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COUNTRY PORTFOLIO EVALUATION TAJIKISTAN (1999 – 2015)

VOLUME II - TECHNICAL DOCUMENTS

(Prepared by the Independent Evaluation Office of the GEF)

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TECHNICAL DOCUMENT A – COUNTRY ENVIRONMENT LEGAL FRAMEWORK

Abbreviations

ADB	Asian Development Bank	**BCAP**	Biodiversity Conservation Action Plan
CBD	Convention on Biological Diversity	**CEP**	Committee for Environmental Protection
DRD	Direct Rule Districts	**EA**	Executive Agency
EA	Enabling Activity	**EBRD**	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment	**FAO**	Food and Agriculture Organization
FSP	full-size project	**GBAO**	Gorno-Badakhshan Autonomous Oblast
GEF	Global Environmental Facility	**GDI**	Gender-related Development Index
GDP	Gross Domestic Product	**GoT**	Government of Tajikistan
HDI	Human Development Index	**IEE**	Initial Environmental Examination
ILO	International Labour Organization	**IMF**	International Monetary Fund
IOM	International Organization for Migration	**KHO**	Khatlon Oblast
M&E	monitoring and evaluation	**MDG**	Millennium Development Goal(s)
MSP	medium-size project	**NCSA**	National Capacity Self-Assessment
NEAP	National Environmental Action Plan	**PMIS**	Project Management Information System
POP	persistent organic pollutant	**PPCR**	Pilot Program for Climate Resilience
PRSP	Poverty Reduction Strategy Paper	**RAF**	Resource Allocation Framework
RT	Republic of Tajikistan	**REAP**	Regional Environmental Action Plan
SGP	Small Grants Programme	**STAR**	System for Transparent Allocation of Resources
TJS	Tajik Somoni (national currency)	**TOR**	Terms of Reference
UNCCD	United Nations Convention to Combat Desertification	**UNFCCC**	United Nations Framework Convention on Climate Change
UNEP	United Nations Environment Programme	**UNDP**	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization	**WB**	World Bank

1. Introduction

1. The Country Environmental Legal Framework (CELF) technical document reports on Tajikistan's environmental legislation and environmental policies (plans, strategies and others) as well as on the international agreements/conventions ratified, accessed and enacted in the country. This information is presented and analyzed through time, since the start of GEF activities to date (1999-2014).

2. Tajikistan has a well-developed environmental legal and regulatory framework. Current environmental legislation in Tajikistan includes statutory acts and laws on the following topics: (i) Protection of the environment; (ii) ecological audit and monitoring; (iii) protection of flora and fauna; (iv) environmental information and education; (v) soil, water and air quality; (vi) biological safety; (vii) human health and safety; and (viii) waste and chemicals management. These laws, along with the regulations approved by the Government of Tajikistan (GoT) create a favorable legal framework for environmental protection and for the use and protection of the country's natural resources. They also enforce the rights of any citizen for environmental safety, organic products, eco-friendly environment, access to environmental information, possibility of investing (moral, material and financial) to improve the ecological situation in the country. The most relevant of these laws, codes and regulations within the GEF focal areas are highlighted in the sections below.

2. Laws and regulations

2.1 Basic Provisions in the Constitution

3. The environment is very much present into Tajikistan's legal agenda. The Constitution of the Republic of Tajikistan was adopted in 1994 and amended in 1999 and 2003. It recognizes public and individual rights to a safe and healthy environment, as the following two articles demonstrate:

- Article 38 stipulates that "Every person has the right to health care. This right is ensured by providing free medical assistance in state medical establishments and by measures aimed at protecting environment, developing mass sport, physical training, and tourism…"
- Article 44 states that "The protection of nature, historical and cultural heritage is the duty of every person".

4. Under the Constitution, land and mineral resources, water, air, animals and plants, as well as other natural resources, belong exclusively to the State. Article 13 stipulates that "Land, earth bowels, water, air, fauna and flora, and other natural resources are owned by the State, and the State guarantees their effective use in the interests of the people".

5. Beyond those general articles contained in the Constitution, environmental protection and other related issues are reflected in the articles stipulated by other statutory legislative acts.

2.2 Framework Environmental Law

6. Since the start of GEF activities in Tajikistan (1999) the "framework environmental law" in Tajikistan was the Law of the Republic of Tajikistan "On Nature Protection" (No. 905 as of December 27, 1993, it was enacted in 1994 and amended sequentially in 1996, 1997, 2002, 2004 and 2007). This law presented a legal foundation for the state policy in the field of environmental protection and

aimed at ensuring sustainable socio-economic development, human rights guarantees for a healthy and favorable environment, strengthening the rule of law, preventing the negative impacts of economic and other activities on the environment, and ensuring the management of natural resources and ecological safety.

7. The Framework Environmental Law was further replaced by the Law "On Environmental Protection" (No. 760 as of August 2, 2011). This law stipulates that Tajikistan's environmental policy should give priority to environmental actions based on scientifically proven principles that combine economic and other activities having a potential negative impact on the environment, with nature preservation and the sustainable use of resources. The law defines the applicable legal principles, the protected objects, the competencies and roles of the Government, the Committee for Environmental Protection under the Government of Tajikistan, the local authorities, public organizations and individuals. Another key aspect of this law is that it stipulates measures to secure public and individual rights to a safe and healthy environment and requires a combined system of relevant activities that prevent or mitigate negative impacts on the environment. Furthermore, the Law defines environmental emergencies and ecological disasters and prescribes the order of actions in such situations, defines the obligations of officials and enterprises to prevent and eliminate the consequences, as well as the liabilities of persons or organizations that caused damage to the environment or otherwise violated the Law.

8. On the enforcement side, this law establishes several types of controls over compliance with environmental legislation: State control, ministerial control, enterprise control and public control. Public control is carried out by civil society organizations or trade unions and can be exercised with respect to any governmental body, enterprise, entity or individual.

2.3 Water Code

9. The Water Code (No. 34 as of November 29, 2000, wording of the Republic of Tajikistan Laws No. 381 as of 20.03.08, No. 572 as of 03.12.09, No. 744 as of 28.06.11, No. 821 as of 16.04.2012) stipulates the policies on water management, issuance of water use permits, dispute resolution, usage planning and cadaster. It promotes rational use and protection of water resources and defines the types of water use rights, authority and roles of regional and local governments for water allocations among various users, collection of fees, water use planning, water use rights and dispute resolution.

2.4 Forest Code

10. The Forest Code of Tajikistan was approved in 1993 (No. 770 as of June 24, 1993) and amended twice in 1997 and 2008 (wording of the Republic of Tajikistan Laws No. 421 as of May 15, 1997 and No. 352 as of August 01, 2008). The Code stipulated the policies on forest management, permitting, dispute resolution, usage planning and cadaster. It also promoted rational use and protection of forestry resources and defined the types of use rights, authority and roles of regional and local governments for forestry resources use rights and dispute resolution among various users, collection of fees, forestry development planning, among others.

11. In 2011 a new Forest Code of Tajikistan (No. 761 as of August 2, 2011) replaced the old one. The new Forest Code, in compliance with the above-mentioned general provisions, requires that everyone is responsible for forestry prescriptions, ensures that prescriptions include appropriate species selection, stocking, and specific free growing requirements. With this Code an ecological and ecosystem-specific approach to the selection of tree species and stocking has been introduced.

12. Other normative acts and program documents related to forestry are worth mentioning: “Provision on the protection of forests (1999)”; “Provision on implementation on the collateral use in forestry (1999)”; “Concept (Framework) of Forestry Development of the RT through 2005”; and “Provision on government control over the conditions, use, reproduction, conservation and protection of forests (2000)”.

2.5 Land Code and other Land Administration Laws

13. The current Land Code[1] regulates land relations among users and it is directed at the rational “use and protection of land and fertility of the soil…” The land may be used in a “rational manner” only and the Code allows local authorities to decide what constitutes “rational” land use.

14. The Law on Land Administration (No. 356 as of January 5, 2008) obliges the land administration authorities to map and monitor the quality of land, including soil contamination, erosion and water logging. It provides requirements for planning and rational use of the land in Tajikistan.

15. The Law on Land Assessment (No. 18 as of May 12, 2001, wording of the Republic of Tajikistan Law No. 262 as of May 12, 2007) establishes the legal basis for cadastral assessment of the land in the Republic of Tajikistan and defines in the technical requirements for conducting a land assessment.

16. Other substantial legislative acts regulating relationships in the field of the land use are the Law "On Land Reform" (No. 594 as of March 5, 1992, and amended in 1994, 1995, 1997 and 2006) and the "Resolution on the Government on Control over Land Use and Land Protection" (1997). This law stipulates the requirements for effective use of land, the application of environmental protection technologies, and the measures to be taken against the deterioration of the land caused by economic activity. Provisions in the law on land reform include the creation of the conditions for an equal development of various forms of land activity, establishment of national economy based on various types of ownership, and rational use and protection of lands subjected to intensification of agricultural production. Land legislation also regulates land management relations between state bodies, local self-governance, authorized government entities in the area of land resource management, as well as any other physical and legal persons.

2.6 Environmental Impact Assessment Laws

17. There are two laws in Tajikistan that stipulate all aspects of how to conduct an Environmental Impact Assessment (EIA) on a proposed investment: (a) the “framework environment law”, i.e. the Law on Nature Protection and since 2011 the Law on Environmental Protection; and (b) the Law on Ecological Expertise. In 2012 this law (No. 20 as of April 22, 2003, wording of the Republic of Tajikistan Laws No. 328 as of July 30, 2007, No. 468 as of December 31, 2008 and No. 589 as of January 12, 2010) was replaced by a new Law on Ecological Expertise (No. 818 as of April 16, 2012).

18. Chapter V, Articles 35-39 of the Law on Environment Protection (2011), introduces the concept of state environmental or ecological review (literally, the State Ecological “Expertise” – SEE[2]), which seeks to examine the compliance of proposed activities and/or projects with the requirements of the current environmental legislation and the standards and ecological safety of the society. The above-mentioned laws stipulate the mandatory cross-sectoral nature of SEE, which shall be scientifically

[1] No. 327 as of December 19, 1996, wording of the Republic of Tajikistan Laws No. 746 as of May 14, 1999, No.15 as of May 12, 2001, No.23 as of February 28, 2004, No. 199 as of July 28, 2006, No. 357 as of January 05, 2008, No. 405 as of June 18, 2008, No. 704 as of March 25, 2011, No. 819 as of April 16, 2012, No. 891 as of August 01, 2012.

[2] State Ecological Expertise means both the department (institution) within the Committee for Environmental and the process of review as well.

justified, comprehensive, and objective and which shall lead to conclusions in accordance with the law. SEE precedes decision-making about any activity and/or investment that may have a negative impact on the environment.

19. Financing of programs and projects are allowed only after a positive SEE review has been issued. Activities and investments that are subject to SEE review also include the construction and refurbishment of various types of facilities (namely plants and factories, mines and deposits, industrial and dwelling buildings, production and service-related units, roads, railroads, airports, power transmission lines and all other infrastructure) irrespective of their ownership. In short, all types of economic production activities must be implemented in accordance with existing environmental standards and norms and must have sufficient environmental protection and mitigation measures to prevent and avoid pollution and enhance environmental quality. The EA studies[3] analyzing the short- and long-term environmental, genetic, economic, and demographic impacts and their consequences shall be evaluated prior to making decisions on the allocation, construction, or refurbishments of the facilities, irrespective of their ownership. If these requirements are violated, construction will be stopped until the necessary improvements are made. These provisions are enforced by GoT duly authorized control bodies, including sanitary, geological, and public safety agencies.

20. An EIA is a component of the SEE, as set out in the 2011 Environmental Protection Law and in the 2012 Law on State Ecological Expertise, which comprises both the department within the Committee for Environmental and the process as well. Conducting the EIA is the responsibility of the project proponent. The State Ecological Review[4] - which comprises the process component only - for all investment projects is the responsibility of the GoT Committee for Environmental Protection (CEP) and its regional offices. Furthermore, according to the 2012 Law on State Ecological Expertise, all civil works, including rehabilitation ones, should be assessed for their environmental impacts and the proposed mitigation measures should be reviewed and monitored by the CEP.

21. The legal and regulatory system for the EIAs also include:

- the Procedure of Environmental Impact Assessment (adopted by the Resolution of the Government of the Republic of Tajikistan No. 509 as of 01.08.2014).
- the Procedure to implement State Ecological Expertise (approved by the Resolution of the Government of the Republic of Tajikistan No. 697 as of December 3, 2012).
- the Guidelines on the composition and order of development of content and structure of the documentation to be submitted for review (SEE), as well as coordination and approval of all projected budget or investment estimations, design drawings or documentation that must be developed in coordination with the SEE[5], buildings and structures and EIA chapters, Strategic Environmental Assessment SEA and feasibility documents; and
- the List of objects and types of activity for which preparation of documentation on Environment Impact Assessment is mandatory (adopted by the Resolution of the Government of the Republic of Tajikistan No. 253 as of June 3, 2013).

[3] The Environmental Assessment document must be prepared by the project proponent and submitted to SEE for review and further approval together with other relevant project documentation including background information and rationale, technical/engineering design, budget estimation, master or business plans, among others.

[4] State Ecological Review which is also commonly referred as State Environmental Review means the process only.

[5] All projected budget or investment estimations, design drawings or documentation must be developed in coordination with the SEE.

2.7 Main Environmental Laws

22. The main purpose of the legal environmental arrangements is to determine necessary standards and behavioral patterns of authorized agencies and citizens in order to live in a healthy and balanced environment. Regulations, directives, circulars, and notifications that were issued on the basis of the environmental laws include the procedures and methods to be complied with. A list of the main environmental laws by sector is provided here below.

Hydro-meteorological Activity

23. Entered into force by the Decree No. 86 as of December 2, 2002, this act establishes the legal basis for hydro-meteorological data gathering and analysis activities on Hydrometeorology and aims to meet the needs of the State, individuals and legal entities in the hydro-meteorological information, as well as information about the state of the environment.

Production and Safe Handling of Pesticides

24. Entered into force by the Decree No. 1 as of April 22, 2003, this act establishes the legal basis of the production and safe handling of pesticides, including the exposure to substances and agrochemicals to protect human health and the environment.

Protection and Use of Flora

25. Entered into force by the Decree No. 31 as of May 17, 2004, this act establishes the principles of State policy of the Republic of Tajikistan in the field of protection and rational use of the country's flora, including the legal, economic and social framework in this subject matter, with the aim of preservation and reproduction of flora resources.

Environmental Audit

26. Entered into force by the Decree No. 785 as of December 26, 2011, this law defines the principles and sequencing of carrying out an ecological audit in the Republic of Tajikistan. The purpose is preventing any eventual harmful effect of economic and other production activities on the environment, life and health of the population of the Republic of Tajikistan.

Environmental Information

27. Entered into force by the Decree No. 705 as of March 25, 2011, this law defines the legal, institutional, economic and social framework for ensuring the production of environmental information in the Republic of Tajikistan. The law also promotes the rights of natural and legal persons to receive complete, accurate and timely environmental information and regulates the relations in this area among all interested or concerned individuals, communities or legal entities.

Environmental Monitoring

28. Entered into force by the Decree No. 707 as of March 25, 2011, this act defines the organizational, legal, economic and social framework for environmental monitoring in the Republic of Tajikistan and governs the relationships between public authorities, local governments of towns and villages, public organizations and citizens in this subject matter.

Environmental Education

29. Entered into force by the Decree No. 673 as of December 29, 2010, this law regulates the legal, organizational, financial and economic principles of the State policy in the field of environmental education.

Atmospheric Air Protection

30. Entered into force by the Decree No. 915 as of December 28, 2012, this law regulates relations of the individuals and legal entities, irrespective of their form of legal entities' ownership, in order to preserve, restore air quality and to ensure environmental safety.

Biological Safety

31. Entered into force by the Decree No. 88 as of March 1, 2005, this law regulates the development, testing, production, import, export and placing on the market of Genetically Modified Organisms (GMOs), aimed at reducing the risk of GMOs adverse effects on human health, on the country's biodiversity, on the ecological balance and more generally on the environment.

