcomes of the National Program in Uzbekistan are as follows:

- (i) improved ecological viability of degraded ecosystems whether agricultural land, pasturelands, forests or critical areas such as the Aral Sea, with resultant local and global benefits;
- (ii) improved economic productivity of land, managed with SLM approaches, and improved livelihoods of population groups directly dependant on the land, (agricultural land, pasturelands, forests, or the Aral Sea region);
- (iii) strong institutional and human resource capacity among all land management stakeholders to actively engage and participate in coordinated approaches to improving sustainable land management;
- (iv) a strong policy, regulatory, and economic incentive framework designed to facilitate and integrate sustainable land management practices in all sectors within the context of the country's sustainable development plan; and
- (v) a robust and capable monitoring and evaluation system for SLM, including improved capacity to undertake targeted research for further SLM activities.

159. The Program's overall impact and outcomes will be pursued through specific technical assistance and/or investment projects grouped into seven program areas, namely: (1) capacity building, including (a) strengthening the enabling environment and (b) integration into land-use planning and management; (2) sustainable agriculture, both in (a) rain-fed areas and (b) irrigated areas; (3) sustainable forest and woodland management; (4) sustainable pastureland management; (5) targeted research; (6) integrated resource management; and (7) mitigation of

the negative consequences of the Aral Sea crisis. In addition, a program for national coordination and management will be required to oversee the implementation of the National Program.

160. The success of the program will be evaluated by measuring performance indicators developed as part of the Project Performance Monitoring System (PPMS) and Land Degradation and Sustainable Land Management Information System (LDSLMIS).¹⁵ The goals are to see measurable reductions in the current trends of land degradation from an ecological stand-point in vulnerable ecosystems, to see an increase in livelihoods and consequent stabilization of downward poverty trends among vulnerable populations, and to see evidence of increased capacity and participation of all land management stakeholders. More information is contained in the Program Design and Monitoring Framework (Appendix 2).

161. Each of the seven program areas will consist of one or more specific technical assistance or on-the-ground investment projects. Each of these projects will develop its own Project Design and Monitoring Framework, and will be evaluated according to its own set of criteria and established indicators measured against a baseline. A set of Project Briefs has already been prepared for the projects scheduled for implementation starting in Phase 1 (Inception).

C. Program Areas

162. The Uzbekistan National Program includes the following integrated Program Areas: (1) capacity building, including (a) strengthening the enabling environment and (b) integration into land-use planning and management; (2) sustainable agriculture, both in (a) rain-fed areas and (b) irrigated areas; (3) sustainable forest and woodland management; (4) sustainable pastureland management; (5) targeted research; (6) integrated resource management; and (7) mitigation of the negative consequences of the Aral Sea crisis.

163. Priority geographic areas identified in the Problem Analysis (Section III) include: the Republic of Karakalpakstan, and nine oblasts (Khorezm, Bukhara, Navoi, Kashkadarya, Namangan, Ferghana, Syrdarya and Djizzak). These areas comprise about 98% of the total area of wind erosion, salinization and degradation of land, and were identified as regions of ecological vulnerability where ecological and socio-economic factors such as poverty overlap and reinforce each other. All these oblasts require urgent support to control land degradation and alleviate poverty among groups which are highly dependant on the land for their livelihoods. Importance shall also be attached to local risk zones inside relatively safe oblasts, such as districts of irrigated agriculture and forestry in Samarkand, etc.

1. Capacity Building

1. a. Enabling Environment- Mainstreaming SLM

164. This Program Area improves the enabling environment for SLM through the mainstreaming of mechanisms for sustainable land management into existing national sustainable development plans and/or poverty alleviation strategy documents. The rationale behind mainstreaming is that it will facilitate coordinated financial resource mobilization, from both in-country and external sources, and the successful implementation of priority activities. Program interventions in this area directly contribute to the achievement of the Uzbekistan NPF's Outcome #1: strong institutional and human resource capacity among all land management stakeholders to actively engage and participate in coordinated approaches to improving sustainable land management.

¹⁵ described under Implementation Arrangements later in this document

165. The program area also addresses SLM through improved inter-sectoral cooperation and partnerships on all levels, ensuring integration of sustainable land use policy into the priorities of national strategies and planning systems. This program area is also aimed at establishing enabling conditions in the policy and legislative arenas and supporting the introduction of a comprehensive approach to combating land degradation and promoting poverty alleviation in the most vulnerable ecosystems of the country.

166. Projects in this program area, Capacity-Building (1.a.), in the Uzbekistan National Program will address the capacity building needs identified in the Problem Analysis (Section III), such as: overcoming institutional and technical barriers to SLM, through analysis of current policy, legal, organizational and financial foundations, and strengthening the capacity of key management structures and institutes, particularly at the oblast and local levels, and overcoming these technical constraints.

167. Projects will significantly contribute to the improvement of legal and institutional frameworks, with measures such as the introduction of new mechanisms and incentives for SLM, and the implementation of projects and programs for the development of acceptable reform policy. These include urgent measures for (i) harmonization of institutional and inter-sector coordination, (ii) improvement of legal and regulatory frameworks, particularly the Land Code, and adoption of a Forest Code, Water Code, and Law on WUAs; and (iii) enhanced awareness and public involvement in sustainable land management.

168. Capacity building at the local, national, and regional levels will initially focus on activities aimed at creating the appropriate enabling environment and institutional capacity to support sustainable land management. Three projects will be implemented under Capacity-building (1.a.) in the Uzbekistan National Program: (1) *Institutional strengthening and inter-sectoral coordination in UNCCD implementation*; (2) *Enhancement of knowledge and public participation* and (3) *Development of economic incentives for farmers to combat land degradation*. All three projects will be initiated during Phase 1, in order to achieve results with regard to increased capacities to facilitate the successful implementation of other SLM projects which assume strengthened capacities and a sound enabling environment.

169. The first project: *Institutional strengthening and inter-sectoral coordination in UNCCD implementation*, will contribute to addressing land degradation issues and improving living standards of vulnerable population groups by strengthening the coordination of cross-sectoral activities of all involved stakeholders for UNCCD implementation. Insufficient coordination and cooperation impede more effective fulfillment of the UNCCD country obligations. Coordination of the activities at the national level will prevent the duplication of effort and maximize collective activities.

170. The intended outcomes of Project 1 will be strengthened cross-institutional coordination promoting UNCCD implementation in a more effective and complementary manner. Activities will include (i) the establishment of mechanism for more effective coordination between all stakeholders through the development and implementation of joint long-term programs; (ii) the establishment of a coordination center and strengthening of UNCCD Focal Point capacity; and (iii) the building of cross-sectoral groups for developing programs and projects on land degradation, desertification and rational water and land management issues.

171. The second project: *Enhancement of knowledge and public participation* will render assistance to the Government of Uzbekistan in mainstreaming participatory SLM approaches through the enhancement of knowledge and involvement of farmers and all stakeholders in solving problems of land degradation with the goal of improving agricultural production and rural livelihoods. The project will address the interconnected and cross-cutting needs for capacity development which have been identified in the Problem Analysis (Section III).

172. Project activities include: (1) identification of stakeholders and vulnerable groups, inventory of recently completed and on-going projects, and also a review of good practice, and lessons-learned, and their applicability in the context of Uzbekistan; (2) development of a joint participation and public awareness program at the local and regional levels on the targets of UNCCD/CACILM, with the definition of integrated approaches, principles and tools, and also mechanisms for implementation and integration into national plans; (3) strengthening capacity of local communities and stakeholders in designing, planning, implementing, and monitoring SLM practices; (4) implementation of Farmer Field Schools and consulting services to test and demonstrate participatory approaches and alternative technologies of sustainable land management and best land use practice; (5) and providing synergy among projects and training programs directed to SLM at the local and regional levels.