Wildlife

32. Entered into force by the Decree No. 354 as of January 5, 2008, this act regulates social relations in the field of conservation, restoration and rational use of wildlife. It also establishes the legal, economic and social foundations for activities in this field which are aimed at the protection and restoration of wildlife resources.

Fish Farming

33. The Law on 'Fishing and Protection of Fishery Resources" entered into force by the Decree No. 1021 as of September 19, 2013. This act establishes the legal basis for conservation and sustainable use of fish resources, with the aim of providing the population with fish and fishery products. The law also regulates fish breeding and the protection of fish habitat.

Specially Protected Natural Areas

34. Entered into force by the Decree No. 786 as of December 26, 2011, this law defines the legal, institutional and economic framework for protected areas. The law also establishes the main responsibilities pertaining to the mode of operation and zoning in the country protected areas.

Use of Renewable Energy

35. Entered into force by the Decree No. 587 as of January 12, 2012, this law regulates the legal relations arising between public authorities, individuals and legal entities in the priority setting and efficient use of renewable energy sources. It also defines the legal and economic framework to ensure the improvement of energy efficiency, the reduction of the level of human impact on the environment and climate, as well as the economy and conservation of non-renewable energy sources for future generations.

Energy Conservation and Efficiency

36. Entered into force by the Decree No. 1018 as of September 19, 2013, this law regulates the social relations in the field of energy conservation and efficiency. It also determines in which order energy resources and products should be used.

Radioactive Waste Management

37. Entered into force by the Decree No. 1002 as of July 22, 2013, this law regulates the responsibilities of individuals and entities associated with radioactive waste management, in a way to ensure the protection of people and the environment from the harmful effects of radioactive waste.

Potable Water and Drinking Water Supply

38. Entered into force by the Decree No. 670 as of December 29, 2010, this law establishes state guarantees for drinking water in the Republic of Tajikistan and regulates its production and supply in the country.

Pastures

39. Entered into force by the Decree No. 951 as of March 19, 2013, this act regulates the use of pasture lands in the Republic of Tajikistan.

Food Safety

40. Entered into force by the Decree No. 890 as of August 1, 2012, this law regulates the food production in the Republic of Tajikistan, which should be done a way to protect human life and health, the interests of consumers, the protection of flora and fauna and the overall environment in the Republic of Tajikistan.

Biological Management and Production

41. Entered into force by the Presidential Decree No. 1001 as of July 22, 2013, this law establishes the legal and institutional framework and management of production activities aimed at the production, processing, storage, transportation, packaging, labeling and sale of biological products in the Republic of Tajikistan.

Ensuring Sanitary and Epidemiologic Safety of Population

42. Entered into force by the Decree No. 49 as of December 8, 2003 (wording as of RT Laws No. 441 as of October 6, 2008, No. 481 as of December 31, 2008, No. 793 as of December 26, 2011 and No. 1010 as of 22.07.2013), this law establishes the legal, organizational and economic measures connected with ensuring the sanitary and epidemiological safety of the population of the Republic of Tajikistan.

Subsoils

43. Regulations on subsoils were approved by the Resolution of the Supreme Council of the Republic of Tajikistan No. 983 as of July 20, 1994 (wording as of RT Laws No. 120 as of November 4, 1995, No. 351 as of January 5, 2008, No. 471 as of December 31, 2008 and No. 663 as of December 29, 2010). This resolution establishes the legal basis for study (observation), protection and use of mineral resources.

Soils Conservation

44. Entered into force by the Decree No. 555 as of October 16, 2009, this ACT defines the basic principles of State policy in soil conservation, as well as the legal framework in which public authorities, individuals and legal entities should operate for the rational and careful use of soil conservation quality, fertility and soil protection against negative phenomena.

Protection of the Population and Territories from Emergency Situations of Natural and Manmade Origin

45. Entered into force by the Decree No. 53 as of 15 July 2004, this law determines the organizational and legal standards for the protection of the population in case of natural and/or manmade disasters and emergency situations affecting land, subsoil, water, air space, flora and fauna and other natural resources, industrial and social facilities, and the environment in general. It also establishes the responsibilities in preventing the cause of disasters, reducing the extent of damage and losses from emergencies, responding to emergencies and providing timely warning to the population from emergency situations of natural and manmade origin.

46. Other important environmental legal acts include:

- The Law on Energy Saving (No. 524 as of February 6, 2002)
- The Law on Hydro-meteorological Activity (No. 86 as of December 2, 2002);
- The Law on Production and Safe Handling of Pesticides (No. 1 as of April 22, 2003);
- The Law on Protection and Use of Flora (No. 31 as of May 17, 2004);
- The Law on Protection of the Population and Territories from Emergency Situations of Natural and Manmade Origin (No. 53 as of 15 July 2004);
- The Law on Biological Safety (No. 88 as of March 1, 2005);
- The Law on Wildlife (No. 354 as of January 5, 2008);
- The Law on Soils Conservation (No. 555 as of October 16, 2009);
- The Law on Subsoils (No. 983 as of July 20, 1994, wording as of RT Laws No. 120 as of November 4, 1995, No. 351 as of January 5, 2008, No. 471 as of December 31, 2008 and No. 663 as of December 29, 2010);
- The Law on Potable Water and Drinking Water Supply (No. 670 as of December 29, 2010);
- The Law on Environmental Education (No. 673 as of December 29, 2010);
- The Law on Environmental Information (No. 705 as of March 25, 2011);
- The Law on Environmental Monitoring (No. 707 as of March 25, 2011);
- The Law on Environmental Audit (No. 785 as of December 26, 2011);

- The Law on Specially Protected Natural Areas (No. 786 as of December 26, 2011);
- The Law on Use of Renewable Energy Sources (No. 857 as of January 12, 2012);
- The Law on Food Safety (No. 890 as of August 1, 2012);
- The Law on Atmospheric Air Protection (No. 915 as of December 28, 2012);
- The Law on Pastures (No. 951 as of March 19, 2013);
- The Law on Biological Management and Production (No. 1001 as of July 22, 2013);
- The Law on Radioactive Waste Management (No. 1002 as of July 22, 2013);
- The Law on Ensuring Sanitary and Epidemiologic Safety of Population (No. 49 as of December 8, 2003, wording as of RT Laws No. 441 as of October 6, 2008, No. 481 as of December 31, 2008, No. 793 as of December 26, 2011 and No. 1010 as of 22.07.2013);
- The Law on Energy Conservation and Efficiency (No. 1018 as of September 19, 2013); and
- The Law on Fishing and Protection of Fishery Resources (No. 1021 as of September 19, 2013).

3. National Sustainable Development Frameworks

47. Being a relatively small country with relatively weak and backward economy relied mostly on agriculture and remittances of labor migrants Tajikistan is vulnerable to the loss of biodiversity, land degradation, and the negative impacts of climate change and pollution. To address these issues environmental considerations are being incorporated into plans and policies relevant to Tajikistan's national development agenda.

48. In 1997 the State Environmental Program of the Republic of Tajikistan for 1998-2008 was adopted. The Program is a major public document which defines the main directions of sustainable development of society, and maintains a balance between natural resources and its users, the organization and coordination of relations between users of natural resources and the nature, the healthy development of the society, and the rational use of natural resources as ways of restoring the environment.

49. The Poverty Reduction Strategy Paper (2002) ensures implementation of the National Development Strategy of the Republic of Tajikistan for the period 2002-2015 according to the Millennium Development Goals.

50. The National Strategy for the Development of the Republic of Tajikistan for the Period 2006-2015 represents a shared vision of the expected evolution in the mid-term and contains the planned actions to implement the economic reforms promoting Tajikistan's high sustained economic growth. The National Strategy of the Republic of Tajikistan mainly complements future renewals, ensures implementation of development process of the country, which comprises improvement of political climate, social welfare and development of economic opportunities.

51. Tajikistan's National Strategy and Action Plan on the Conservation and Sustainable Use of Biodiversity (NBSAP) was adopted by Decree of the Government of the Republic of Tajikistan No. 392

on September 1, 2003. The NBSAP focuses on five strategic goals: (1) economic and social evaluation of national biological resources; (2) regeneration and conservation of the genetic pool of plants and animals; (3) in situ and ex situ biodiversity conservation; (4) provision of biological safety for the country; (5) sustainable use of biological resources to reduce poverty and improve the quality of human life. Fifteen priorities for biological conservation were identified, including the creation of the national ecological network and the conservation of each of Tajikistan's ecosystems, including through in situ and ex situ conservation, with key actions to implement each of these priorities. The NBSAP provides a set of measures aimed at reducing greenhouse gas emissions improving the state of their natural sinks, promoting climate change adaptation, optimization of systematic observation network, improved education, training and public awareness, as well as the preparation of the inventory of emission sources and sinks of greenhouse gases. Now it is under updating to 2020.

52. The Concept of Transition of the Republic of Tajikistan to sustainable development (2007-2030) defines the vision, principles, goals, objectives and key mechanisms for achieving sustainable development by integrating economic, environmental and social issues aimed at improving the living standards of the population of Tajikistan. This document was approved by the Government's Resolution No. 500 as of October 1, 2007.

53. The Concept of Environmental Protection in the Republic of Tajikistan specifies the implementation of state policy in the field of environmental protection and natural resources utilization and management. It was approved by the Government's Resolution No. 645 as of December 31, 2008.

54. The Current State Environmental Program of the Republic of Tajikistan for 2009-2019 provides an opportunity to resolve the issues of rational use of natural resources and the environment. It was approved by the Government's Resolution No. 123 as of February 27, 2009.

55. The Framework Document on Biosafety (2004) includes mechanisms of cooperation among governmental institutions. It is proposed to ensure clarity, transparency and predictability of decisions on biosafety. NBF describes the following components:

- Biosafety policy;
- Regulatory framework;
- Administrative system;
- Monitoring and Enforcement;
- Public awareness and participation in decision-making.

56. The Concept of Rational Use and Protection of Water Resources and Land Use establishes the policy in the fields of water resources and land use relations to ensure the sustainable development of the Tajik economy. The document includes the following issues:

- rational use and protection of water resources according to the principles of international water law,
- mutually beneficial and friendly cooperation with foreign countries, and
- general environmental security and international cooperation.

The documents were approved by the Government's Resolutions No. 551 as of December 1, 2001 and No. 349 as of August 31, 2004.

57. The Program for the Improvement of the Security of the Republic of Tajikistan through Clean Drinking Water for 2007-2020 was approved by the Government's Resolution No. 514 as of December 2, 2006, the Program provides funds to increase safe and clean drinking water.

58. The State Program on Development of Specially Protected Natural Areas in the Republic of Tajikistan for the period 2005-2015 addresses the major issues of conservation reserves and management of protected areas according to the standards of ecological system. The Program takes into account sustainable use of natural resources for eco-tourism, recreation, and creation of buffer zones around protected areas. It was approved by the Government's Resolution No. 79 as of March 4, 2005.

59. The Forestry Development Program of the Republic of Tajikistan for 2006-2015 provides critical issues for Forestry sector and the main guidelines in order to increase the gross domestic product (GDP) and improve the environment. It was approved by the Government's Resolution No. 396 as of October 31, 2005.

60. The 2001 Regional Environmental Action Plan for Central Asia covers high priority transboundary environmental challenges in the land faces problems common to Central Asia Countries (CARs). In 2003, a common environmental and natural resources management vision for the CARs was presented at both the United Nations (UN) World Summit on Sustainable Development in Johannesburg and the Europe Economic Commission conference on Environment held in Kiev.

61. The National Environmental Action Plan was approved in 2006 the Government of Tajikistan. Its main purpose is to create a basis to optimize the environmental management and conservation of the most fragile and valuable ecosystems for the harmonious ecological and economic development. Sectoral strategies are developed on the main priorities of the NEAP.

62. The National Action Plan for Environmental Hygiene presents the environmental and health management national policy to live in a favorable environment, both socially and physically. It was adopted by the Ministry of Nature Protection and the Ministry of Health in 1999.

63. The National Program of Action to Combat Desertification was approved in 2001. It provides a set of measures to protect and improve the status of forest and land resources. It includes measures to react to climate change related to carbon fixation.

64. The National program to eliminate the use of ozone-depleting substances and the Government's Action Plan for its implementation determines the timing phase out use of ozone-depleting substances (ODS) with a complete rejection of the use related to Annex A Group 1 and Group II of Annex B of the Montreal Protocol by January 1, 2004.

65. The Targeted Comprehensive Program for the use of renewable energy sources in Tajikistan for 2007-2015 was adopted by the Government of Tajikistan in 2007. The program provides a set of measures to introduce and facilitate the use of renewable energy sources - solar radiation, wind energy, biomass, small rivers hydropower plants, and geothermal sources.

66. The National Action Plan on Persistent Organic Pollutants, developed in 2007, provides guidelines for implementation of the Stockholm Convention in Tajikistan.

67. The State Comprehensive Program for Environmental Education, adopted by Decree No. 178 of April 2, 2015 Tajikistan, includes the long-term goals, the objectives, the priorities to improve the environmental education at all levels.

4. National Institutions involved in the Environment Sector

68. In order to create an effective system of governance strategic planning and sustainable socio-economic development of the country and in accordance with Article 69 of the Constitution, the environmental institutional and management system has been established by the GoT which includes various state agencies. Tajikistan's current environmental institutional and management system includes the following institutions:

- Parliament,
- Presidential Administration,
- Committee for Environment Protection (CEP) under the Government of Tajikistan,
- State Committee of Statistics,
- Ministry of Agriculture,
- Ministry of Energy and Water Resources,
- Ministry of Healthcare,
- Ministry of Economic Development and Trade,
- Ministry of Finance,
- Agency for Land Reclamation and Irrigation,
- Tajik Standard Agency,
- Tajik Forestry Agency,
- Tajik Meteorological Service under CEP,
- Tajik Academy of Science and its research Institutes,
- Tajik Academy of Agricultural Science and its research institutes, and
- other minor institutions.

A brief description of key institutions and their role within the public administration is provided below:

69. The Environmental Protection Agency (EPA) of Tajikistan (namely the Committee for Nature Protection of the Tajik Soviet Socialistic Republic) was established for the first time in August 1989. Its mandate included coordination of the activities related to environmental protection among government agencies and the control over natural resource use, land protection, subsoil, forests, water, and other resources. In 1994 EPA's legal status was improved and reorganized into the Ministry of Nature Protection of the Republic of Tajikistan with the same mandate. However, 10 years later due to restructuring of the GoT the Ministry became again a State Committee for Environmental Protection and Forestry (SCEPF) in 2004. The EPA mandate was expanded slightly by including the former Forestry Management agency. In 2006 due to further restructuring of the GoT EPA was merged with the Ministry of Agriculture, which became the Ministry of Agriculture and Environmental Protection. EPA's

mandate within the new Ministry was kept the same. During 2008 EPA became the Committee for Environmental Protection (CEP) under the Government of the Republic of Tajikistan.

70. CEP coordinates all activities related to environmental protection among GoT and oversees natural resources use, land protection, subsoil, forests, water, and other resources. The decisions of CEP are considered mandatory for all legal entities and individuals. Currently CEP has a total of 400 staff of which about 50 in Dushanbe Headquarter.

71. CEP manages a website and publishes an environmental journal: Tabiat, a government newsletter: Inson va Tabiat (Human and Nature), published 1-2 times per month, and the report on the State of the Environment yearly. In addition, CEP produces a monthly video for television on a selected environmental and climate change issues. CEP oversees Tajik Meteorological Service (Hydromet) and other institutions that work in the area of environmental information, analytical and instrumental control, eco-tourism, nature and water conservation and climate change studies. CEP also has its own information center (Aarhus Center), a training center and laboratory facilities. Current role of CEP related to environmental safeguards policy include increased involvement in policy-making for sectors that may pose threats to the environment, a clear mandate for coordination with other ministries in cross-cutting areas such as environmental education, and training on climate change and mainstreaming adaptation into policies and programs.

72. The Parliament of Tajikistan plays a key role in determining policies, strategies and rules for sectors that may affect and be affected by environmental factors. It consists of two chambers – (*Majlisi Namoyandagon)*, Lower Chamber, and (*Majlisi Oli)*, Higher Chamber. The Parliament involves relevant executive agencies related to environmental safeguards which overview relevant sectoral legislation with active role in endorsing supporting laws and regulations (sub-laws).