173. The third project: *Development of Economic Incentives for Farmers to Combat Land Degradation*, will address the need for improvements in economic incentives for maintaining regulatory mechanisms and land tenure. This project is currently under development and will be described in the next revision of the NPF.

1. b. Integration into Land Use Planning and Management Systems

174. This program area includes activities such as: (i) strengthening of participatory institutional mechanisms and capacity for integrated land use planning and implementation, (ii) incorporation of sustainable land management practices into systems developed for drought preparedness; (iii) development of policies, regulations, and incentive structures such as improved land tenure systems and pricing systems to appropriately value renewable natural resources, including water, to encourage efficient and sustainable use and management; (iv) strengthening of information management systems to support decision making at the national and local levels on integrated land use planning and management; (v) dissemination and replication of good management practices, technologies, and lessons learned. In addition, this program area includes agreements and mechanisms for the management of transboundary resources.

175. Program interventions in this area directly contribute to the achievement of the Uzbekistan NPF's Outcomes #2 and #3: (2) a strong policy, regulatory, and economic incentive framework designed to facilitate and integrate sustainable land management practices in all sectors within the context of the country's sustainable development plan; and (3) a robust and capable monitoring and evaluation system for SLM, including improved capacity to undertake targeted research for further SLM activities.

176. Projects in this program area, Capacity-Building (1.b.), in the Uzbekistan National Program will address the capacity building needs identified in the Problem Analysis (Section III), such as:

- Weaknesses in the assessment and monitoring of land degradation. Analysis identified substantial discrepancies in quality and quantity of data that limit assessment of land degradation trends and capable decision-making and development of comprehensive solutions. Major reasons for this are limitations on baseline data, drawbacks of monitoring technique, poor capacities at oblast and local levels that inhibit regular and reliable surveys and studies. Classification methods of land degradation evaluation need to be updated. They are out of date and were adopted during the Soviet period. Problems related to increased soil erosion and salinization, and limited information on growth quality makes it difficult to measure and analyze degradation trends. Poor institutional coordination and the lack of a unified system of natural resources data collection, processing and storage restrict the exchange of information. A shortage of human and financial resources inhibits the introduction of GIS/Remote Sensing

technologies and formation of databases, modeling and mapping for assessment of changes and impacts, forecasting and planning for sustainable land use. It is necessary to strengthen the potential of information services and create a unified system of monitoring for land use at all levels. It is critical to develop a national program to strengthen the technological capacity of institutes for monitoring land use over the period 2006-2016.

- Lack of a uniform system of land inventory and cadastres at national and local levels. It will be necessary to strengthen the capacities of the responsible organizations, institutes and local structures, with an introduction and adaptation of technologies and methods of management. Although carrying out necessary contractual agreements and orders, the institutional structure is inadequate and does not meet the required standards of land users. The existing management structure and technical potential is not utilized effectively. It is necessary to assess the demands and limitations that prevent these organizations from fully carrying out their activities in the battle against land degradation and for sustainable land management. Instead of having an agency supported by various technical and technological methods, we have an information structure of various agencies.
- Weaknesses in subregional cooperation in the National Programming Framework: Sustainable resource management should be practiced not only at local and national levels, but on regional and global levels as well. It is necessary to develop and introduce a system of joint planning and a program for the management of natural resources and ecosystems of transboundary rivers, with the goal of harmonizing water linkages between upstream and downstream flows, and to develop and improve sustainable land use in the Aral Sea Basin. A joint needs assessment of local communities will demand special attention, and the problems of improving livelihoods of the population will need to be addressed (such as improving regional trade or access to regional markets).

177. Four projects are planned for implementation under Capacity-building (1.b.) in the Uzbekistan National Program: (1) *Capacity Building for Land Degradation Assessment and Management*; (2) *Development of an Integrated System for Monitoring and Information Management of Land and Land Inventory*; (3) *Creation and Adaptation of an Automated Land Information and Land Cadastre System*; and (4) *Reforestation by Local Communities in the Irrigated Lowlands (ILAFOR)*. Projects 1, 2, and 4 are planned to be initiated during Phase 1 and are briefly described below.

178. Some degraded lands in Uzbekistan are fairly stable, others are deteriorating, while others may be undergoing a recovery process. It is of utmost importance for the control of land degradation to find out how and why these trends develop as a result of human interventions. The first project: *Capacity building for land degradation assessment and management* will strengthen the national expertise, the equipment facilities and the cooperation among institutions concerned in order to facilitate the implementation of integrated approaches of dryland degradation assessment and sustainable land use planning and monitoring. It will overcome technological and institutional constraints and opportunities to build multidisciplinary co-operation capacities and joint working processes among national experts and other stakeholders. In particular, closer links will be established among the diverse government institutions, scientists and NGOs concerned with land degradation and all other activities in a more efficient manner.

179. The second project: *Development of integrated system for monitoring, information management and inventory*, will address the need for improvements in organizational capacity

for maintaining an inventory of land resources and cadastre. This project is currently under development and will be described in the next revision of the NPF.

180. The fourth project: *Reforestation by local communities in the irrigated lowlands (ILAFOR)*, aims at improving the working methodologies of the Forestry Department and their representative structures in the region of Khorezm and Karakalpakstan to fulfill their mandate, by combining traditional and modern procedures to conduct forest inventories. Based on this knowledge, high-risk regions and locations will be identified for Reforestation purposes - either in or out of irrigated areas. The selection will be based on combined evaluation criteria that integrate site-specific environmental and socio-economic factors. Hence, the local communities will be involved in the planning, detection and planting and maintaining efforts. Expected outcomes of the project include: (i) an assessment of the impact of land degradation on drylands ecosystems; (ii) the development a new approaches and experience in land degradation assessment; (iii) improved capacity for land degradation impact assessment and land use policy; (iv) establishment of information system network and testing of the GIS/RS technologies; and (v) implementation of new integrated approaches for land degradation assessment and land use planning.

2. Sustainable Agriculture

181. This program area addresses key causes and consequences of soil and agricultural ecosystems degradation through the introduction of integrated and comprehensive SLM approaches and best land use practices for agricultural development. Program interventions in this area directly contribute to the achievement of the Uzbekistan NPF's **Outcomes #4 and #5**: (4) improved ecological viability of degraded ecosystems whether agricultural land, pasturelands, forests or critical areas such as the Aral Sea, with resultant local and global benefits; and improved economic productivity of land, managed with SLM approaches, and (5) improved livelihoods of population groups directly dependant on the land, (agricultural land, pasturelands, forests, or the Aral Sea region).

182. Criteria for the selection of projects were set based on major criteria suggested by GEF OP15, taking into account the potential of their contributions to the control of land degradation, improvement of globally significant agricultural management, and the stabilization of the social and economic situation and poverty alleviation. This program area includes activities such as packages of interventions to improve both livelihoods and economic well-being of local people, and to preserve or restore ecosystem stability, functions, and services through sustainable land management.

183. Projects in this program area in the Uzbekistan National Program will address the needs for sustainable agriculture interventions identified in the Problem Analysis (Section III), such as: (i) combating cropland erosion using soil and water conservation methods and technologies to reduce soil salinization and water logging through improved irrigation and drainage infrastructure, (ii) improve operational & management systems such as water saving and adaptation of integrated techniques for best land use practices; (iii) strengthening capacity, training and support for the development of basin principles of water management on all levels (Basin Departments, WUAs) with public participation; and (iv) assistance in strengthening agricultural reforms through supporting programs for encouraging agricultural producers, organization of consulting services and ensuring alternative sources of livelihood and employment in rural areas.

184. Four projects are planned for implementation under Sustainable Agriculture (2.a. and b.) in the Uzbekistan National Program: The first two deal with rain-fed agriculture (2.a.): (1) *Watershed/Land Erosion Prevention and Reforestation in Rain-fed Areas*; and (2) *Rainwater harvesting and land erosion prevention in sloping areas*. The last two pertain to

irrigated agriculture (2.b.): (3) *Sustainable farm development in the irrigated lowlands of the Amudarya basin*, and (4) *Sustainable Agriculture and Food Processing Industry*. Projects number 2 and 3 are scheduled to begin implementation during Phase 1 of the National Program, and are briefly described below.

185. Project #2: *Rainwater harvesting and land erosion prevention in sloping areas*, will render assistance to the Government of Uzbekistan in increasing rainfed land productivity through the adaptation and introduction of multidisciplinary approaches, directed to the maximum use of natural moisture, erosion control, and improving rainwater management. The task is to effectively utilize rainwater, in order to increase farmer incomes and provide long-term ecological benefits. The introduction of integrated methods of rainwater-soil-crop management practices provides an increase in the productivity of rainfed lands by as much as 2-3 times, giving an opportunity to improve living standards for all groups of stakeholders. Expansion of the rainfed areas can provide the population with high quality grain. The project's long-term results will be geared towards achieving sustainable rainfed agriculture and better environmental services.

186. The project will implement the following activities: (i) study rainfed ecosystem vulnerability and the needs of rainfed agriculture, including assessment of constraints and limiting factors, degree and trends of soil erosion and land degradation in sloping lands; (ii) analysis of local and new technologies on water harvesting, tested in arid and semi-arid countries of Asia, Africa and Near East, and assessment of their acceptance to local conditions; (iii) Testing and demonstration of multidisciplinary approaches to improve rainwater productivity and obtain the highest yield under low and variable rainfall conditions, combining runoff farming system with improved soil moisture management, crop husbandry and agronomic practices, including forest shelter-belts, etc.; (iv) strengthening capacity of responsible institutions and local farmers, training, study tours and extension programs for local communities; and (v) project implementation monitoring and impact assessment.

187. Project #3: *Sustainable farm development in the irrigated lowlands of the Amudarya basin*, builds on experience gained in Soil Conservation Agriculture (SCA) in irrigated areas in Uzbekistan, which has been successfully tested in Khorezm within a ZEF/UNESCO project. The main objective is twofold: (1) to school farmers in SCA, and (2) to provide the means to implement SCA as an improved, financially feasible, economic profitable, and more sustainable and ecological sound form of agricultural production.

188. The focus of the project is on improving water and soil conservation practices through SCA for smallholder farmers in Khorezm Oblast, replicating previous successes. In this region, the equipment is being developed which can be used by the farmers in Khorezm but also in other irrigated lowland regions plagued by soil degradation such as Karakalpakstan. The implementation of SCA will directly contribute to both the prevention of further degradation of the land and the regional ecosystems, and the improvement of human well-being. SCA leads to long-term environmental benefits such as a build-up of soil organic matter and biological activity and reduction of greenhouse gas emissions. It also allows cultivating the land in an economically more efficient way.

3. Sustainable Forest and Woodland Management

189. This program area includes activities to directly address the strengthening of forest ecosystem viability and achieving global benefits, such as: (i) restoration of forest and mountain ecosystems and establishment of forest protective strips in piedmont plains; (ii) protection of desert pastures and irrigated oasis from degradation and desertification; (iii) creation of forest protection strips in irrigated areas; and (iv) establishment of forest plantations for improved viability of ecosystems and economic support for local communities.

190. Program interventions in this area directly contribute to the achievement of the Uzbekistan NPF's Outcomes #4 and #5: (4) improved ecological viability of degraded ecosystems whether agricultural land, pasturelands, forests or critical areas such as the Aral Sea, with resultant local and global benefits; and improved economic productivity of land, managed with SLM approaches, and (5) improved livelihoods of population groups directly dependant on the land (agricultural land, pasturelands, forests, or the Aral Sea region).

191. Current trends of deforestation lead to the wide-scale problem of land erosion which constitutes a serious threat of economic damage for all groups of the population. In comparison with 1930, areas under forests in Uzbekistan decreased almost by one third, and flood-plain forests and tugai forests decreased by 1000%. Given the global importance of forest diversity preservation for the increased potential of greenhouse gas absorption, support for reforestation at various scales and landscapes was identified as the most important priority of the Uzbekistan NPF.

192. Annually, the State forest fund in an effort to prevent soil erosion, conducts forest planting on an area of more than 42 thousand hectares, from which about 37 thousand hectares is on the dry bed of the Aral Sea, in the immediate vicinity of the Aral, and on adjacent desert territories of the Republic of Karakalpakstan, Khorezm, Bukhara and Navoi oblasts. In 2004 on forest fund lands, new forest was planted on an area of 14.8 thousand hectares, and forest nursery was laid on the area of 280 hectares. On the area of 315 hectares was laid industrial poplar plantations and other fast growing species.

193. Operation of commercial forestry in Uzbekistan is not allowed due to the low percentage of area of forest cover and the importance of the protective functions and roles of forest resources for the improvement of biodiversity and ecology. However as a forest maintenance practice, sanitary and forest rehabilitation cuttings are done every year. The forest sector in the republic is not a priority sector of the national economy, and allocated budget funding for rehabilitation of forest massifs and the creation of forest plantations remains as insufficient. This limits potential development and implementation of key technologies in forestry.

194. Existing problems in forest management systems and use of forest areas (decreasing of tugai forest area and young saxsaul areas in Kyzylkum, tree cutting for fuel, uncontrolled grazing of cattle and etc), as well as lack of financing for large-scale forest rehabilitation and the creation forest plantations, complicates degradation processes and instability. Natural replacement of old plantations with young one takes place very slowly. Gradually plantations become old and die off. If we do not stop this process, the green barrier created around Bukhara oasis, for example, can be dry out, which leads to a second disaster and creates new problems.

195. Key land management technologies in forestry are directed at: (i) protective forestation and plantation growing of forest crops (ii) forest rehabilitation and forestation (saxsaul plantations, poplar asiatic and others.) and (iii) intensification of low height vegetation. Some reserves present a selection of long-term varieties of forest species. The main shortcomings of forest management are the slow pace of forest rehabilitation, slow replacement of old-growth plantations with young, not observing the demand of technological processes in rehabilitation of plantations, unauthorized tree cutting for fuel, and uncontrolled cattle grazing.

196. Two projects are planned for implementation under the Sustainable Forest and Woodlands Management program area (3) in the Uzbekistan National Program: (1) *Achieving Ecosystem Stability on the degraded land in Karakalpakstan and Kyzylkum Desert*, and (2) *Promotion of reforestation and forestry conservation initiatives among rural communities*. Both projects are scheduled to begin during Phase 1 of National Program implementation.

197. The first project is entitled: *Achieving Ecosystem Stability on the degraded land in Karakalpakstan and Kyzylkum Desert*. The project goal is to mitigate the causes and negative impacts of land degradation on the structure and functional integrity of ecosystems through sustainable land management practices as a contribution to improving people's livelihoods and economic wellbeing. More specifically, the impact of the project will be arresting and reversing land degradation by stabilizing mobile sand, by entering into partnerships with local communities, and by strengthening institutions and building capacity.