73. Several committees are of particular relevance:

- The Ecological Committee, which oversees environment-related legislation;
- The Education Committee, which oversees the Law on Environmental Education and laws regarding post-secondary education and professional (vocational) training; and
- Sectoral committees covering environment-sensitive sectors, for example Agriculture Committee, which will be essential to integrating environmental safeguards issues into agriculture, land use, water, and other policies. Parliament's facilities include an information library for members of the Lower Chamber that contains more than 16,500 publications. Among 63 Parliamentarians, 6 are members of the Ecological Committee which work directly on environment-related legislation.

74. The Ministry of Economic Development and Trade (MEDT) is the government agency with task in overseeing the system of state economic planning and forecasting and facilitating the effective implementation of socio-economic development priorities in Tajikistan. One of the main tasks of this Ministry is to develop and implement economic development programs and strategies of the Republic of Tajikistan with the aim of reducing poverty and stabilizing socio-economic conditions. According to governmental regulations, the Ministry of Economy is to be included in all working groups that develop sustainable strategies, plans and budgets. Representatives of the Ministry are headed the editing group to prepare the country's National Development Strategy and the Poverty Reduction Strategy. The Ministry also monitors the implementation of the two strategies. Among its other roles, MEDT is one of the co-executive bodies of the National Action Plan for Climate Change Mitigation.

75. The Ministry of Finance aside from economic and financial functions is responsible to review and approve the budgets of state agencies including those related to the environment and climate change.

76. The Ministry of Industry and Innovative Technology is involved with environmental issues despite its role as Designated National Authority for Clean Development Mechanism projects conducted under the Kyoto Protocol of the UNFCCC in Tajikistan. The Ministry is responsible for data flow coordination, monitoring, and analysis under the National Development Strategy process.

77. The Ministry of Energy and Water Resources is responsible for the water policy in the country. It is involved in almost all emerging policies in the country, including the discussion of program action plans focusing on the environmental protection. The Ministry is participating in the development of the national water strategy based on the Millennium Development Goals. The National Water Strategy includes the development of energy sources without negative environmental impact. The activities of the Ministry are interlinked with the construction of hydropower plants and their reservoirs in areas related to trade-off between development and environmental issues with the strategic purpose of: a) providing the necessary flow regulation during the fluctuation and changes in water volume; b) reducing the negative impacts of silt on existing reservoirs; and c) reducing the potential negative impacts of construction of new reservoirs.

78. The Ministry of Agriculture (MoA) develops and coordinates agricultural and regional policy, strategic plans, state and sectoral programs in the agricultural sector. Beyond that, the Ministry oversees a significant segment of the economy that is vulnerable to climate change, land degradation, POPs, biodiversity and other GEF focal areas. The Ministry has a total of 3.583 staff; 104 of them work in the central management unit, in Dushanbe.

79. MoA also oversees the activities carried out by the Academy of Agricultural Sciences, which serves as the scientific and coordination centre for agrarian science in Tajikistan. The Ministry is also linked with the Tajik Agrarian University consisting of nine faculties. Both of these provide opportunities for applied research and knowledge transfer. The Ministry also publishes the journal “Kishovarz”. The Agrarian University publishes a monthly newspaper “Donish”. The activities of the Academy of Agricultural Sciences are directly relevant to various environmental issues.

80. According to the Public Health Law, the Ministry of Health provides sanitary-epidemiological services to the public. It conducts the state sanitation-epidemiological supervision, carries out activities on environmental safety, environmental protection and sanitation as well as develops national industry health norms, regulations and hygiene standards. The Ministry has an affiliated research institute, the Institute of Epidemiology and Sanitation, and it also manages about 73 sanitary-epidemiological observation stations. The State Epidemiological Service is an independent agency participating in a WHO regional project on health and climate change. The project team has drafted a Strategy for Health and Climate Change.

81. The Ministry of Education deals with environmental issues because of its mandate under the Law on Environmental Education, which instructs it to develop and carry out environmental education projects. The Ministry oversees schools, which can serve as effective entry points for awareness about climate change issues.

82. The Post-Graduate Institute of Continuing Education for Civil Servants, which falls under the jurisdiction of the Ministry of Education, is engaged in the ongoing preparation and re-training of public servants ranging from the heads of jamoats (district-level officials) to senior management staff

in all government ministries and departments. In 2010, the Institute developed three training modules on the three Rio Conventions (UNFCCC, UNCBD, UNCCD), and it expects to deliver 20 trainings on climate change for public servants in main oblasts of Tajikistan. Furthermore, the Institute is planning to establish a Department of Environmental Education. The Institute has also conducted a special course on human development that included modules on environmental security and gender equality.

83. The Ministry of Transport is responsible for the implementation of transportation policy. The environmental impact of the transport infrastructure, as well as transport traffic. At the same time the impact of the climate change on the state of road infrastructure is considered considering roads and bridges washout by mudflows and avalanches. Additionally, the Ministry is relevant to environmental issues because of its participation in the development of a National Strategy for Sustainable Transport.

84. The State Committee for Land Use, Geodesy, and Cartography was established in 2011 and is responsible for developing land use policies and reforms. It is one of the main agencies being responsible for the development of the Land Code. The Committee's functions include:

- Monitoring of land resources;
- State control on efficient use and conservation of land;
- Introduction of land inventory;
- State registration to legal land use;
- Promotion of rational ways of the land use;
- Definition of land tax and land use fees for violation of land legislation;
- Participation in decision-making regarding the rehabilitation of degraded land; and
- The preparation of documents for the distribution of land among various executive agencies.

85. In addition, the Committee oversees two institutes that conduct applied research relating to land use change, including land use inventories and mapping. The Committee has a main office in Dushanbe with approximately 70 staff and district level offices with nearly 200 staff.

86. The Committee for Emergency Situations and Civil Defense is the government agency with the task for disaster risk reduction and response and coverage of climate-induced natural disasters. The Committee conducts reviews and analysis of disaster risk assessment in light of climate change, and it has a department that focuses on evacuation and re-settlement. In terms of facilities, the Committee has its headquarters in Dushanbe and representatives in every region and district of the country. The Committee has its own training facilities, and it offers in-service training for its employees. It also has its own chemical-radiometric laboratory. It participates in several CIS-wide initiatives to share good practice, and it has previously used international experts on an extended-term basis through technical assistance projects with good results.

87. The Agency of Land Reclamation and Irrigation (ALRI) is responsible for sustainable operation of the national irrigation system and the land reclamation. It also monitors the use of water resources, being responsible for the distribution of water to farmers for agricultural purposes, and provides data on water consumption to the Committee of Environmental Protection. Finally, the Agency is in charge of the operation and infrastructure maintenance of irrigation and rural water supply. It has offices in Dushanbe and also oversees the Institute of Water Improvement.

88. The Academy of Sciences is the main source of scientific information and data that possesses highly-qualified specialists and researches. Fifteen research institutes including the Institute of Water Problems, Hydropower, and Ecology are operational under the umbrella of the Academy. The institute has the capacity to develop long term action plans in different sectors of the economy, and Academy researchers are involved in developing the National Action Plans on biodiversity and climate change mitigation. The Academy includes institutes that conduct researches related to the environment (climatology, glaciology, hydrology, radiation safety, hydropower, biodiversity conservation and water resource management); fourteen institutes are located in Dushanbe, and 1 is located in GBAO. The Academy issues several publications: Izvestiya ("News") and some specific Reports.

5. International Environmental Commitments

89. Tajikistan's current policy pays particular attention to international co-operation on environmental issues. The country has been actively involved in the international agreements and conventions. Presently, the GoT is a member of the following international Institutions:

- UN and its agencies such as UNEP, UNDP, UNECE, among many others;
- WTO;
- OSCE;
- Shanghai Cooperation Organization (SCO); and the
- Commonwealth of Independent States (CIS).

90. The sections below enumerate the key global, regional and sub-regional international agreements approved, ratified, acceded and/or adopted by Tajikistan.

91. The UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage was adopted on August 28, 1992.

92. The Vienna Convention for the Protection of the Ozone Layer was acceded on May 6, 1996 and updated to May 7, 2009 (Beijing Amendments). The scope of this Convention is to take appropriate measures in accordance with its provisions and of those protocols in force to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer.

93. The UN Convention on Biological Diversity (CBD) was acceded on 29 October 1997. This Convention is a multilateral environmental agreement having three main goals: conservation of biological diversity; sustainable use of its components; and fair and equitable sharing of benefits arising from genetic resources. Related updates are:

- Cartagena Protocol on Biosafety to the Convention on Biological Diversity, which was acceded on February 12, 2004.
- Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity. It was signed on September 20, 2011 and ratified on September 12, 2013.

94. The UN Convention to Combat Desertification (CCD) was acceded on July 16, 1997. This Convention is a multilateral environmental agreement aiming to combat desertification and mitigate

the effects of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements.

95. The United Nations Framework Convention on Climate Change (UNFCCC) was adopted on July 16, 1997. UNFCCC entered into force on October 14. This Convention is an international environmental treaty negotiated at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro from 3 to 14 June 1992. The objective of the treaty is to stabilize greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. A related update is the Kyoto Protocol, accessed on December 29, 2008, and entered into force on March 29, 2009.

96. The UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention 1998) was acceded on July 17, 2001. This Convention is a multilateral environmental agreement through which the opportunities for citizens to access environmental transparent information are facilitated. The purpose of the Convention is to enhance the environmental governance network, introducing a reactive and trustworthy relationship between civil society and governments. The value of public participation in the decision making process is empowered by the Convention that guarantees access to justice in the environmental issues. The related update is the Kiev Protocol on Pollutant Release and Transfer Registers to the Convention on Access to Information, on May 21, 2003.

97. The Convention on Wetlands, especially as Waterfowl Habitat (Ramsar) was entered into force in Tajikistan on November 18, 2001. This Convention is an international treaty for the conservation and sustainable utilization of wetlands, i.e., to stem the progressive loss of wetlands, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific, and recreational value.

98. The UNEP Convention on the Conservation of Migratory Species of Wild Animals (CMS) was acceded in 2000. CMS or Bonn Convention is an environmental treaty under the aegis of the United Nations Environment Programme. It provides a global platform for the conservation and protection of migratory animals and their habitats. A related update is the Bukhara Deer Memorandum, 2002.

99. The Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD) was acceded on October 12, 1999. It is an international treaty prohibiting the military or other hostile use of environmental modification techniques having widespread, long-lasting or severe effects.

100.The Stockholm Convention on Persistent Organic Pollutants was signed on May 21, 2002 and ratified on February 8, 2007. It is an international environmental treaty, which aims to eliminate or restrict the production and use of persistent organic pollutants (POPs). Related updates are:

- 2009 amendments listing 9 new POPs, August 26, 2010;
- 2011 amendment listing endosulfan, October 27, 2012; and
- 2013 amendment listing HBCD, November 26, 2014.

101. The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was signed on September 28, 1998, but it has not been ratified yet. It is a multilateral treaty to promote shared responsibilities related to importation of hazardous chemicals. The convention promotes open exchange of information and calls on exporters

of hazardous chemicals to use proper labeling, include directions on safe handling and inform purchasers of any known restrictions or bans.

102. This review justifies that environmental legal framework of Tajikistan and its policies are in parallel with the international context of environmental agenda. Table 1 lists the international environmental conventions and treaties acceded by GoT.

Table 1. Environmental international conventions and regulations accessed/ratified by Tajikistan

#	Convention/Agreement	Year[6]
1	Convention on the World Meteorological Organization	1991
2	1992 Rio Declaration on Environment and Development	1992
3	The United Nations Convention on Biological Diversity	1997
	Cartagena Protocol on Bio-safety (CBD)	2004
	Nagoya Protocol on Access and Benefit-sharing (CBD)	2013
4	Vienna Convention for the Protection of the Ozone Layer	1996
	The Protocol on Substances That Deplete the Ozone Layer (Montreal)	1998
	London Amendments to Montreal Protocol on Ozone Depleting Substances	1998
	Copenhagen Amendments to Montreal Protocol on Ozone Depleting Substances	2009
	Montreal Amendments to Montreal Protocol on Ozone Depleting Substances	2009
	Beijing Amendments to Montreal Protocol on Ozone Depleting Substances	2009
5	UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention 1998)	2001
	Protocol on Pollutant Release and Transfer Registers	2003
6	United Nations Convention to Combat Desertification (UNCCD)	1997
7	United Nations Framework Convention on Climate Change	1997
	Kyoto Protocol	2009
8	Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar)	2001
9	Bonn Convention on the Protection of Migrating Wild Animals (CMS)	2000
	Bukhara Deer Memorandum (CMS)	2002
10	Stockholm Convention on Persistent Organic Pollutants	2007
	2009 amendments listing 9 new POPs	2010
	2011 amendment listing endosulfan	2012
	2013 amendment listing HBCD	2014
11	104. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD)	1999

[6] Year refers to any of the following: Ratification/Acceptance, Accession/Succession

12	Framework Convention for the Protection of the Environment for Sustainable Development in Central Asia	2006
13	Agreement on Cooperation in the field of ecology and environmental protection	1992
14	Agreement on Co-operation for Environmental Monitoring among the CIS countries	2001

103. In the framework of regional and sub-regional cooperation, Tajikistan actively participated in the "Environment for Europe" process started in 1991. Tajikistan was active in the third, fourth and fifth Ministerial Conferences (Sofia, 1995; Aarhus (Denmark), 1998 and Kiev, 2003).

104. Tajikistan participated in both Pan-European Biological and Landscape Diversity Strategy and took part to the Task Force for the Implementation of the Environmental Action Programme (EAP Task Force) established by the second "Environment for Europe" Conference in Lucerne (Switzerland).

105. During the 2003 Kiev Ministerial Conference, Tajikistan joined the other four Central Asian States to present an "Invitation to Partnership for the Central Asian Sustainable Development Initiative Implementation" considering the geopolitical importance of Central Asia in the UNECE region for the maintenance and enhancement of security, preservation of a wholesome and healthy environment, including the conservation of landscape and biological diversity.

106. The five States interested to tackle jointly the problems of the environment, water and security suggested a multilateral agreement including donors, civil society and business. The proposal for a regional agreement was also reflected in the Central Asia progress review on the implementation of Agenda 21 and the statement by ICSD[7] at the World Summit on Sustainable Development.

107. Agreement on Cooperation in the field of ecology and environmental protection (CIS agreement, Moscow, February 8, 1992) entered between CIS countries. It creates legal basis for cooperation in the field of environmental protection at CIS countries level.