198. The project will target five Outcomes, each with a cluster of relevant Outputs and Activities. The first Outcome focuses on the botanical and microbiological research activities that will provide the foundation for all other Outcomes and Outputs. The second Outcome will focus on the practical problems caused by mobile sands and will be achieved through empowerment of affected communities. The third Outcome addresses the institutional underpinning of the work to ensure its sustainability. The fourth Outcome ensures that the experience and lessons learnt from this project will be disseminated widely. The fifth Outcome provides for efficient management, administration and evaluation of the project.

199. The Outcomes of this project are consistent with the objectives of GEF Operational Programme #15: Sustainable Land Management and its Activities are aligned more specifically to GEF Strategic Priority #SLM-2: Implementation of Innovative and Indigenous Sustainable Land Management Practices. The project is supported fully by the Uzbek UNCCD National Focal Point and the Uzbekistan GEF Operational Focal Point has endorsed it on behalf of the Government of Uzbekistan.

200. The second project: *Promotion of reforestation and forestry conservation initiatives among rural communities* is currently under development and will be described in the next revision of the NPF.

4. Sustainable Pastureland Management

201. This program area includes activities aimed at the protection and sustainable management of pasture areas through the introduction of comprehensive measures for infrastructure restoration, irrigation, and the preservation of biodiversity. It also addresses the need for additional approaches for improved productivity of ecosystems and increased incomes of local population.

202. Program interventions in this area directly contribute to the achievement of the Uzbekistan NPF's Outcomes #4 and #5: (4) improved ecological viability of degraded ecosystems whether agricultural land, pasturelands, forests or critical areas such as the Aral Sea, with resultant local and global benefits; and improved economic productivity of land, managed with SLM approaches, and (5) improved livelihoods of population groups directly dependant on the land, (agricultural land, pasturelands, forests, or the Aral Sea region).

203. Activities under Program 4 are closely linked with 2 and 3 and address the priority problems identified in the Problem Analysis in Section III. Targeted program interventions will result in the following expected outcomes: (i) reduction of overgrazing and increased pasture productivity through the introduction of integrated approaches and technologies for the preservation of vegetative growth and soil quality, and improved irrigation and infrastructure; (ii) protection of pasture areas from ground water rise (flooding) and exhaustion through alternative measures and interventions for improved land productivity and creating additional sources for farmers' and shepherds' livelihood. These measures will demonstrate beneficial ecological effects for desert ecosystems and social and economic benefits for local community in mid flow of Syrdarya and Amudarya river basins.

204. Pasture farm management, which occupies nearly half of Uzbekistan's territory, is conducted ineffectively. Low productivity due to natural-climatic conditions, the absence of control over the numbers of cattle herds and load rate per hectare lead to overgrazing and loss of plant species. At present, limited grasses and low productivity characterize the vegetation of arid pasturelands. In periods of drought, fodder stores decline by 3-5 times. The poor harvest of green fodder in conditions of desert pasture is observed rather regularly.

205. The problem of pasture overgrazing remains very urgent due to low incomes of herders. As has been stated previously, there are many poor herders among the general population of herders in Uzbekistan. Pasture overgrazing is the result of weakened control over land use in comparison with the soviet period, contributing to land degradation and further decreasing the long-term production potential of pasture lands used for cattle breeding. After independence, almost all the animal husbandry was transferred to dekhans farms, which now undertake about 90% of animal husbandry production. As of 2004, they had 90% cattle, 72% sheep and goats, and 69% poultry. Insufficient provisions of concentrated fodder (40-45% demand) create difficulties for the development of animal husbandry in this sector. The quality of available concentrated fodder is low, and price is high. Productivity of cattle milking (1,684 kg) remains low. The private sector has weak veterinary services for cattle, as well as insufficient capability to provide this sector with pedigree cattle.

206. Under conditions of sharp inflation, mainly in remote regions, a more common practice for the population is to use cattle as a bank equivalent. Under this scheme, taxes are levied per head of cattle, so real cattle heads are hidden, particularly, goats and sheep. According to various expert evaluations, unregistered cattle can reach, in some rayons, 50% higher than the registered number.¹⁶ One more serious tendency, leading to sharp loads increasing on pasturelands is the phenomena of sheep being outnumbered by goats. The latter is more multifunctional in comparison with sheep, but goats bring more damage, as they do not cut the grass, but pull it out by the roots.

207. To address these identified problems, assistance will be provided for improving the traditional system of pasture management, and a new system of pasturing will be introduced to restore pasture rotation and improve pasture productivity and protection. Activities for improved pasture irrigation and infrastructure rehabilitation will also be utilized. Pilot projects for improved selection and enlargement of pedigree livestock breeds and flock structure will be implemented, with the intention of replication on a larger scale in a later stage of National Program implementation.

208. Three projects are planned for implementation under the Sustainable Pastureland Management program area (4.) in the Uzbekistan National Program: (1) *Concept of sustainable drylands pasture management*; (2) *Stabilization of the Arnasay lake ecosystems and pastureland protection*; and (3) *Increasing fodder productivity through groundwater use*. Project number 2 is scheduled to begin during Phase 1 of National Program implementation, and is briefly described below.

The project: *Stabilization of the Arnasay lake ecosystems and pastureland protection*, addresses the problem of desert sinks, which serve as a water receiver of polluted collector-drainage water, diverted from the irrigated lands. This creates a serious threat of flooding and loss of pasture biodiversity. These impacts are felt widely everywhere, but more perceptible along the main water-courses of the Syrdarya River basin. The objective of the proposed project is to render assistance to the Government of Uzbekistan to protect desert pastures for the improvement of pasture productivity and living standards of affected stakeholders. The project will also lead to achieving environmental stability around the Arnasay Lake system. The

¹⁶ Ecocenter Biostan, Uzbekistan, 2005

specific project aim is to promote the integration of soil-crop management systems and to integrate good agronomic practices with technical, institutional and community-oriented interventions for the removal of barriers and restoration of desert ecosystem functions and integrity. The proposed project will contribute to mitigate the root causes and social-economic and environmental impacts of land degradation through introduction of participatory and integrated water and land management options directly addressed to sustainable pasture management and improving rural livelihoods.

5. Targeted Research

209. Program interventions in this area directly contribute to the achievement of the Uzbekistan NPF's Outcome #3: a robust and capable monitoring and evaluation system for SLM, including improved capacity to undertake targeted research for further SLM activities.

210. Analysis of existing scientific and ecological education establishments in Uzbekistan indicates that the core ecological disciplines are more fully represented in medical and agricultural specializations. The majority of curricula of other specializations, however, includes general educational disciplines but does not focus on obtaining deep professional knowledge. Educational preparation is weak in such important fields as GIS and Remote Sensing technology, ecological security, environmental impact assessments (including socio-economic aspects), the legal basis of natural resource use, ecologically clean technology, eco-tourism, ecological audits, and other specializations. The task is not only to achieve ecological education through the transmittal of a pre-determined basis of knowledge, but to promote the formulation of an ecological consciousness as a critical foundation for analysis, modeling, forecasting, and decision-making about ecological problems and activities associated with them. Increased capacity in this area will lead to greater effectiveness of all environmentally-related programs, not only those related to SLM.

211. Though the scientific potential in Republic is sufficiently high, there are certain complexities connected with the fact that many institutes have limited potential to reproduce or create new avenues of research. There is still insufficient coordination among institutes for ecological and nature protection, and lack of mechanisms for financing basic research. There is a shortage of financial resources for modernization and/or replacements of obsolete and broken technical equipment, upgrading of software, and acquiring new GIS/remote sensing technologies. This limits opportunities for the development and adaptation of new approaches and methods of research, exchanges of ideas and innovation, and cooperation between sectors.