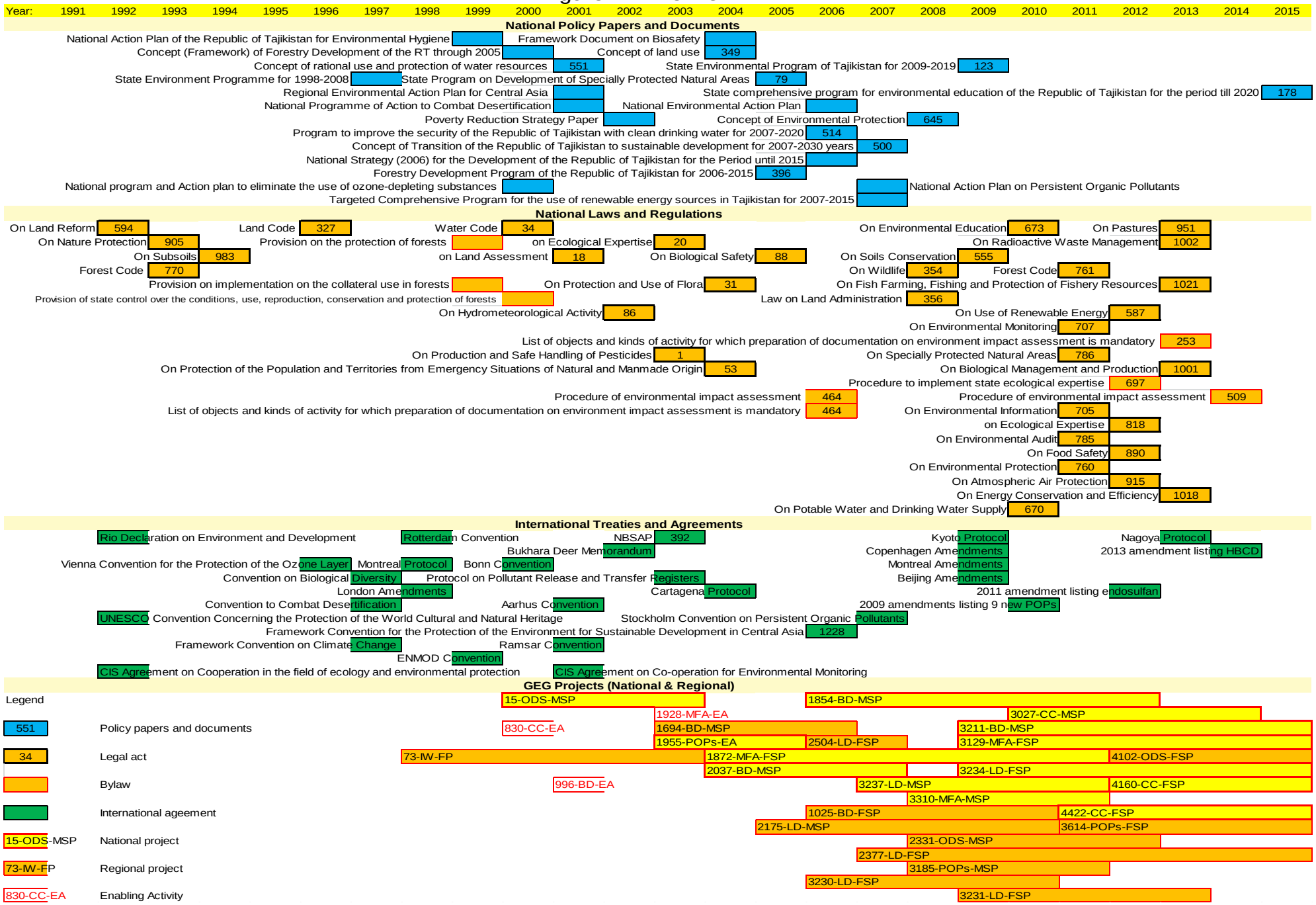
108. The co-operation Agreement for Environmental Monitoring between the CIS countries was made in 2001 as a legal basis for cooperation in the field of environmental monitoring for CIS countries.

109. The Framework Convention for the Protection of the Environment for Sustainable Development in Central Asia was adopted by Presidential Decree No. 1828 as of November 10, 2006. This Convention pursues regional cooperation to preserve the unique environment of Central Asia and the sustainable use of its natural resources.

110. The timeline in Figure 1 illustrates the sequences between the timing of laws/regulations, the ratification of treaties and the implementation of GEF projects.

[7] The Interstate Commission on Sustainable Development is a forum established by the five Central Asian countries originally to prepare their national sustainable development reports for the World Summit on Sustainable Development in Johannesburg (South Africa) in 2002. It began its work in 2000.

Figure 1 Timeline



6. Implementation Status and Challenges

111. Tajikistan recognizes both the importance of its biodiversity and other natural resources and the significance of the threats to their sustainable management, which include a variety of unsustainable land and natural resource practices that might impact its fragile ecosystems. These challenges are being addressed through the development and implementation of relevant legislation and action plans such as the National Environmental Action Plan (NEAP), which was prepared with the involvement of government ministries, committees, agencies and other authorities, Hukumats, the private sector, and the civil society and community based organizations.

Environmental regulations

112. The purpose of regulatory arrangements in the environmental area is to determine necessary standards and behavioral patterns of authorized agencies and citizens in order to live in a healthy and balanced environment. Regulations, directives, circulars, and notifications that were issued on the basis of the environmental laws include the procedures and methods to be complied with.

Public participation and gender

113. Article 12 of the Environment Protection Law proclaims the right of citizens to live in a favorable environment and to be protected from negative environmental impacts. Citizens also have the right to access environmental information (Article 13), as well as the duty to adopt, and implement decisions related to environmental impacts (Article 13). The latter is assured by public discussion of drafts of environmentally important decisions and public ecological reviews. Public representative bodies have an obligation to take into consideration citizens' comments and suggestions. On July 17, 2001 Tajikistan acceded to the 1998 Aarhus Convention, whose provisions have priority over domestic law with regard to gender equality.

Licenses

114. Licenses are legal instruments to regulate certain potentially hazardous activities where minimal qualifications and strict adherence to rules are required to ensure that they are carried out efficiently, safely and do not result in potentially significant and irreparable damage to the environment and human health. In particular, licenses are required for handling hazardous waste and for activities in industrial safety. They are issued by the relevant sector Authorities.

Environmental permits

115. Environmental permits are meant to ensure the sustainable use of natural resources. There are two types of permits: (a) permits to use natural resources; and (b) permits for emissions or discharges. The natural resources use permits allow their holders to take a certain number or amount of a particular natural resource within a defined territory and time period. They are issued both to individuals (e.g. to hunt a particular species of animal or harvest particular factories) and to organizations (e.g. permits to extract ground or surface water for a particular use). By law, permits

are needed for any commercial use of any resource. Permits to discharge polluted matter are issued by the relevant inspectorate (e.g. previous State Water Inspectorate or State Air Inspectorate – now departments) of the local state environmental protection committees to industrial or agricultural enterprises and municipal utilities that release by-products into the environment. Permits allow releasing a certain amount of polluted matter (gases, liquids, solid waste) into the environment. They are usually granted for one year and indicate the maximum allowed concentration of the pollutants in the released matter, the maximum volume of the polluted matter and the pollutants allowed.

Environmental norms and standards

116. Environmental norms and standards are set for air and water pollution, noise, vibration, magnetic fields and other physical factors, as well as residual traces of chemicals and biologically harmful microbes in food. The exceeding of their thresholds results in administrative action, including financial sanctions. Several ministries determine environmental quality standards, each in its field of responsibility. For example, admissible levels of noise, vibration, magnetic fields and other physical factors have been set by the Ministry of Health.

Enforcement instruments

117. A number of legal acts establish liability for violations of environmental laws, which can be enforced by several state bodies and agencies. In particular, the 2010 Code of Administrative Violations establishes administrative liability for organizations and individuals according to a range of violations, from the careless treatment of land to violation of the rules for water use or water protection, or failure to comply with a State ecological expertise. The administrative sanctions for environment related violations can be imposed by the administrative commissions of Hukumats, Courts, CEP's inspectors, Veterinary Inspectors of the Ministry of Agriculture, and the State Committee for Land Use, Geodesy, and Cartography. The most common administrative sanction is a fine of up to 10 minimal monthly salaries for individuals and up to 15 minimal salaries to employees of organizations. Since 1998 Criminal Code dealings with crimes against ecological safety and the environment, such as violations of ecological safety at work, poaching, and spoiling land, violation of rules for the protection and use of underground resources. The maximum fine is up to 2 minimal monthly salaries and the maximum sentence is up to eight years in prison.

Implementation status by GEF Focal Area

Biodiversity

118. Tajikistan acceded to the 1992 UN Convention on Biological Diversity (CBD) on October 29, 1997 and its 2000 Cartagena Protocol on Biosafety on February 12, 2004. Further in 2000 the country joined other biodiversity-related conventions - Ramsar Convention and Bonn Convention (entered into force for Tajikistan in 2001). The Russian Federation represents Tajikistan's interests at meetings on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), since Tajikistan has not yet acceded to it.

119. In 1997 the State Environmental Program of the Republic of Tajikistan for 1998-2008 was adopted. The Program is a major public document defining the main guidelines of sustainable development of society, maintaining a balance between natural resources and its users, the organization and coordination of relations between users of natural resources and the nature, the healthy development of the society, the rational use of natural resources as the right way to restore the environment. Current Environmental Program of the Republic of Tajikistan for 2009-2019 provides an opportunity to resolve the issues of rational use of natural resources and the environment.

120. In 2001 the Regional Environmental Action Plan for Central Asia (REAP) was developed under ISDC auspices and with support from ADB, UNEP and UNDP. It has five basic ecological priorities: air pollution, water pollution, land degradation, waste management and mountain ecosystems degradation. Each of the five Central Asian States has the lead for one of these priorities. Tajikistan has the lead for mountain ecosystems degradation. REAP identifies both short-term (2002-2007) and long-term measures (2007-2012) for each of the five issues as well as for public involvement.

121. Currently, the Tajik authorities are becoming increasingly aware of both the importance of biodiversity and the significant threats to its sustainable management which include a variety of unsustainable land and natural resource practices that are increasingly impacting ecosystems. Under the obligations stemming from the CBD, Tajikistan prepared its National Biological Diversity Action Plan (NBSAP) in 2003 with the support of GEF. The NBSAP focuses on five strategic goals: (1) economic and social evaluation of national biological resources (2) regeneration and conservation of the genetic pool of plants and animals (3) in situ and ex situ biodiversity conservation (4) provision of biological safety for the country (5) sustainable use of biological resources to reduce poverty and improve the quality of human life.

122. Tajikistan has also joined the Cartagena Protocol on Biosafety in February 12, 2004. This was supported by the UNEP/GEF project on the development of National Biosafety Framework in 2004. The project showed that the current legislation was not sufficient for the implementation of the Protocol and the need for a new biosafety law arose. A task force was established to prepare a draft law on biosafety. One year later, the Law on Biological Safety was approved by Decree No. 88 as of March 1, 2005.

123. Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity was signed on September 20, 2011. It was ratified by Parliament on September 12, 2013.

124. The challenges above are also considered by the National Environmental Action Plan (NEAP), which was developed in 2006 with the involvement of the Governmental Agencies, Academia and the civil society.

125. In 2007 the Concept of Transition of the Republic of Tajikistan to sustainable development for 2007-2030 years was approved by the Government. It defines the vision, principles, goals, objectives and key mechanisms for achieving sustainable development by integrating economic, environmental and social issues aimed at improving the living standards of the population of Tajikistan.

126. In 2008 Tajikistan adopted the Concept of Environmental Protection. It provides basis for the implementation of state policy in the field of environmental protection and natural resources utilization and management.

Climate Change

127. Tajikistan became a party to the 1994 United Nations Framework Convention on Climate Change (UNFCCC). Tajikistan acceded UNFCCC on July 16, 1997 entering into force on October 14, 1997. The Government adopted its National Action Plan for the Mitigation of Climate Change in 2003. Then, on December 29, 2008 the GoT joined the Kyoto Protocol, which was introduced into the legislation on March 29, 2009.

128. The First National Communication on Climate Change was published in 2002 with the financial support from the Global Environment Facility and UNDP. This Communication became the national strategic document to provide Capacity Building in priority areas.. With the support mentioned above, the National action plan of the Republic of Tajikistan for climate change mitigation was elaborated in 2003. Second and Third National Communications on Climate Change were submitted on December 31, 2008, and December 29, 2014 respectively.

129. Significant contribution to the preparation of the national Greenhouse Gas Inventory (GHG) was carried out by regular consultations and close cooperation with the experts from the National Communication Support Program of GEF-UNDP, UN FCCC Secretariat, Azerbaijan Climate Change Center, among others.

130. Within the framework of UNFCCC and its Kyoto Protocol, Tajikistan is committed to use clean and highly efficient resources in all new infrastructure, buildings and industrial plants. GEF support to Tajikistan in terms of Climate Change is in line with the country's specific development plans and policies. The Kyoto Protocol provides a framework to accede to international investments through its Cleaner Development Mechanism and GEF funded project was focused on issues related to the mentioned Mechanism.

131. In 2007 the Government of Tajikistan adopted the Targeted Comprehensive Program for the use of renewable energy sources in Tajikistan for 2007-2015. It provides a set of measures to create a production base and infrastructure for the use of renewable energy sources - solar radiation, wind energy, biomass, small rivers flow, and geothermal sources.

132. The GoT elaborated and adopted the Decree on use of Renewable Energy No. 587 as of January 12, 2012. This Law regulates the legal relations arising between public authorities, individuals and legal entities to accede to efficient use of renewable energy sources, and defines the legal and economic framework to ensure improvement of energy efficiency, reducing the level of human impact on the environment and climate.

133. As further step of improvement of the national legislation on September 19, 2013 the GOT adopted the Decree No. 1018 "On Energy Conservation and Efficiency". This law regulates the social relations in the field of energy conservation and determines the order of efficient use of energy resources and products.

International Waters

134. GEF national and regional activities in Tajikistan cover projects in ozone depletion, biodiversity, international waters, and land degradation. For example, GEF fully supported (more than 21,5 million US dollars) the regional "Water and Environmental Management in the Aral Sea Basin" project.

135. In 2000 the Water Code was developed and adopted in Tajikistan. This legal Act stipulates the policies on water management, permitting, dispute resolution, usage planning and cadastre. It promotes rational use and protection of water resources and defines the types of water use rights, authority and roles of regional and local governments for water allocations among various users and collection of fees. Then in 2001 Tajikistan adopted the Concept of rational use and protection of water resources. The document establishes the water policy to ensure the sustainable economic development through the rational use and protection of water resources based on the principles of international water law and international cooperation.

136. The Law of the Republic of Tajikistan "On Potable Water and Drinking Water Supply" was entered into force by Decree No. 670 as of December 29, 2010. This law regulates relations in the field of drinking water and its supply and establishes the quality standards.

Land Degradation and Sustainable Forest Management

137. Tajikistan joined the UN Convention to Combat Desertification (CCD) on July 16, 1997. The GEF Land Degradation Focal Area (LD) and Sustainable Forest Management (SFM) directly support the implementation of the UNCCD, as well as foster synergic benefits with the UNFCCC, UNCBD and international agreements on the sustainable use of Waters.

138. In 2000 Tajikistan adopted the Concept (Framework) of Forestry Development of the RT. The National Action Program for Combating Desertification (NAPCD) was finalized in 2001. The Action Program analyses the threats of desertification and land degradation, the contributing factors, and the environmental, economic and social consequences. A strategy to combat desertification recommends, inter alia, monitoring the desertification process and creating an information system on desertification problems classifying the territory according to the degree of soil degradation. The

Action Program takes into consideration anti-erosion methods to combat soils degradation and drafting sustainable use of natural resources. The document develops also social and economic instruments for action against desertification.

139. The GoT adopted the Concept of land use and the Forestry Development Program for 2006-2015, in 2004 and 2005 respectively.

140. Complementary to the NAPCD and the Forestry Development papers, GEF contributed to fund several national and regional initiatives (2 MSP and 5 FSP for LD focal area as well as 1 MSP and 2 FSP for MFA) that address the problems of rural poverty and land degradation in different regions of the country. Since 2009 the contribution of GEF funds to prevent land degradation includes several projects funded through GEF/UNDP Small Grant Program (SGP). Under SGP grant the community-based organizations (CBOs) and non-governmental organizations (NGOs) are directly funded considering the key role played by the civil society for environment protection and sustainable development.

Chemicals and Waste

141. With regards to Persistent Organic Pollutants POPs, Tajikistan signed the 2001 Stockholm Convention on Persistent Organic Pollutants on May 21, 2002. It was ratified on 8 February 2007 by Parliament. It is an international environmental treaty that aims to eliminate or restrict the production and use of POPs. Its 2009 amendments listing 9 new POPs were joined by Tajikistan on August 26, 2010; 2011 amendment listing endosulfan on October 27, 2012; and 2013 amendment listing HBCD on November 26, 2014.

142. In response to the requirements of the Convention, RT was obliged to develop and implement a National Implementation Plan (NIP) according to the rules and procedures of the Convention. This task was supported by GEF through Enabling Activities for the Stockholm Convention on Persistent Organic Pollutants. The National Implementation Plan for Republic of Tajikistan (NIP) was developed and adopted in 2005. The NIP provides a basic and essential level of information to enable policy and strategic decisions identifying prior activities that should be undertaken in order to meet the requirements of the Stockholm Convention.

143. The Law of the Republic of Tajikistan “On Ensuring Sanitary and Epidemiologic Safety of Population” was entered into force by the Decree No. 49 as of 8 December 2003 (wording as of RT Laws No. 441 as of 06.10.2008, No. 481 as of 31.12.2008, No. 793 as of 26.12.2011 and No. 1010 as of 22.07.2013). This Act establishes legal, organizational, economic basis, measures, connected to ensuring sanitary-and-epidemiologic safety of the Tajik population.

144. The Law of the Republic of Tajikistan on Radioactive Waste Management entered into force by Decree No. 1002 as of July 22, 2013. This Law regulates the relations connected with the activities of individuals and entities associated with radioactive waste management, as well as

ensuring the protection of people and the environment from the harmful effects of radioactive waste.

145. Currently Tajikistan is considering the opportunity to join the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Disposal.

146. Despite the progress in aligning the country environmental framework, several parts of legislation concerning air, water, and nature protection are still to be regulated and several standards are not consistent with best international practices.

Challenges

147. Tajikistan experiences a number of the challenges in the implementation of environmental legislations:

- allocation of environmental responsibilities among government institutions is not clear enough;
- mobilization of financial resources by the GOT for investment in environmental issues is not enough;
- use of a variety of economic instruments for environmental purposes (including specific taxes, charges, emission trading systems) in Tajikistan is not considered as one of the most relevant tool to meet the required efficiency;
- adoption of environmental management systems for industry development including public-private partnership is not implemented;
- capacity of provincial and local authorities in terms of environmental safeguards remains not sufficient; and
- application of the principles of polluter pays and user pays is not effectively implemented through a shared approach.

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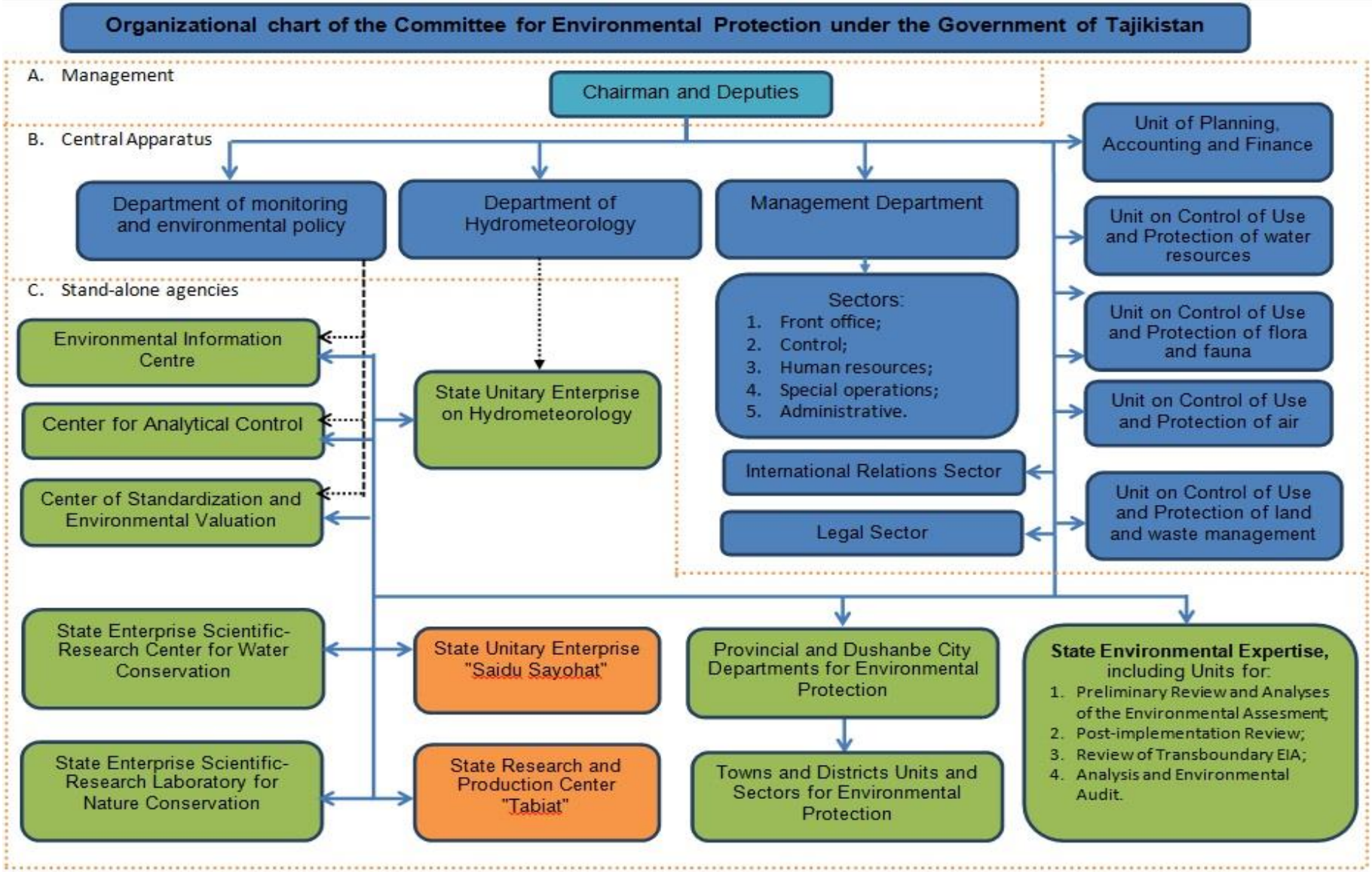
Appendix 2: Committee for Environmental Protection - Organization Chart



TECHNICAL DOCUMENT B – GLOBAL ENVIRONMENTAL BENEFITS ASSESSMENT

Abbreviations

ADB	Asian Development Bank
CEP	Committee for Environmental Protection
DRD	Direct Rule Districts
EA	Executive Agency
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EMMP	Environmental Mitigation and Monitoring Plan
ES	Environmental Specialist
ESM	Environmental Supervisor and Monitor Expert
FAO	United Nations Food and Agriculture Organization
GBAO	Gorno-Badakhshan Autonomous Oblast
GDP	Gross Domestic Product
GDI	Gender-related Development Index
GEF	Global Environmental Facility
GoT	Government of Tajikistan
HDI	Human Development Index
HSE	Health, Safety and Environment Management
IEE	Initial Environmental Examination
ILO	International Labour Organization
IMF	International Monetary Fund
IUCN	International Union for Conservation of Nature
IOM	International Organization for Migration
KHO	Khatlon Oblast
MDG	Millennium Development Goal(s)
PRSP	Poverty Reduction Strategy Paper
RT	Republic of Tajikistan
TJS	Tajik Somoni (national currency)
TOR	Terms of Reference
UNEP	United Nations Environmental Programme
UNDP	United Nations Development Programme

WB	World Bank

1. Background

1. The main purpose of the Global Environmental Benefits Assessment (GEBA) technical document is to review Tajikistan's contribution to GEF mandate and its focal areas based on appropriate indicators such as those used in GEF-4 within the Resource Allocation Framework (RAF) concerning biodiversity and climate change and those used in GEF-5 within the System for Transparent Allocation of Resources (STAR) concerning biodiversity, climate change and land degradation. Other environmental indicators come from external sources, which are referred to in GEF project documents. This document presents, based on existing information, what are the environmental benefits that Tajikistan could generate globally in response to the GEF mandate. The review is presented by GEF Focal Area. It has involved literature review from relevant sources of information, including GEF-related and other available documentation and indicators.

2. Biodiversity

2. The biodiversity Global Environmental Benefits considered for Tajikistan:

a. Conservation of globally significant biodiversity:
   i. Endemism, endangered/relict species/taxonomically unique species;
   ii. Globally threatened species (National Red Data Book and IUCN Red lists);
   iii. Important ecosystems (TNC – hotspots, WWF – threatened regions), unique/rare ecosystems, important life support systems, boosting global biodiversity, global climate and water balance, areas supporting threatened/significant migratory species.

b. Sustainable use of the components of globally significant biodiversity:
   i. Medicinal herbs, NTFP (from significant species);
   ii. Wild relatives of food crops and yams that are important to food security especially due to climate change.

3. Natural ecosystems are the single reliable source of environmental stability in the world. At the same time, the impact of anthropogenic activity on ecosystems is becoming the main reason for climate change, loss of biodiversity, and desertification/land degradation. Control of environmental risks requires a strong environmental policy, improved coordination of government structures, civil society, and business representatives involved in the implementation of global environmental Conventions.

4. The Republic of Tajikistan (RT) is located in one of the links of the Eurasian highland belt, stretching from the Atlantic to the Pacific Ocean. The formation of the peculiar local soil and climatic conditions is based on the physical and geographical characteristics of the territory. The soil composition is variable, with a clear division into belts (according to types): plains and low

mountains (300-1600 masl) with gray desert soils, medium-high mountains (1600-2800 masl) with brown mountain soils, high mountains (2800-4500 masl) with high-mountain and meadow steppe, steppe, zang, and desert soils, and nival belt (4500 masl) with skeletal soils.

5. Changeable mountain climatic conditions and hard natural historical processes promoted formation of a unique biological diversity in Tajikistan. The annual average sunshine level varies from 2090 to 3160 hours, the average air temperature varying from +17°C and higher in the south of the country to -7°C and lower in the Pamirs. The highest temperature is in July, while the lowest is in January. The most severe climate is observed in the Eastern Pamirs, where the annual average temperature is from -1 to -6ºC. The absolute minimum is at the Bulunkul Lake -63°C. In hot deserts of southern Tajikistan and in cold high-mountain deserts of the Eastern Pamirs, the annual average precipitation level varies from 70 to 160 mm, the maximum being in Central Tajikistan, sometimes exceeding 2000 mm a year. The mountain landscapes of Tajikistan contain 0.66% of the animal world and 1.8% – plant diversity, including wild relatives of domestic animals and cultivated plants.

6. The contrast combination of arid, sub-arid, and humid conditions, with the precipitation fluctuation from 70 to 2000 mm a year, promoted formation of a complex and particularly rich flora (more than 9 thousand species) and vegetation, from broadleaf forests and boreal meadows to subtropical and tropical deserts.

7. Forests only take up 3% (412,000 ha) of the land area of the country, however they still play an important role in the conservation of biodiversity and genetic resources as well as in atmospheric carbon absorption. In addition, the forests are a natural protection for human settlements against floods, avalanches, and soil erosion. They also regulate the water balance and microclimate.

8. Almost all forests in Tajikistan belong to the state and are considered to be Group 1 forests. Forest management activities are directed at conservation and the improvement of forest conditions. Primarily, this is an open juniper forest prevailing at 1,500-3,200 m. above sea level. Pistachio trees, well accustomed to the hot dry climate, are mostly found in southern Tajikistan at an elevation of 600-1,400 m. Walnut forests are characteristic of Central Tajikistan at 1,000-1,200 m. above sea level and are known by their specific requirements for soil and climatic conditions. Part of the forest belt consists in maple forests with fragmentary poplars, willows, birch trees, buckthorn, saxaul and various shrubs.

9. Since the 1930s there has been intensive reclamation of foothill and floodplain valleys to increase the area of arable land in Tajikistan but up to 100 thousand ha of floodplain, pistachio, and partially broad-leaved forests were destroyed in the process. During the economic and energy crises in 1990s juniper forests, which are difficult to reforest, were cut down. Deforestation and animal grazing in forest areas have had a negative impact on the quality and diversity of forests and the natural regeneration of forests have practically stopped.

10. Pasture makes up 80% of agricultural land and is mainly found in the Khatlon region and the DRS. Pasture stocking today is lower than during the Soviet period 25 years ago and the condition of pastures is not adequate. In the east of the Pamir the condition of the teresken (Eurotea) pastures has become critical. Here, due to a lack of energy sources, people have started a massive uprooting of teresken that is a valuable animal fodder, and this has resulted in the desertification of highland pastures. In other districts cattle often graze near human settlements, thus local pastures have become overgrazed and degraded. More than half of the natural pastures in the country are in the highlands at altitudes varying from 1,700-2,000 to 3,500 masl.

11. Tajik fauna is characterized by great genetic diversity. Mountain fauna is richer than that of the plain and contains a substantial number of European-Siberian and East-Asian elements. The fauna of the hot, lowland deserts contains plenty of Indo-Himalaya, Ethiopian, and Mediterranean species. Genetic relation of flora and fauna with other faunal and floral areas (Mediterranean, Central-Asian, desert complexes of Turan and Arctic-Alpine elements) enrich the biodiversity genetic pool of the Republic.

Table 1. Main Components of Biodiversity in Tajikistan[8]

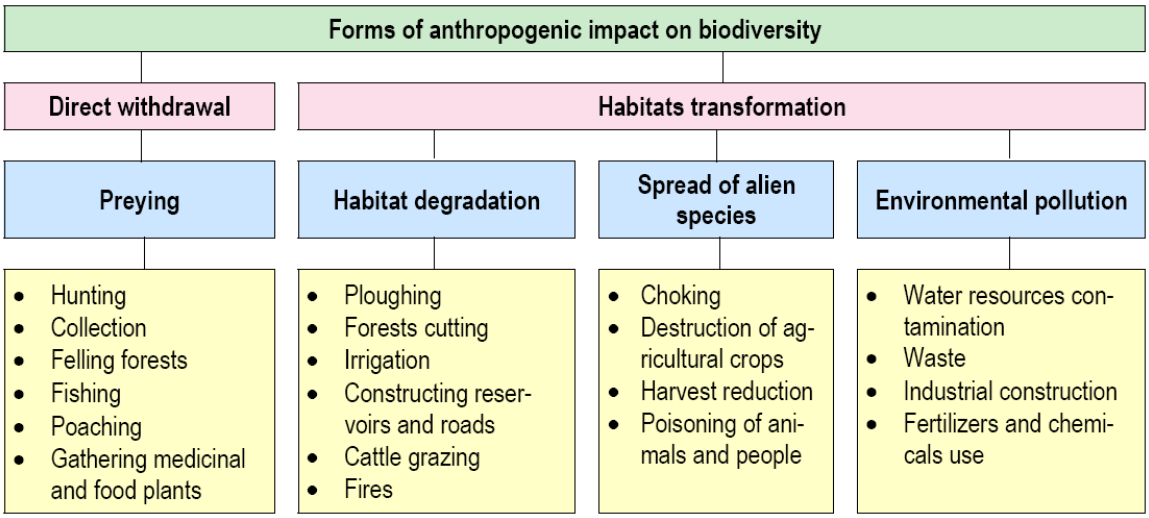
Component	Importance
Ecosystems	12 types
Types of vegetation	20 types
Flora	9 771 species
Wild relatives of cultivated plants	1 000 species
Endemic plants	1 132 species
Plants, listed in the Red Data Book of Tajikistan	226 species
Agricultural crops	500 varieties
Fauna	13 531 species
Endemic animals	800 species
Animals, listed in the Red Data Book of Tajikistan	162 species
Domestic animals	30 breeds

12. The Box below provides the list of species most important for the population of Tajikistan.

Value of Biological Resources for the Population of Tajikistan

The local population traditionally uses wild nature products as raw materials in construction, utensils and dyers production, etc.
1090.7 thousand heads of cattle, 2269.3 thousand sheep and goats, and 71.2 thousand horses are being raised due to the natural vegetation of pastures. Local people gather wild berries – sea buckthorn (*Hippophae rhamnoides*), barberries (*Berberis*), currants (*Ribes*), raspberries (*Rubus odoratus*), hawthorn (*Crataegus*), etc., as well as mushrooms and dozens of medicinal plant species. They gather nuts and stone fruits in naturally growing forests – walnut (*Juglans*), pistachio (*Pistacia*), almond (*Amygdalus*), wild apple (*Malus*), pear (*Pyrus*), plum (*Prunus*), cherry plum (*Prunus sogdiana*) etc. Local people and specialized organizations store up medicinal plants. Small part of the population is engaged in hunting and fishing. The number of game mammals is estimated at 11 species, birds – 36, and fish – 20. Fur-skins of red marmot (*Marmota caudata*), muskrat (*Ondatra zibethica*), fox (*Vulpes vulpes*), badger (*Meles meles*), wolf (*Canis lupus*), etc. are stored up. International hunting is organized for the following animals: argali (*Ovis ammon*), Siberian ibex (*Capra sibirica*), urial (*Ovis vignei*), and Tajik markhur (*Capra falconeri*). Game fishing in lakes and water reservoirs is inconsiderable (164 t). Most of fish and animals are caught by poachers.