212. Three projects are planned for implementation under the Targeted Research program area in the Uzbekistan National Program: (1) *Water management and sustainable livelihoods in the delta ecosystem*; (2) *Application of new biotechnology in cattle breeding*; and (3) *Adaptation of stimulation mechanisms of agricultural producers for food security*. Projects 1 and 2 are planned to be initiated during Phase 1, and are briefly described below.

213. The first project: *Water management and sustainable livelihoods in the delta ecosystem*, will contribute to a greater understanding of the prospects for developing alternative livelihood approaches for rural people who are negatively impacted by land and water degradation in delta areas of the Amu Darya. This project is planned to be started and completed during the Inception Phase of the National Program (2006-2008). As a result of this research project, more effective program interventions can be developed during the course of the full implementation phase.

214. The population groups directly impacted by land and water degradation are the agricultural producers who comprise the majority of rural households. Although employment in

the agricultural sector has decreased from about 42% in 1991 to about 33% in 2003¹⁷, it still remains the largest employer. The other important group is cattle breeders; this activity is concentrated mostly in intensively irrigated agricultural areas and partly in desert pastures. Water and soil degradation has resulted in a substantial decrease in the biological efficiency and the fodder capacity of the pastures as well as lower productivity of irrigated croplands. The constraints that these negative influences pose on local livelihoods have resulted in a decrease in living standards, widespread unemployment, and migration to cities especially among the men. Migration has further consequences for reducing household livelihood options and increasing the burden on women as they often remain behind to take care of the young and the old in the family. The degraded natural environment offers little but only seasonal employment to women in weeding and gathering cotton, and as unskilled manual laborers.

215. In this context, the NPF Situation Analysis noted that if this trend continues, most of the agricultural land, particularly in the Amudarya mid-stream and down-stream areas will be unusable for irrigated agriculture within several decades. At the same time, the level of pollution and salt accumulation in rivers and depressions will continue to increase and have negative impacts on the ecosystems and quality of water, particularly drinking water supply and health of the population. Thus improving the practice of water and land management poses an important challenge both for improving livelihoods and for revival and resilience of the dynamic ability of the delta ecosystem.

216. The main objective of the research is to identify viable ways to improve the livelihood options and well being of the rural population through sustainable practices of water and land management in the delta ecosystem areas. The specific objectives are: (i) develop sustainable and diversified livelihood options for improving living standards; (ii) promote technological and institutional improvements for irrigation practices, water conservation and water use efficiency; (iii) identify current and dynamic drivers of social and ecological vulnerability; (iv) enhance the adaptive capacity and well-being of the people while simultaneously strengthening ecological resilience; (v) ensure people's participation in research, planning and implementation of future development strategies through a multi-stakeholder dialogue process in the study areas.

217. The results of the research will lead to the development of appropriate irrigation technologies for the local area, and institutional arrangements for combating problems of secondary salinization, water logging and reduced soil productivity. The participatory research methodology based on multi-stakeholder dialogue processes will also result in capacity development of irrigation institutions particularly for the water users' associations. This will also promote understanding of the equity aspects of water management both for resource, land and gender based membership, decision-making and implementation of WUA activities.

218. The research will also improve understanding of the technological and institutional constraints and opportunities for improvement of the irrigation practices and water management for agriculture, pasture and all other activities in a more efficient manner, achieving higher economic returns and ecological sustainability in the long run. The planned outcome will comprise of the following areas: (i) understanding of the technological, institutional and social aspects of water management improved; (ii) Capacity building on livelihood options and strategies improved; and (iii) Understanding of the equity aspects of water management improved. Further the research will promote recognition of gender-based roles and relations in livelihood option analyses. It will also recognize other equity issues based on differentiated access to land and other resources.

¹⁷ Source: Department of Statistics, Ministry of Macroeconomics and Statistics of Uzbekistan, 2002 (in Max Spoor, 2003)

219. The research project's outcomes will directly link to the National Program's expected outcomes and GEF OP15 as the project will have institutional and human resource capacity improved for water and land management particularly at the local level; the irrigation and land management policy framework will be strengthened; and further, the economic productivity of land is expected to improve as a result of sustainable irrigation.

220. The second project: *Application of new biotechnology in cattle breeding* will be described in the next revised version of the NPF. The project brief is provided in Annex 4.

6. Integrated Resource Management

221. This program area takes a broader approach to land resource rehabilitation interventions by addressing an ecologically distinct territory, for example, a watershed or specific valley region, and incorporating multiple resource issues, stakeholders, and institutions into an integrated approach. Such an approach offers numerous advantages in combining related issues of, for instance, land degradation, food security, and fuel provision into one set of project activities.

222. Program interventions in this area directly contribute to the achievement of the Uzbekistan NPF's Outcomes #4 and #5: (4) improved ecological viability of degraded ecosystems whether agricultural land, pasturelands, forests or critical areas such as the Aral Sea, with resultant local and global benefits; and improved economic productivity of land, managed with SLM approaches, and (5) improved livelihoods of population groups directly dependant on the land, (agricultural land, pasturelands, forests, or the Aral Sea region).

223. Six projects are planned for implementation under the Integrated Resource Management program area (6.) in the Uzbekistan National Program: (1) *Land improvement in Bukhara, Navoi and Kashkadarya regions*; (2) *Rehabilitation of main collectors and land improvement in Khorezm*; (3) *Improvement of water management in the Ferghana Valley*; (4) *Land improvement in Djizak and Syrdarya regions*; (5) *Community-based water management*; and (6) *Drainage, irrigation and wetlands improvement project*. Projects 1, 2, 3 and 5 are planned to be initiated during Phase 1. Project 1 and 2 are briefly described below. Descriptions of projects 3 and 5 will be included in a subsequent version of the NPF.

224. The first project: Land Improvement in Bukhara, Navoi and Kashkadarya regions (LIP), has been formally approved by the Government of Uzbekistan and the Asian Development Bank. The project aims to implement a wide range of strategies to stop the downward spiral of land degradation (particularly secondary salinization) and deterioration of irrigation and drainage systems in the current irrigation areas that have led to land abandonment of other irrigated lands. To achieve this, the project will engage in strengthening water and land management institutions in the development of providing agricultural technology extension methodologies, operation and maintenance cost recovery mechanisms and O&M programs which will deliver future sustainability to the irrigated agriculture sector.

225. The project will rehabilitate and upgrade selected irrigation facilities and rehabilitate targeted drainage facilities for the main, inter-farm and on-farm systems to the benefit of 162,300 hectares, and a rural population of 1.7 million that contains up to 39% of rural poor whose livelihood depends on irrigated agriculture. The project will provide agricultural development and land improvement interventions, develop and test four demonstration farms, totalling 1200 hectares, to arrest the ever increasing presence of soil salinity and high water-table resulting from inefficient on-farm and in-field water management.

226. Moreover, the project will address policy constraints to the development of sustainable irrigated agriculture and mitigation of land degradation through addressing the Government's

agenda and reform in the agricultural and water sector, including the “command and control” system, and fixed prices and crop quotas.

227. The project will result in improved farmer’s livelihoods, increased incomes, higher yields and enhanced land productivity. The major outcomes will be: (i) increased investments in land by private farmers resulting from the improved policy environment; (ii) improved soil quality through measures that mitigate land degradation; and (iii) environmental sustainability due the combined positive effects of the policy and physical interventions.

228. The project will create: (i) enhanced incentives for farmers through policy reforms at the project and sector level; (ii) improvements in land, water, and agricultural management practices; (iii) rehabilitation of land management infrastructure and improved operation and maintenance of irrigation and drainage systems; and (iv) strengthened land and water management institutions.

229. The LIP has four principal components: (i) *Land and Agricultural Improvement* to promote improved land reclamation practices; (ii) *Capacity Building of Land and Water Management Institutions* through introduction of integrated land and water management and institutional strengthening; (iii) *Rehabilitation of Land Management Infrastructure* including rehabilitation of on-farm infrastructure to improve land and water management both on private farms, and of main drains and structures to improve drainage and irrigation. (iv) *Project Management*, including establishment of project management offices, monitoring and evaluation (M&E), and consulting services.

230. The GEF incremental activities will include: (i) introduction of and demonstration of novel and improved land management techniques to supplement and gradually replace traditional practices, (ii) enhanced capacity building and institutional strengthening for mainstreaming sustainable land management and integration of land-use planning systems; (iv) promotion of up-scaling and replicability of Project results for wider country implementation, (v) development and implementation of meaningful indicators and monitoring and evaluation systems.

231. The second project in this Integrated Resource Management program area is entitled *Rehabilitation of main collectors and land improvement in Khorezm*, The aim of this project is to integrate the urgently needed reconstruction of the main drainage collectors in Khorezm (in the lower reaches of the Amu Darya River), with improvements in institutional performance, the implementation of improved farm business management concepts, and human capacity building. The mere rehabilitation of the irrigation and drainage network is insufficient in the long run, because due to the complex nature and ecological implications of land and water management, only a water management aimed at successfully controlling soil degradation (desertification) can lead to reducing rural poverty, stabilizing rural incomes, and improving rural livelihoods in Khorezm.

232. This integrated approach aims at minimizing land and water use and improving water use efficiency (“more crop per drop”). It is based on a scientifically sound concept that was developed in participation with key stakeholders of the region and amply tested under field conditions in the interdisciplinary ZEF/UNESCO research program based at the University of Urgench. The stakeholder-oriented approach includes community-oriented needs assessments and thus will not only ensure broad government support (“enabling policy environment”) but also the farmer’s support for novel land use planning approaches. Although the proposal is tailored to Khorezm region, the approach may serve as a model for improved land management in similarly structured irrigated lowlands of the Aral Sea Basin.

233. With the rehabilitation of the deteriorated drainage system, a sound and appropriate foundation is laid for the introduction and adoption of novel water and farm management

strategies. Integrated sustainable farm management should take hold in the region, with sustainable and more efficient land and water use technologies being implemented, including more diverse crops and novel cropping techniques; WUAs functionally operating based on IWRM principles; with the economic well-being of rural households having considerably improved; and with self-sustained training centers set up for the dissemination of best practices through human capacity building. Only the combination of these activities will contribute to combating soil degradation and rural poverty at the roots and thus ensure that the returns expected from this investment program can be fully realized.

7. Mitigation of the Negative Consequences of the Aral Sea Crisis

234. Given the multi-country and global significance of the Aral Sea disaster's severe consequences, interventions in land degradation for the Aral Sea area have been singled out as a separate programmatic priority which requires collective efforts of all stakeholders on local, national and multi-country levels.

235. Program interventions in this area directly contribute to the achievement of the Uzbekistan NPF's Outcomes #4 and #5: (4) improved ecological viability of degraded ecosystems whether agricultural land, pasturelands, forests or critical areas such as the Aral Sea, with resultant local and global benefits; and improved economic productivity of land, managed with SLM approaches, and (5) improved livelihoods of population groups directly dependant on the land, (agricultural land, pasturelands, forests, or the Aral Sea region).

236. The problems and consequences of land degradation and desertification relating to the Aral Sea disaster, which has resulted in worsened living standards for over 2.7 million people in the delta of the Amu-darya and Aral Sea, are quite striking and well known to the world community. According to the latest assessments, direct and indirect social and economic losses as a result from the Aral Sea disaster in Uzbekistan amount to \$144 million USD per year, which is approximately \$5 per capita and 1.8% of GDP.

237. Two projects are planned for implementation under this program area in the Uzbekistan National Program: (1) *Upscaling of the GTZ project "Forestry amelioration of sea-bed of the Aral Sea*; and (2) *Reforestation in desiccated sea-bed of Southern Aral Sea*.

238. The first project in this program area is entitled *Upscaling of the GTZ project "Forestry amelioration of sea-bed of the Aral Sea*. The aim of this project is: (i) strengthening the capacity (institutional, human and technical) of forest organizations on local, oblast and national levels, (ii) introduction of integrated approaches to the restoration and best forestation practices (crop diversification, selection, effective schemes of forest plantations etc.) and establishment of industrial plantations; (iii) improved employment opportunities and poverty alleviation for the rural population exposed to direct (15,000 people) and indirect impacts of the Aral Sea desertification processes (Amudarya Delta and North-West Kyzylkum); and (iv) creation of viable infrastructure for activities in remote areas of Kyzylkum Desert and Dried Aral bottom.

239. The main objective of the second project for implementation in the Phase 1 is to assist the GoU to provide for the reforestation of the dried bed of the Aral Sea within the territory of the Republic of Uzbekistan. The specific objective the project is decreasing wind erosion, fixation of mobile sands that lead to the minimum deflation processes, and salt and dust removal from the protected territory. Planned measures support making a healthy ecological situation with the help of wood-shrub vegetation, excreting oxygen, absorbing greenhouse gasses and accumulating dust. Such benefits will sharply decrease illnesses among the local population and will bring the desiccated area back into the agricultural cycle by developing cattle breeding and growing herbs.

240. One of the project's tasks is to combat salt-dust transfer and its localized negative impact on the environment by the creation of forest belts using local vegetation (saxsaal, saltwort, tamarisk) capable of growing in such natural conditions without additional moistening of root zone soil at the expense of natural precipitation. They serve as the main climate regulating chain and supports the ecological equilibrium of natural environment. The creation of forest shelter belts on the desiccated bed of the Aral Sea will be a condition of sustainable natural development of this territory, and it provides an opportunity to increase the fodder base for distant-pasture cattle breeding. This will help improve the socio-economic position of the population.

D. Investment Program

241. The major objective of the National Programming Framework (NPF) is the reduction of land degradation, alleviating poverty and restoring the integrity of vulnerable natural ecosystems in the RU. The specific goal of the NPF is to provide assistance to the Government of Uzbekistan in establishing an effective SLM system to ensure sustainability, alleviate poverty, and ensure the viability of natural ecosystems for future generations. The NPF supports National and Sub-Regional Programs and Action Plans within the framework of UNCCD, SRAP and IPRSP, and maintains close links to UN CBD and UN FCCC targets. Improved synergy between the three Global Conventions facilitates the development of common and comprehensive approaches in implementing the SLM strategy at local, national and global levels.

242. Activities financed through the Uzbekistan Program in SLM will assist the government in achieving progress in:

- (i) creating conditions for strengthening institutional, legal and political framework;
- (ii) carrying out operational arrangements to realize SLM;
- (iii) establishing monitoring and assessment of land degradation;
- (iv) development of integrated approach in sustainable land management and natural ecosystems through national investment programs; and
- (v) monitoring of the progress of project implementation and assessment.

243. Special attention will be paid to natural resources management at the local and oblast levels and related activities with active involvement of all stakeholders. The NPF will be implemented gradually over the course of ten years.

1. Overview of Program

244. GEF assistance would cover three inter-related types of interventions: capacity building, on-the-ground investments, and targeted research – at the community, national, and/or transboundary levels. The interventions presented below represent a menu of likely areas of GEF support from which countries may choose depending on their priorities.