Figure 1. Main Factors of Anthropogenic Impact on Biodiversity[9]



13. In the last 50 years, due to the impact of the anthropogenic factor, 226 plants and 162 animal species have become rare or endangered, and they are listed in the Red Data Book of Tajikistan; 10 vertebrate species are listed in the Red List of the IUCN.

14. Reptiles and mammals have become the most vulnerable, indeed 50% of mammals and 44.7% of reptiles are listed in the Red Data Book of Tajikistan. Among the vertebrates of Tajikistan, the psammobiont forms of reptiles – *Crossobamon eversmanni, Teratoscincus scincus, Phrynocephalus myctaceus, Echis carinatus*, etc. – turned to be the most vulnerable to the anthropogenic transformation.

15. Destruction of native habitats and the deterioration of the environment in 1954 caused the complete disappearance of the Turan tiger (*Panthera tigris virgata*) from Tajikistan area and from the face of Earth. In total, 3 species of animals and 16 species of plants are extinct.

Table 2. List of Extinct Species[10]

Flora	Fauna
Silene caudata	*Panthera tigris virgata*
Juno popovii	*Marmota menzbieri*
Juno tadshikorum	*Pseudoscaphirinchus fedtschenkoi*
Astragalus darvasicus	

[9] Source: The National Biodiversity Strategy and Action Plan, 2003
[10] Red Data Book of Tajikistan, Dushanbe, 1988.

Hedysarum korshinskyanum	
Oxytropis mumynabadensis	
Allium gracillimum	
Allium incrustatum	
Allium minutum	
Allium paulii	
Allium schugnanicum	
Bellevalia inconspicua	
Eremurus micranthus	
Tulipa anisophylla	
Delphinium nevskii	
Populus cataracti	

16. The Government of Tajikistan has been taking steps to reverse the lost biodiversity. Impressive steps have been taken in ex-situ conservation through GEF interventions[11] (conservation outside the natural habitat or artificial conservation)[12]. Efforts have also been taken to improve in-situ conservation[13].

17. The proportion of land under various forms of protection for nature conservation has increased from 4% to about 22% since independence. The approach to in-situ conservation has also been modified, with more involvement of local communities, possibly catalyzed by NGOs.

18. As of 2014, all protected areas of Tajikistan occupy a total area of 3.1 million hectares or 22% of the country. These include: four Nature reserves with a total area of 173,418 hectares; thirteen Zakazniks (reserves) for 313,260 hectares; one national park with a total area of 2.6 million hectares; one historical and natural park - 3000 ha; and one the natural park of 3805 hectares.

19. The biggest protected area in Tajikistan and Central Asia – the Pamir National Park (also known as Tajik National Park) is a national park and nature reserve in eastern Tajikistan. It was established in 1992. In 2008, the national park was submitted to UNESCO with a view to becoming a World Heritage Site. Indeed in 2013 the park was accepted as World Heritage[14]. The national park

[11] In Situ/On Farm Conservation and Use of Agricultural Biodiversity (Horticultural Crops and Wild Fruit Species) in Central Asia

[12] Ex-situ conservation means that species threatened by uncontrollable processes that cannot be managed by in-situ conservation can be conserved.

[13] In-situ conservation areas are classified into National Parks, Nature Conservation Areas, Nature Parks, Wildlife Development Areas, Special Environmental Protection Zones, Natural Sites, Natural Assets and Gene Preservation and Management Areas.

[14] Mount Etna and the Mountains of Pamir inscribed on World Heritage List alongside El Pinacate and Gran Desierto de Altar, www.unesco.org, 21 June 2013.

features a mix of steppe, desert, grassland, and alpine regions. It has long cold winters and cool summers; with an average annual rainfall of 12.7 cm. Species known to live in the national park include the brown bear, snow leopard, wolf, markhor, Marco Polo sheep, brown-headed gull and bar-headed geese.

Table 3: GEF projects and alignment to Biodiversity GEBs

ID	Name	Conservation of globally significant Biodiversity	Sustainable use	Sharing of GEBs from genetic resources	Other GEBs
996	Biodiversity Strategic Action Plan with Clearing House Mechanism	☑☑	☑☑	☑	CC/IW
1854	Biodiversity Conservation and Sustainable Development in the Gissar Mountains of Tajikistan	☑☑	☑☑	☑☑	LD/CC
1872	Community Agriculture and Watershed Management	☑	☑	☑	LD/CC/IW
1928	National Capacity Needs Self-Assessment for Global Environmental Management (NCSA)	☑	☑	☑	LD/CC/POPs/IW
2037	Dashtidzhum Biodiversity Conservation	☑☑	☑☑	☑☑	LD/CC
2528	Additional Financing for Capacity Assessment in Biodiversity Priority Areas	☑☑	☑☑	☑	LD/CC
3129	Sustaining Agricultural Biodiversity in the Face of Climate Change	☑☑	☑☑	☑	LD/CC
3211	Support for the Implementation of the National Biosafety Framework of the Republic of Tajikistan	☑☑	☑☑	☑	LD/CC
3234	CACILM: Rural Development Project under CACILM Partnership Framework, Phase I	☑	☑		LD/CC
3310	Environmental Learning and Stakeholder Involvement as Tools for Global Environmental Benefits and Poverty Reduction	☑	☑	☑	LD/CC/POPs/IW
4352	Environmental Land Management and Rural Livelihoods	☑☑	☑☑	☑	LD/CC

4694	Support for the Revision of the NBSAPs and Development of Fifth National Report to the CBD	☑☑	☑☑	☑	LD/CC
5236	Strengthening Capacity for an Environmental Information Management and Monitoring System in Tajikistan	☑	☑	☑	LD/CC/POPs/IW
6949	Conservation and Sustainable Use of Pamir Alay and Tian Shan Ecosystems for Snow Leopard Protection and Sustainable Community Livelihoods	☑☑	☑☑	☑☑	LD/CC

☑☑ - Indicates main objectives cover this GEB and was/will be primary focus
☑ - Indicates main objectives cover this GEB but with less focus

3. Climate Change

20. Global environmental benefit in the Climate Change Mitigation focal area is the sustainable mitigation of the concentration of anthropogenic greenhouse gases (GHG) in the atmosphere. Specifically, it includes:

- Mitigated GHG emissions;
- Increased use of renewable energy and decreased use of fossil energy resources;
- Improved energy efficiency;
- Increased adoption of innovative technologies and management practices for GHG emission reduction and carbon sequestration; and
- Conservation and enhanced carbon stocks in agriculture, forest, and other land use.

21. In order to implement the UNFCCC commitments and strengthen climate protection measures, to date Tajikistan has produced three National Communications on climate change. Tajikistan is one of the pioneers in the preparation of a National Action Plan for climate change mitigation (2003) within its territory. This plan includes adaptation measures many of which are being implemented and currently recommendations on updating the National Action Plan are currently being developed.

22. Tajikistan is convinced that intentions and commitments of countries on GHG emissions must be implemented by all Convention Parties with consideration to their specific emissions, socioeconomic conditions and development needs, geographic location, as well as the availability of financial resources and technologies.

23. According to the last inventory of GHG emissions (2004-2010) and as confirmed by international sources, the level of absolute and per capita emissions in Tajikistan remains the lowest

in Central Asia. Despite the fact that the country does not have quantitative UNFCCC commitments on the reduction of emissions, the current level of emissions as compared to 1990 have reduced by one third, mainly due to the collapse of the Soviet Union and structural changes resulting from the transition to a market economy and independence. During the last decade, the level of carbon dioxide has remained quite stable, however in the current decade an increase of emissions is expected.

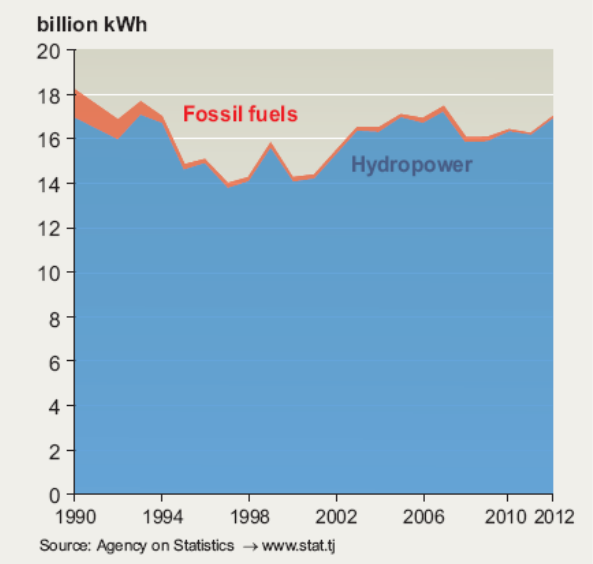
24. The break down up of emissions in Tajikistan differs from other Central Asian countries. Since the late 1990s to the present, agriculture has been the main source of GHG emissions. Considering the low level of mechanization, underfeeding of livestock, and limited use of fertilizers, emissions from the agriculture sector of Tajikistan are lower than in the other countries of Asia and Europe. Opportunities for any considerable reduction of carbon footprint in agriculture are therefore limited, while the measures in other economic subsectors are more promising, especially in energy and industry.

25. Currently 98% of the electricity in Tajikistan is generated from hydropower[15]. This source of energy produces a minimum level of carbon dioxide and has a great potential for development and growth. Therefore, energy consumption could increase and still result in a smaller demand for other sources of energy. Also, neighboring countries could use electricity from Tajikistan to reduce their carbon footprint. Since 2010, coal mining has increased as a measure to address the seasonal energy deficits and as a substitute for gas imports, which are often problematic. This coping strategy might result in an increase in carbon dioxide emissions in the near future. From an environmental point of view this option is not ideal, however the country's acute energy deficit, coupled with population growth, slow the pace of development and consequently the capacity to eliminate poverty.

26. In CO_2 equivalent, the contribution of greenhouse gases from the Energy sector for different years was between 14% and 67% of total emissions for the corresponding year. In 2010 GHG emissions in the energy sector was 1.2 mln tons or <10% than the emissions in 1990. During the same year, the International Energy Agency estimated that energy emissions in Tajikistan reached 2.8 mln tons per year. (http://www.iea.org/statistics/statisticssearch/report/?country=TAJIKISTAN&product=indicators&year=2010) The difference occurs because of the lack of balance between supply and demand, and also due to different calculation and registration methods.

[15] On the average. For example in 2013 99.5% of energy was generated from hydropower.

Figure 2. Power generation



27. Despite sufficient per capita production indicators, energy supply to the rural population is limited and the energy deficit during autumn and winter reaches 2.5 bln kWh. Therefore power supply limits are introduced every year. Except for the larger cities, electricity is supplied to the population for 2-8 hours per day. These circumstances compel the rural population to use forest wood, cotton stems and other biomass for heating and preparing food. The rural population makes up 75% of the total population, but uses less than 10% of the total volume of electricity. Annually, due to electricity cuts in rural areas, agricultural losses reach 30% and many small entities stop working.

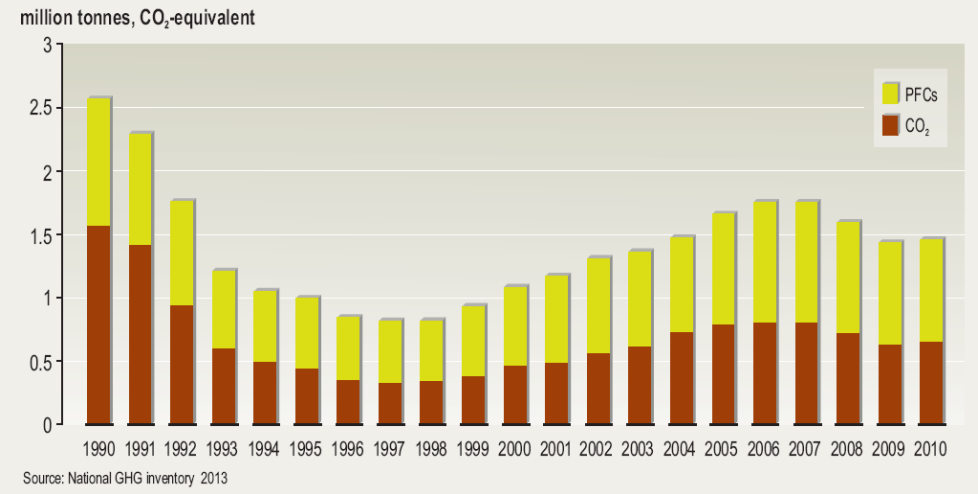
28. In summer period Tajikistan can generate sufficient electricity to meet the local demand and also to export to neighboring countries. The volume of water discharge through the HPP turbines in the summer period depends on the dryness of the year and varies from 3.5 to 7.5 bln kWh, averaging 6 bln kWh. Taking into account high demand for electricity in several neighboring countries such as Pakistan and Afghanistan, Tajikistan could make significant profit from selling surplus energy to external consumers.

29. In Tajikistan the number of automobile users is the lowest among Central Asian countries, as it is the general level of transport emissions. The present sector fully relies on imported fuel. Given that the price of natural gas is lower than the price of petrol and diesel, the number of vehicles using LNG as a fuel or having hybrid fuel systems is higher than the number of vehicles using other types of fuel. Since the emissions of vehicles running on gas as compared to those running on petrol are lower, the overall level of emissions in the sector is not high.

30. New road infrastructure such as tunnels and improved roads in mountainous areas have considerably reduced travel times and consequently fuel consumption, which in turn has led to reduced emissions and increased road safety as well as improved transport communication between the regions and remote districts of the country.

31. In addition to burning fuel, GHG emissions are also created by non-energy industrial processes where materials transform from one state to another. IPCC methodology prevents double counting of emissions in industry since the emissions resulting from fuel burning are covered under 'Energy'. The input of GHG emissions from the 'Industrial processes' sector varies from 6 to 20% of total national emissions for different years. In 2010 the emissions in this category were equivalent to 58% of the emissions in 1990. The lowest emission rates were observed in 1996-1998. As for the period covered by the national inventory (2004-2010) the highest levels of emissions occurred in 2007 (814 Gg) due to industrial growth. Consequently, the global economic crisis in 2008 and reduction of import of natural gas, the volume of cement and ammonia production has reduced. Moreover, due to lack of natural gas supply in 2009-2010, ammonia production was discontinued. As a result, compared to 2005, CO_2 emissions in 2010 were reduced by 20%.

Figure 3. GHG emissions from the industrial processes



32. In Tajikistan the natural absorption of carbon dioxide takes place in 'Land Use, Land Use Change and Forest Management' (LULUCFM) as a result of:

- Change (increase) of forests and other wood biomasses;
- Conversion of forests and pasture lands; and
- Land use dynamics.

33. After the collapse of the Soviet Union, the supply of coal and gas was stopped and the power supply to rural population was reduced. Therefore, people were compelled to use available wood

biomass. The woodlands most frequently used were field shelter belts and woodland belts along the highways and near to communities.

34. Forest cover comprises only 3% of the land area of Tajikistan and the recent intensive deforestation has resulted in reduction in the carbon absorption capacity of forests. Reforestation is 50% of what it was compared to 1990. One of the key indicators of forest health is its stand density. With an average norm of 0.5-0.6 in 1990 the share of medium stocking was 50%, but by 2007-2010 it had dropped to 30%. This is mainly the result of human activities such as forest cutting, as well as animal grazing, fires and an increase of forest pests. According to expert observations, the standing tree crop has declined from 1.3m^3 per person in 1990 to 0.8m^3 per person in 2010. Ongoing reforestation works are insufficient for full reforestation. Even under these circumstances, forests absorb a considerable proportion of all emissions. Fruit and nut trees planted to ensure food security are also taken into account in reporting on emissions. During the last few years, an increase in sequestration of carbon dioxide in wood biomass has taken place through tree planting.

35. The contribution of GHG emissions from the agriculture sector ranged from 20% to 62% of total national emissions depending on the year. From 2000 the agricultural sector was among the key sources of emission, and the 2010 emissions were equivalent to 110% of the 1990 levels. In the agriculture sector the main GHGs are methane (CH_4) and nitrous oxide (N_2O) with the largest share coming from livestock digestion livestock (80-85%). The smallest proportion comes from methane from animal waste (manure) (~10%). Methane emissions from rice paddles and the burning of agricultural waste do not exceed 8%. Annually the area for rice cultivation varies between 12 and 20 thousand ha. The main rice cultivation regions are Sughd and Khatlon oblasts. In 2010 rice cultivation reached 15 ha. Rice is cultivated in traditional way through regular check dam flooding of rice fields, which creates methane emissions through the anaerobic decomposition of organic substances.