245. The investment program includes a package of priority investment and demonstration programs and projects identified during the process of comprehensive problem analysis. Their implementation will allow for the generation of knowledge and experience in integrated approaches for SLM. Different approaches will be tested addressing legal, political and institutional problems and programs to enhance participation. Jointly, these specific programs and projects will ensure aggregated lessons and acceptable models of integrated management in priority regions of ecological risk, and possibilities for the government to widely replicate and adopt SLM approaches. Individually, each project will have direct local, national and global

benefits. With a view to maximizing demonstration effects, each project was selected on the basis of acceptance and priority GEF/CACILM criteria.¹⁸ The eligibility criteria are given below.

246. The project regions/oblasts described previously, which cover various natural ecosystems and land degradation components, represent high priority geographical areas to be supported by GEF under the NPF. These regions have:

- (i) global importance for preserving the diversity of agricultural ecosystems, pastures and forests, and increased potential for greenhouse gas absorption;
- (ii) compliance with the objectives of the national program to combat land degradation and achieve poverty reduction;
- (iii) potential to positively influence the mitigation of land degradation and its prevention; and
- (iv) possibilities for the broad development of acceptable models for integrated management of land resources and natural ecosystems.

247. The preliminary package of investment and technical assistance projects has been identified under the NPF in order to submit for SPA consideration under CACILM. The first package of projects is united in seven program areas, and projects for implementation in Phase 1 (Inception) are attached in Appendix 4. The remaining potential investment and demonstration projects require further preliminary review in order to be submitted to the international donor community. The ADB has a few feasibility studies within the framework of the ADB to possibly provide support to Uzbekistan.

248. The list of proposed investment and demonstration projects, which may be included in CACILM activity, is given in the following table. It includes pipeline national and regional projects (supported by ADB, WB, GEF, GTZ, etc), loan projects under the National Investment Program, and newly proposed projects, programs and concepts, which may be included in CACILM activity. Brief descriptions of the proposed projects and programs were given in Section IV C.

249. Updating of the NPF Investment Program will be needed for the planning of later phases. Other interventions will be made gradually, in accordance with NPF principles and objectives, during initial program activities.

¹⁸ PDF-B Proposal for CACILM, ADB, 2005

Table 8: Uzbekistan SLM Program Investment Table (in millions of USD)

Baseline Project	Project Proposal	Total Cost Estimate	Gov't	Donor	GEF Budget	Partners / Implementing Agency	Timeframe	Financial Firmed To Be To Obtained (TBO)
1.a. Capacity Building – Strengthening the Enabling Environment								
NSCA project GEF/ UNDP (2004-2006)	1. Institutional strengthening and inter-sectoral coordination in UNCCD implementation	2,500	0,050	1,450	1,000	Uzhydromet, MAWR, Academy of Science, NGOs, etc /UNDP	2006-2011	TBO. Experience of UNDP and ADB is available/ Uzhydromet
FAO/TCP/UZB/2901. 2002-2005; Enhancement of Living Standards project EC/UNDP 2005-2006	2. Enhancement knowledge and public participation	2,200	0,050	1,300	0,850	MAWR, Agrarian University, NGO, UNDP, FAO, ADB	2006-2011	TBO. Experience of ADB, GM, IFAD, FAO is available / MAWR
	3. Development of economic incentives for farmers to combat land degradation	2,650	0,030	0,470	2,150	MAWR, Uzgeodezcadastre, and beneficiaries / UNDP	2006-2010	GEF and other counterparts
1.b. Capacity Building - Integration into Land Use Planning and Management								
GEF Land Degradation Assessment in Drylands (LADA) 2000-2004	1. Capacity building for land degradation assessment and management	2,000	0,050	1,200	0,750	MAWR, Uzgeodezcadastre, Hydromet, Samarkand University, FAO / ADB	2006-2010	TBO. Experience of FAO, ADB, etc is available/MAWR
NAP CCD, SRAP-CD, 2003	2. Development of integrated system for monitoring, information management and land inventory	2,500	0,060	1,440	1,000	UNCCD counterpart institutions and all groups of stakeholders / GTZ, ADB	2006-2011	TBO. Experience of ADB, EU, WB, etc is available / MAWR & Uzhydromet
	3. Creation and adaptation of Automated Land Information and Land Cadastre System	9,000	0,025	7,975	1,000	Land Committee, Uzgydromet, MAWR, etc /ADB	2009-2016	TBO. Experience of ADB, EU, WB, etc is available / Uzgeodezcadastre/MAWR & Uzhydromet
UNESCO/ZEF Bonn Khorezm Region 2002-2006	4. Reforestation by local communities in the irrigated lowlands (ILAFOR)	0,123	0,046	0,027	0,050	MAWR, Hokimiats, ZEF/UNESCO Project, ZEF Bonn, DLR / ADB	2006-2008	TBO. ZEF Bonn/UNESCO is available / MAWR
2.a. Sustainable Agriculture – Rain-fed Lands								

Baseline Project	Project Proposal	Total Cost Estimate	Gov't	Donor	GEF Budget	Partners / Implementing Agency	Timeframe	Financial Firmed To Be To Obtained (TBO)
	1. Watershed/Land Erosion Prevention and Reforestation Project in Uzbekistan	9,000	0,010	8,480	0,500	Forestry Department, MAWR and affected stakeholders / ADB	2011-2016	TBO. Experience of ADB, UNDP, WB, etc is available / MAWR
NAP CCD, SRAP-CD, 2003	2. Rainwater harvesting and land erosion prevention in sloping areas of Uzbekistan	4,000	0,070	2,930	1,000	MAWR (Agricultural Centers, Forestry Department), Grain Institute, and beneficiaries / ADB	2006-2011	TBO. Experience of ADB, UNDP, GTZ is available /MAWR
2.b. Sustainable Agriculture – Irrigated Crop Lands								
UNESCO/ZEF Bonn Khorezm Region 2002-2006	1. Sustainable farm development in the irrigated lowlands of the Amudarya River basin	0,091	0,010	0,031	0,050	Ministry of Higher Education, MAWR, the Hokimiats, ZEF/UNESCO Project, TIIM, CIMMYT, ICARDA / ADB	2006-2007	TBO. Experience of ZEF Bonn / UNESCO is available / Khorezm Department of MAWR
	2. Sustainable Agriculture and Food Processing Industry in Uzbekistan	16,500	0,030	15,470	1,000	MAWR (Agricultural Centers) and beneficiaries / ADB	2009-2016	TBO. Experience of FAO, ADB, WB, etc is available / MAWR
3. Sustainable Forest and Woodland Management								
GEF PDF-A Phase, UNDP	1. Achieving Ecosystem Stability on the degraded land in Karakalpakstan and the Kyzylkum Desert	3,597	0,114	2,696	0,787	Forestry Department, MAWR, Uzhydromet, Academy of Science, Goskompriroda, etc / UNDP	2006-2009	Firmed by UNDP GEF PDF-A project / Forestry Department of MAWR
	2. Promotion of reforestation and forestry conservation initiatives among rural communities	2,550	0,100	1,450	1,000	Forestry Department, MAWR, Goskompriroda, Uzhydromet, Academy of Science / UNDP	2006-2010	TBO. Experience of UNDP, ADB, GTZ is available/ Forestry Department, MAWR
4. Sustainable Pastureland Management								
	1. Concept of sustainable drylands pasture management	0,365	0,015	0,15	0,200	Uzhydromet, Academy of Science, etc /ADB	2009-2011	TBO. Experience of UNDP, ADB, etc is available / Uzhydromet & MAWR