36. Twenty years ago domestic waste comprised a very small share of the total emissions. However, due to changes in overall composition of emissions, there has been a notable increase of domestic waste level. In theory, all domestic waste is arranged in waste landfills and only small part is processed informally. There are landfills in all major cities, yet their number is considered insufficient for the country.

37. For the national inventory, the 'waste' sector covered the following sources: solid domestic waste landfills and complex non-industrial and industrial waste water treatment plants. The waste sector has smallest volume of emissions making up 3-9% of total volume in CO_2-equivalent. GHG emissions in 2010 were 70% of their 1990 equivalent. Between 1991 and 1999 the emissions were reduced. There was a considerable reduction of methane emissions of 30% in 1999 compared to

1998 equivalent, which was primarily linked to a reduction in the number of disposal sites from 70 to 52, controlled landfills from 5 to 3, and uncontrolled deep landfills from 12 to 7.

38. Over the last decade, especially between 2005 and 2010, emissions have been increasing. The number of controlled landfills has increased from 3 to 4 (Dushanbe, Khujand, Vahdat, and Tursunzade) whilst the number of uncontrolled landfills with more than a 5 meters thickness of waste has reached 7 (B. Ghafurov, Istarafshan, Isfara, Khorog, Somoniyon, Sarband, and Kulyab). The number of shallow landfills with less than 5 meters thickness of waste has reached 52. In total, there are 63 solid domestic waste landfills and 105 complex waste water treatment plants. Since Tajikistan has no adequate infrastructure for collecting and processing sorted waste except from individual initiatives on collecting waste paper, waste metal, and plastic, all waste is offset out in landfills. The major contribution is made by emissions from solid domestic waste (95-97%). An increase in emissions is mainly linked to the growth of the urban population, the volume of waste and the number of disposal sites.

Table 4. Key sources of GHG in 2010

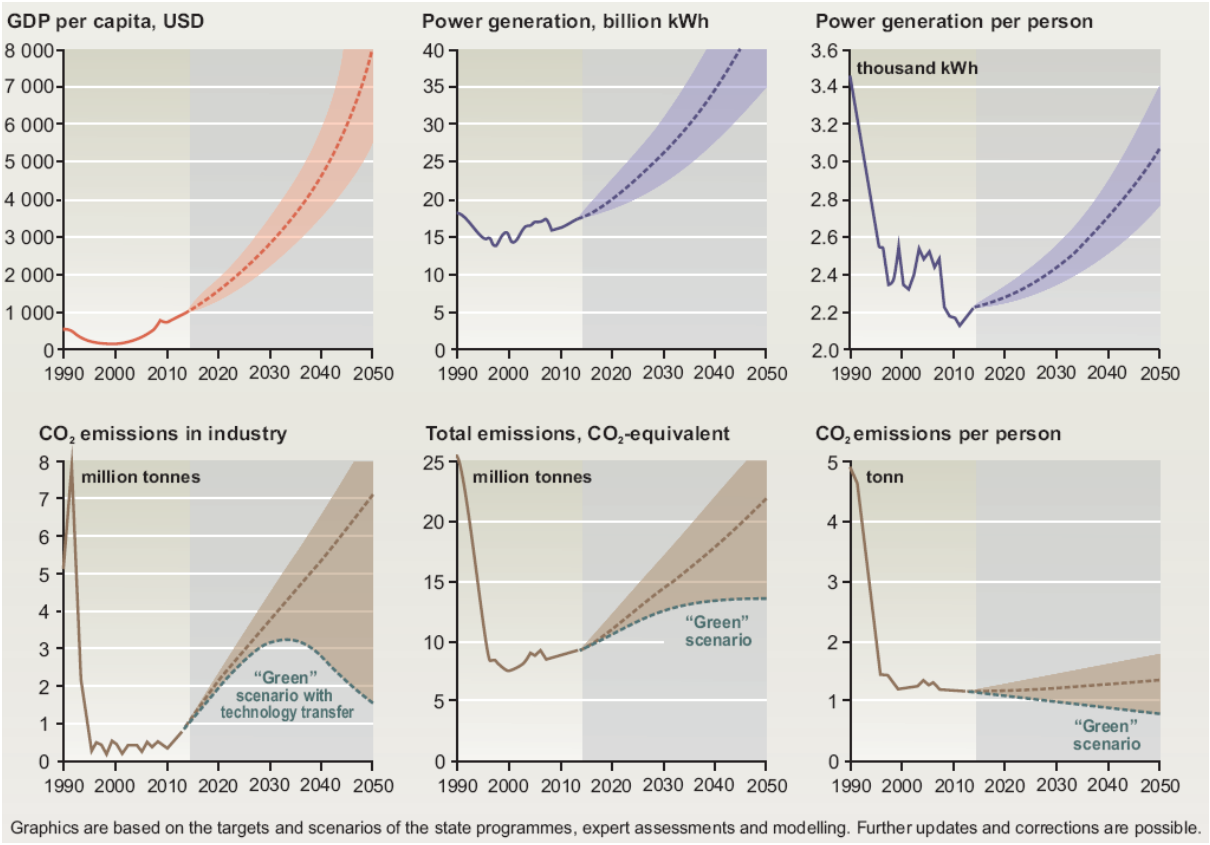
	Sector	IPCC source	Gas	CO_2equivalent (Gg)	%	Cumulative total
4.D	Agriculture	Agriculturalareas (directandindirect emissions)	N_2O	2681.80	29.44	29.44
4.A	Agriculture	Digestion by domestic animals	CH_4	2436.77	26.75	56.18
2.C	Industrial processes	Aluminum production	PFCs	822.74	9.03	65.21
6.A	Waste	Solid domestic waste landfills	CH_4	532.38	5.84	71.06
2.C	Industrial processes	Aluminum production	CO_2	523.56	5.75	76.80
4.B	Agriculture	Animal waste and compost emissions	CH_4	360.01	3.95	80.76
1.A.2	Energy	Industry and construction	CO_2	328.06	3.60	84.36
1.A.4	Energy	Housing and Communal management	CO_2	305.61	3.35	87.71
4.B	Agriculture	Animal waste and compost emissions	N_2O	198.77	2.18	89.89
1.A.3	Energy	Vehicles	CO_2	176.46	1.94	91.83
1.A.3	Energy	Aviation	CO_2	125.16	1.37	93.20
4.C	Agriculture	Rice cultivation	CH_4	119.80	1.31	94.52
6.B	Waste	Waste water	N_2O	112.40	1.23	95.75
2.A	Industrial process	Production of cement	CO_2	102.98	1.13	96.88

Source: UNFCCC, 2012

39. “Uncertainty” assessment characterizes the level of dispersion and possible deviations of data in comparison with true value. The information on uncertainty enables identification of the priority measures for more accurate assessment of emissions in further inventories and account of the information on uncertainty while planning for GHG emission reduction. The final uncertainty is a combination of uncertainties in coefficients of emissions and uncertainties in data on activities.

40. Uncertainties are subdivided into three levels: low level (high reliability) if uncertainty is <10%; medium level if uncertainty is between 10 and 50%; and high level if uncertainty is high (low reliability) and is equivalent to > 50%. The final uncertainty of the present inventory is assessed to be at the medium level. At the same time, in some sectors such as 'Industrial process' the level of uncertainty is low, whilst for other sectors, such as 'Agriculture', 'LULUCFM', and 'Waste', the uncertainty level is high. Because of the lack of a robust energy balance and taking into account the most reliable data on fuel consumption, the level of uncertainty in the Energy sector is medium.

Figure 4. Scenarios of economic development, energy and GHG emissions till 2050[16]



41. There is a high level of uncertainty with regards to the use of fuel for transport and 'sectoral' GHG emissions. This is due firstly to the quality and completeness of data on fuel consumption, and secondly to the rapid technological progress taking place in the West in the use of electric vehicles. This might also be a good option for Tajikistan, given its rich hydropower resources. By 2020-2030 it is expected that it will be better positioned than traditional vehicles in terms of cost and usability the electric vehicles.

[16] Third National Communication on Climate Change, under the United Nations Framework Convention on Climate Change, 2014

42. In the LULUCFM sector, a growth in the volume of CO_2 absorption has been observed since 2000. During the current decade, as a result of changes in land use, improvement of land registration and control, introduction of effective management methods, and improvement in forests, the volume of CO_2 absorption by soil and wood biomasses has been increasing. In 2010 the CO_2 absorption had reached 110% of their equivalent in 1990, then by 2020 the CO_2 it could be expected that absorption might increase by 120% or 1.8-2mln tons of CO_2 in absolute figures.

43. Tajikistan continues to seek ways to reduce emissions by increasing energy efficiency and increasing the role of renewable energies. In Tajikistan energy efficiency is raising in priority on the policy agenda. Energy efficiency contributes to increasing energy supply security, maintaining a high level of GDP growth and overcoming environmental concerns with the main driver being climate change. Legislation on energy efficiency has recently been formulated and implemented. The next step in the process is to encourage investments in energy efficiency using market mechanisms. Moreover, several projects supported by GEF, World Bank, ADB, EBRD, UNDP and other financing facilities focus on energy efficiency and renewable energy.

44. The GEF has supported limited activities to isolate carbon, but the goal of sequestering terrestrial carbon is largely a secondary benefit of projects in the biodiversity or land degradation focal areas[17].

45. According to National Aeronautics and Space Administration of the United States (NASA), Central Asia is one of the regions that have experienced a pronounced warming of its climate since 1950[18]. Therefore not only Tajikistan, but also the other countries of Central Asia are experiencing the impact of climate change in the form of increased temperatures, melting of glaciers and transformation of river flows.

46. Between 1940 and 2012 the temperature of plain areas of Tajikistan rose at an average rate of 0.1-0.2 ºC per decade. The highest increase of temperature was observed in Dangara town and Dushanbe city, (0.5-0.8 ºC) since 1940 whilst other areas such as Khujand experienced a rise of by 0.3 ºC per decade with the lower increase being due to the impact of irrigation and water reservoirs. In mountainous districts, the average temperature increase comprised 0.3-0.5 ºC, with exception of some districts where trends are less prominent. In highland areas (above 2500 m), the temperature increased by 0.2-0.4 ºC.

[17] GHG emissions from land use are less certain than GHG emissions from fossil fuel combustion. The World Resources Institute estimates that land use changes accounts for approximately 30% of total worldwide GHG emissions. See Climate Analysis Indicators Tool of the World Resources Institute. (cait.wri.org)

[18] Third National Communication on Climate Change, under the United Nations Framework Convention on Climate Change, 2014

47. The period of 2001-2010 turned out to be the warmest decade in the history of instrumental observations in Tajikistan. In zones up to 1,000m, the average temperature of the decade was 1 ºC above the average; at the altitudes of 1,000 – 2,500 m the average exceeded by 0.8 ºC and in highland zones by 0.2 ºC. 2001 it was the hottest, with annual temperature exceeding the average by 1.0-1.6ºC. Similar situations were observed in the plain and mountainous districts in 2004 and 2010.

48. Between 1940 and 2012 annual precipitation increased by 5-10%. However, the diversity of geographic and climatic zones in Tajikistan creates a varied and complex pattern of change. The driest decade was 1940-1950 which was followed by both dry and humid periods. In some instances, an increase in average precipitation was largely caused by increased precipitation intensity and a reduction in the number of days with precipitation per year. The annual amount of rainfall during the last decade (2000-2010) was also above the annual average, with exception of certain years which resulted in a river discharge.

49. The glaciers and snow reserves of Tajikistan are the main sources of river flow formation and are located in the highlands at and above 2,500masl. Glaciers and snow cover are very sensitive to variation in the climate. Even small changes in summer temperature (by 0.5-1°C) can cause visible changes in the fin line (by height) and reduce glaciers by 30% or more.

50. From the middle of 20th century till the beginning of 21st century (i.e. 2003-2010) the area of glaciers in the Vakhsh river basin, including upstream of the river in Kyrgyzstan, has reduced from 3,700 km^2 to 3,200 km^2 (between 7.5% to 10% according to different sources) while the area of glaciers in Pyanj river basin, including feeder glaciers in Afghanistan, has reduced from 3,900 km^2 to 3,600 km^2 or from 8.5% to 15% according to different sources. The current area of glaciers of Gissar-Allai within Tajikistan is approximately 500-550 km^2 which is a reduction of 20-25% during the period covered. This is similar to the trends observed in south-western Pamir.

51. If the dynamics described above continue and considering the impact of climate change, it is predicted that the area of glaciers could reduce by 40-50% in Vakhsh river basin and by 60-70% in Pyanj river basin. Altogether, this reduction in the area of glaciers will be by 3,500 km^2 – 4,000 km^2. Estimating the loss in the volume of glaciers is a challenging task given the insufficiency and lack of reliability of the data. In the middle of 20th century, the volume of glaciers in Vakhsh and Pyanj rivers was estimated at more than 400km^3. By the middle of this century, assuming that the temperature will increase by 2°C and that there will not be any changes in the type and amount of precipitation, the volume of ice in upstream of Amudarya River could reduce by 50%.

52. Melting of seasonal snow cover also plays an important role in formation and nature of river discharge in Tajikistan. If the total amount of solid precipitation (and maximum snow reserves) in the mountains is retained, then no significant reduction of water resources due to loss of glaciers

should be expected. However, an increase in air temperature during winter and spring reduces the snowfalls and the potential snow reserves; therefore it results in an earlier melting of snow cover.

53. The impact of climate change on the nature is diverse. For instance, scientists link climate change with the reduction of habitat of the very rare marmot Menzbira (Marmota menzbieri), included to Red Book, in Kuramin range (Northern Tajikistan) and its population growth. According to local people and observations from a series of expeditions, vegetation cover and type has changed in the periglacial zones and in areas where glaciers are degrading. This is quite likely related to climate change.

54. The production of grain, vegetables and fruits represent the key source of income and livelihoods for many mountain communities of Tajikistan. The modelling of climate change in and its impact on agriculture in local mountain communities is a challenging task. The productivity of the key export crop, namely cotton, to large extent depends on agro-technical measures and accessibility to irrigation water. As compared to other agricultural crops, cotton plants are able to cope with higher temperatures and high soil salinity. Therefore cotton production will be profitable under hot conditions.

55. Due to the increased intensity of rains, loss of soil and erosion processes the sediment load of rivers will increase. This will result in further sedimentation of irrigation channels, reservoir pumping stations, and reservoirs. The current efficiency of irrigation systems is low and may be further aggravated by the water problem.

56. Weather conditions also affect the number of insect pests and insects transmitting infectious diseases. In the southern districts of Tajikistan, an outbreak of cotton budworm halved the cotton harvest. The size of the locust affected areas has also increased. In 2007 locusts destroyed 35 thousand ha of crops and caused considerable damage.