Baseline Project	Project Proposal	Total Cost Estimate	Gov't	Donor	GEF Budget	Partners / Implementing Agency	Timeframe	Financial Firmed To Be To Obtained (TBO)
FS "Stabilization of Aydarkul lake water level with diversion of excess water options", MAWR, 2005	2. Stabilization of the Arnasay lake ecosystems and pastureland protection	9,000	0,050	7,950	1,000	MAWR (Uzqip, Agricultural Centers, etc.), Uzhydromet, Uzbekhydrogeology, Academy of Science, ICARDA and affected beneficiaries / ADB	2006-2011	TBO. Experience of ADB, UNDP, GTZ is available / MAWR & beneficiaries
	3. Increasing fodder productivity through improvement of the groundwater utilization	1,200	0,015	0,685	0,500	Uzbek Hydrogeology, MAWR, etc /ADB	2009-2013	TBO. Experience of ADB, WB, etc is available / Uzbekhydrogeology & beneficiaries
5. Targeted Research								
	1. Water management and sustainable livelihoods in the delta ecosystem of the Amudarya	0,105	0,005	0,050	0,050	MAWR, Hydromet, Center of Ecology, Karakalpakstan Acad., NGO, and affected stakeholders, Stockholm Environment Institute, UK / ADB	2006-2008	TBO. Experience of UNDP, ADB, WB, etc is available / MAWR (UZGIP) & Uzhydromet
	2. Application of new biotechnology in cattle breeding in Samarkand region	0,100	0,005	0,045	0,050	Samarkand Agricultural Center and Veterinary Institute, etc / ADB	2006-2008	TBO. Experience of ADB, IFAD, etc is available / MAWR (Samarkand Agricultural Center)
	3. Adaptation of stimulation mechanisms of agricultural producers in support of food security.	0,365	0,065	0,150	0,150	MAWR (Institute of Market Reforms) /ADB	2009-2010	TBO. Experience of ADB, IFAD, etc is available / MAWR
Economic and Ecological Restructuring of Land and Water Use in Khorezm Region, BMBF, 2002-2006	4. Economic and Ecological Restructuring of Land and Water Use in Khorezm Region: Research for Development	2.000	0.050	0.950	1.000	MAWR, Khorezm Hokimiats, ZEF/UNESCO Project, TIIM, CIMMYT, ICARDA, etc / ADB	2009-2013	TBO. Experience of ZEF Bonn / UNESCO, ADB, IFAD, ICARDA, etc is available / MAWR
6. Integrated Resource Management								

Baseline Project	Project Proposal	Total Cost Estimate	Gov't	Donor	GEF Budget	Partners / Implementing Agency	Timeframe	Financial Firmed To Be To Obtained (TBO)
PPTA Land Improvement Project, 2004-2005	1. Land improvement in Bukhara, Navoi and Kashkadarya regions (LIP)	86,200	22,400	60,8	3,000	Ministry of Agriculture and Water Resources and beneficiaries of the Bukhara, Navoy and Kashkadarya / ADB	2006-2011	ADB /MAWR and beneficiaries
	2. Rehabilitation of main collectors and land improvement in Khorezm region	70,000	9,200	60,0	0,800	MAWR and Khorezm beneficiaries, ZEF/UNESCO Project Urgench, ZEF Bonn, UNESCO, TIIM, SANIIRI, CIMMYT, ICARDA / ADB	2007-2011	TBO. Experience of ADB, etc is available / MAWR
	3. Main collectors rehabilitation in North Karakalpakstan	75.000	15.000	59.350	0.650	MAWR and national beneficiaries / ADB	2009-2014	TBO. Experience of ADB, WB, GTZ, etc is available / MAWR
	3. Improvement of water management in the Ferghana Valley	150,000	30,000	118,0	2,000	MAWR and beneficiaries of Ferghana valley/ WB	2007-2010	TBO. Contribution of the WB only for three Districts (35.000 USD) is available. /MAWR
Project FS is ongoing MAWR,2005-2006	4. Land improvement in Djizak and Syrdarya regions	55,000	11,000	43.550	0,450	MAWR and beneficiaries of the Syrdarya and Djizak, Kuwait Fund / ADB	2008-2012	TBO. Kuwait Fund is available /MAWR
	5. Community-based watershed management	2,270	0,020	1,200	1,050	MAWR, Uzgip, Uzhydromet, Goscompriroda, and all group of stakeholders, / UNDP	2006-2011	TBO. Experience of ADB, WB, UNDP, etc is available /MAWR
WB DIWIP project 2004-2009	6. Up scaling of the Drainage, Irrigation and Wetland Improvement project	2,000	0,050	0.950	1,000	MAWR; Mott MacDonald&Temelsu and relevant national institutions / WB	2009-2013	TBO. Experience of the WB, etc is available /MAWR
7. Mitigation of the Negative Consequences of the Aral Sea Crisis								
GTZ project "Forestry amelioration of the dry exposed sea-bed of the Aral Sea"	1. Up scaling of the GTZ project "Forestry amelioration of the dry exposed sea-bed of the Aral Sea"	2,000	0,05	0,950	1,000	Forestry Department, MAWP and local beneficiaries, GTZ UNDP	2009-2016	TBO, Experience of GTZ, UNDP is available /MAWR

Baseline Project	Project Proposal	Total Cost Estimate	Gov't	Donor	GEF Budget	Partners / Implementing Agency	Timeframe	Financial Firmed To Be To Obtained (TBO)
IFSA Main Program of Specific Actions in the Aral Sea Basin for the period of 2003-2010.	2. Reforestation of desiccated exposed sea-bed of Southern Aral Sea	2,880	0,300	1,080	1,500	IFSA GEF Agency, Forestry Department of the MAWR, Uzgeodezcadastre, Uzbekhydrogeology, etc and affected stakeholders/ ADB	2006-2013	TBO. Experience of GTZ is available /Agency of International Fund for Saving Aral Sea
National Program Coordination and Management								
	Support for National Secretariat Operation and Monitoring of Investment Program Implementation	1,400	0,220	0,750	0,430	CACILM Secretariat /ADB	2006-2016	TBO
Total Cost		516.5961	89.1	401.529	25.967			

3. Phases and Schedule

250. The Uzbekistan National Program for SLM will have three phases:

- (i) Phase I - Inception – 1 July 2006 to 31 December 2008;
- (ii) Phase II - Full Implementation - 1 January 2009 to 31 December 2013; and
- (iii) Phase III - Consolidation - 1 January 2014 – 30 June 2016

Phase I. Inception – 1 July 2006 to 31 December 2008

251. **The Inception Phase.** The inception phase is designed to build the capacity for sustainable land management. The key activities will include:

- (i) Building the capacity of key institutions responsible for planning and implementing land management interventions;
- (ii) Initiation of measures to strengthen the policy, legislative, and institutional frameworks in each country to create conditions conducive for sustainable land management;
- (iii) Design, development, and operationalization of a land management information systems for evaluation of changes in land degradation status;
- (iv) Establishment of land degradation baseline, using specific land degradation indicators;
- (v) Design and development of sustainable land management research program, with initiation of initial research activities;
- (vi) Initiation of new on-the-ground project investments directed towards specific land management improvements, particular demonstration and pilot projects;
- (vii) Establishment national level program coordination and management units, with necessary capacity building in finance and administration; and
- (viii) Design, development, and operationalization of project monitoring and evaluation systems.

Phase II. Full Implementation - 1 January 2009 to 31 December 2013.

252. **The Full Implementation Phase.** The full implementation phase is designed will focus on the ground investments in sustainable land management. The key activities will include:

- (i) Ongoing implementation of existing on-the- ground investments
- (ii) Initiation of new on-the-ground investment projects
- (iii) Continued efforts to strengthen the policy, legislative, and institutional frameworks in each country;
- (iv) Continued capacity building in key institutions, particularly with respect to those required to support implementation of on-the-ground investments;
- (v) Monitoring and reporting of changes in the status of land degradation;