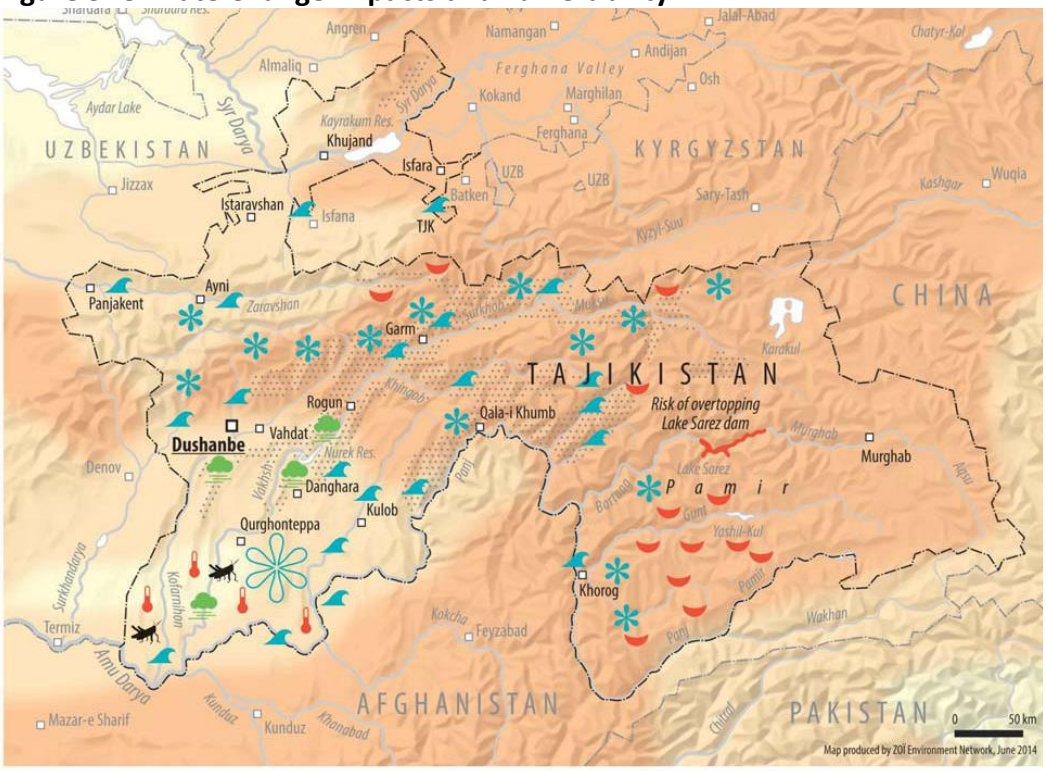
57. With regards to vulnerability to climate change, Tajikistan has made a start on developing the targeted adaptation measures that are needed to deal with the effects of climate change. However, there is still a lot of work to be done in that direction, where costs of these adaptation measures need to be assessed. The main impacts and vulnerabilities identified by Tajikistan are:

- increased risk of drought;
- decreased water availability (concurrent with increased demand for water);
- increase in the frequency and intensity of floods associated with extreme rainfall events;
- increased risk of desertification, particularly in arid and semi-arid areas; and
- loss of biodiversity in several ecosystems.

58. The participatory vulnerability assessment carried out by UNDP (2012) in different parts of the country revealed that the main climate change related concern and adaptation priorities of the

population included; improving access to clean drinking water, increasing the effectiveness and reliability of irrigation systems, better access to high quality seeds and sustainable land management practices. Reliable access to energy in rural areas is also among the top priorities. Studies carried out by NGOs have resulted in similar findings.

Figure 5. Climate Change impacts and vulnerability[19]



59. Since the increase of global GHG emissions is continuing despite climate change related efforts, limiting the temperature increase within 2°C is becoming a rather challenging task. A further increase of global temperature may have negative consequences for the environment, economy and health of the population.

60. Precipitation and temperature scenarios using three climatic models (CCSM3, ECHAM5 and CSIRO) based on 3 emission scenarios (A1B, A2, B1) were studied[20]. The models do not show

[19] http://www.zoinet.org

[20] Third National Communication on Climate Change, under the United Nations Framework Convention on Climate Change, 2014: Article 4.8. Climatic scenarios for XXI century

significant change in precipitation in Vakhsh and Pyanj river basins, however an increased variation in maximum and minimum precipitation has been observed. Thus, it is expected that the nature of precipitation will change with the amount of rainfall increasing and snowfall decreasing. There will be more intensive precipitation events of the type that usually occur only once in fifty years, especially in Pamir. Geographically, the annual amount of precipitation is likely to decrease in southern Tajikistan and neighboring areas, including Afghanistan; it is likely also to increase in the mountainous parts of the country. The amount of precipitation in Tajikistan is likely to increase during summer and winter and may reduce in spring and autumn.

61. Based on the in-depth discussions between national experts[21], a consensus was reached on the prediction about water discharge of the main rivers of Tajikistan. This can be summarized as follows. It is expected that the peak discharge in non-regulated rivers will shift to earlier months of the year. This will affect the economic sectors dependent on water supply in Tajikistan as well as in downstream counties. By the middle of 21_{st} century water discharge in rivers will possibly be reduced in summer and in early autumn, the period during which demand for water from agriculture is significantly high. Inter-annual variability and alternation of watery abundant and dry years are expected.

62. Preventive measures on the protection of catchment areas from erosion and run-off are required as well as the desilting of reservoirs and construction of new ones with the sufficient capacity to cope with sedimentation and dry periods. It must be mentioned that the HPP Kairakkum was constructed not only for generation of power but also to provide irrigation for downstream districts. Therefore, adaptation measures should be viewed in a broader context. The change of river flow will possibly require all basin countries to revisit the operation regime of the reservoirs taking into account the main parameters such as hydro-energy, agriculture, and water ecosystems.

63. According to the conclusions of Tajikistan's First and Second National Communications on climate change, the predicted increase in air temperature and precipitation will contribute to an increased range and a risk of communicable diseases, including malaria, intestinal infections, and parasitic infections. Climate warming, longer periods of hot weather, floods, and droughts may negatively affect the quality of drinking water and contribute to outbreaks of infections and other diseases, including dysentery, typhoid, hepatitis A, salmonellosis, cholera and lambliasis.

64. Warm weather increases the risk of microbial contamination of water in open reservoirs. The wastewater treatment facilities serving urban settlements of Tajikistan are ineffective due to a shortage of equipment and poor processes of waste water purification. The proportion of the population of Tajikistan with access to safe drinking water reduced from 63% in 1991 to 55% in 2012. In rural areas the coverage is even lower, reaching 35%. This is one of the main causes of the

[21] UNITAR Workshop for policy-makers in Tajikistan for the UNFCCC process, Dushanbe, February 2014

vulnerability of people to water borne diseases. The other reason is the construction of toilets, animal sheds, hen houses, and other buildings and facilities with contaminated water runoffs near to open reservoirs and water protective zones, as well as other violation of sanitary standards. More than 90% of the urban population of the country and almost the same proportion of rural population have toilets. However, only 30% of the city population and less than 1% of rural population have toilets connected to the sewage systems.

65. With climate warming and the impact of floods, the risk of the spread of water borne infectious diseases will increase. The impact of heat waves due to climate warming can affect death rate of the vulnerable population groups (children, elderly). The rise of temperature and subsequent drought in 2000-2001 was one of the main factors causing the growth of population mortality.

66. The Pilot Program for Climate Resilience (PPCR), approved in November 2008, was the first program developed and operational under the Strategic Climate Fund (SCF), which is one of two funds within the design of the Climate Investment Funds (CIF). The PPCR aims to pilot and demonstrate ways in which climate risk and resilience may be integrated into core development planning and implementation. In this way, the PPCR provides incentives for scaled-up action and initiates transformational change. The pilot programs and projects implemented under the PPCR are country-led, build on National Adaptation Programs of Action (NAPA) and other relevant country studies and strategies. They are strategically aligned with other donor funded activities to provide financing for projects that will produce experience and knowledge useful to designing scaled-up adaptation measures.

67. The PPCR provides an assessment[22] of the likely impact of climate change on the agricultural sector in Tajikistan and the options and opportunities for sustainable land management practices to adapt to climate change. It is expected that Tajikistan will continue to become warmer, especially in the winter, with prolonged dry periods and increased risk of glacier outbursts.

68. The main measures of the Government of Tajikistan are focused on economic growth, welfare of the population, poverty reduction, diversification of economy, means of communication, and political stability. Altogether these measures provide the basis for developing climate change resilience. The main directions for enhancing the resilience to climate change include:

- Maintenance of stability and enhance public administration; introduction of e-governance to enhance the performance of state institutions; reduction of the level of corruption and administrative barriers; improvement of information exchange and access of users to key information, including information on climate change; development of the economic sector through modernization and diversification; support to the private sector; improvement of

[22] Tajikistan: Strategic Programme for Climate Resilience

the investment climate and transport development; ensuring of effective social protection for the population; support to the stable development of labor market and the development of human capital; enhancement of access to and quality of education and health; ensuring of all stakeholders' participation in the planning and implementation of climate change measures;

- Meeting of fuel and energy demands; development of hydro-energy potential and increase of the reliability coefficient taking into account the consequences of climate change (an increase of maximum floods and a reduction of flow); extension of the service lifespan of operational reservoirs and the construction / reconstruction of HPPs and dams with taking into consideration the impact climate change on water resources and the peak of water consumption in the rivers; construction of new energy generation units, development of other renewable energy sources and modernization of existing equipment to meet the energy demand; construction of new power transmission lines within the country to increase access of the population to energy; construction of new power transmission lines to export hydro-energy outside the country; Reduction in the energy-intensiveness of the economy; enhancement of energy efficiency and energy saving in energy production, industry, construction and agriculture sectors as well as at the household level; stimulation and provision of incentives for the use of gas fuels (liquid) in transport; conduction of awareness campaigns via the mass media and also through the dissemination of brochures, leaflets, posters and local level workshops on RES, the availability of RES devices as well as their economic and environmental benefits.
- Addressing of contradictions and shortcomings in the implementation of land reform and in land management; ensuring of access to financial resources and credits and to agricultural extension services, including information and knowledge; development of infrastructure; development of policies focused on transition of the state from 'controlling' to 'stimulating' and an improvement of legal and regulatory frameworks, and taxations in agriculture, with consideration of importance and vulnerability of the agriculture sector to climate change; enhancement of the responsibility of state bodies, including local governments, for ensuring that land use rights are not violated, and for excluding the government from intervening in production or business related decisions of agricultural producers;
- Improvement of water and food security; enhancement of state control in ensuring the safety of agricultural goods (based on Codex Alimentarius); development of organic land management as well as certification and incentive systems for producers; selection and introduction of drought-resistant grains, legumes and other cultures; enhancement of the effective use of water resources in agriculture; creation of an insurance fund for the agricultural sector during emergency situations and in the context of climate change, improvement of existing storage facilities, and construction of new ones for crop and

livestock products; development of breeds and seed varieties in the context of climate change; Improvement of the epizootic situation, pest and disease control in the context of climate change; rise of awareness and access by rural population, farmers and other parties in the agriculture sector to information on climate change; improvement of livestock productivity through improving feed resources, breeding pedigree stock, the expansion of veterinary services, creating modern abattoirs; improvement of soil productivity, crop rotation, bio-drainage, use of compost, low/no till, combined cropping, and improvement of access for communities to energy and water.

- Wide application of the principles of Integrated Water Resource Management; gradual transition to the management of water resources based on hydrological basins rather than administrative units; creation of Basin Committees and Boards; countrywide development of Water User Associations; efficiency increase of irrigation channels through lining, especially inspectors where the loss of water is highest; application of differentiated water tariffs and incentives for saving water and the gradual increase of energy tariffs to fully cover the operational cost of irrigation systems; construction of reservoirs in narrow-mountain gorges for energy generation, water storage as well as for the control of mudflows and flood risk; development of norms and provision of minimum environmental flows; conservation and expansion of forest area and density in river catchment areas.

Table 5: GEF projects and alignment to Climate Change and the GEBs

ID and Name	GHG Mitigation	Increase in REs and reduction in FFs	Improved energy efficiency	Low carbon development	Carbon stocks	Other GEBs
830 - Enabling the Republic of Tajikistan to Prepare its First National Communication in Response to its Commitments to the UNFCCC	☑	☑	☑	☑	☑	LD/BD/IW
1854 - Biodiversity Conservation and Sustainable Development in the Gissar Mountains of Tajikistan	☑	☑	☑	☑	☑	LD/BD
1872 - Community Agriculture and Watershed Management	☑	☑	☑	☑	☑	LD/BD
1886 - Climate Change Enabling Activity (Additional Financing for Capacity Building in Priority Areas)	☑	☑	☑	☑	☑	LD/BD/IW
1928 - National Capacity Needs Self-Assessment for Global Environmental Management (NCSA)	☑	☑	☑	☑	☑	LD/BD/IW
3027 - Support to Sustainable Transport Management in Dushanbe	☑☑	☑☑	☑☑	☑	☑	LD/BD
3129 - Sustaining Agricultural Biodiversity in the Face of Climate Change	☑	☑	☑	☑	☑	LD/BD
3234 - CACILM: Rural Development Project under CACILM Partnership Framework, Phase I	☑	☑	☑	☑	☑	LD/BD
3237 - CACILM: Demonstrating Local Responses to Combating Land Degradation and Improving Sustainable Land Management in SW Tajikistan-under CACILM Partnership Framework, Phase 1	☑	☑	☑	☑	☑	LD/BD
3310 - Environmental Learning and Stakeholder Involvement as	☑	☑	☑	☑	☑	LD/BD

Tools for Global Environmental Benefits and Poverty Reduction						
4160 - Technology Transfer and Market Development for Small-Hydropower in Tajikistan	☑☑	☑☑	☑☑	☑	☑	IW
4352 - Environmental Land Management and Rural Livelihoods	☑	☑	☑	☑	☑	LD/BD
4422 - Increasing Climate Resilience through Drinking Water Rehabilitation in North Tajikistan	☑	☑☑	☑	☑		LD/BD/IW
5236 - Strengthening Capacity for an Environmental Information Management and Monitoring System in Tajikistan		☑☑	☑☑	☑		
6949 - Conservation and Sustainable Use of Pamir Alay and Tian Shan Ecosystems for Snow Leopard Protection and Sustainable Community Livelihoods		☑	☑	☑		LD/BD

☑☑ - Indicates main objectives cover this GEB and was/will be primary focus

☑ - Indicates main objectives cover this GEB but with less focus

4. International Waters

69. Global environmental benefits targeted by GEF's work in international waters relate to transboundary concerns, including:

- Multi-state cooperation to reduce threats to international waters;
- Reduced pollution load in international waters from nutrient enrichment and other land-based activities;
- Restored and sustained freshwater, coastal, and marine ecosystems goods and services, including globally significant biodiversity, as well as maintained capacity of natural systems to sequester carbon; and
- Reduced vulnerability to climate variability and climate-related risks, and increased ecosystem resilience.

70. Glaciers and mountain ecosystems are abundant in Tajikistan and not only serve as water reservoirs and stream flow regulators, but also as the source of water for the Aral Sea river basins. The rivers of Tajikistan supply more than half of the flow to the Aral Sea basin.

71. The country has a few large river basins: the Sirdarya or Syr Darya (northern Tajikistan), the Zerafshan (central Tajikistan), the Kafernigan, Vakhsh and Pyanj rivers (southwestern Tajikistan and Pamirs) and basin of closed lakes in the eastern part of Pamir. The total catchment area of these river basins (with tributaries) in Tajikistan is estimated being over 120,000 km^2, i.e. almost all territory of Tajikistan.

72. Tajikistan lies in the upstream areas along the Amu Darya River, which is formed after confluence of Vakhsh and Pyanj rivers. Instead along the Syr Darya River, the country lies in the mid-stream areas. In these cases, the use of water resources in Tajikistan may affect the quality and quantity of water in downstream states.

Table 6: Transboundary Waters in the Basin of the Aral Sea[23]

Basin/sub-basin(s)	Total area (km²)	Recipient	Riparian countries
Amu Darya[24]	*612,000*	Aral Sea	AF, KG, TJ, UZ, TM
- Surkhan Darya	13,500	Amu Darya	TJ, UZ
- Kafirnigan	11,590	Amu Darya	TJ, UZ
- Vakhsh	39,100	Amu Darya	KG, TJ
- Pyanj	113,500	Amu Darya	AF, TJ
-- Pamir[25]	10,000	Pyanj	AF, TJ

[23] Source: http://www.unece.org/fileadmin/DAM/env/water/blanks/assessment/aral.pdf

[24] Estimation: While some literature sources quote a basin area of up to 612,000 km^2, the water divide can only be correctly established in the mountainous part of the basin (309,000 km^2); therefore many hydrologists refrain from giving figures for the total basin area.

[25] No exact figure. Some hydrologists give various figures from 5,000 km^2 to 10,000 km^2.

-- Bartang[26]	24,700	Pyanj	AF, TJ
Syr Darya[27]	*782,600*	Aral Sea	KZ, KG, TJ, UZ
- Naryn[28]	59,900	Syr Darya	KG, UZ
- Kara Darya	28,630	Syr Darya	KG, UZ
- Chirchik	14,240	Syr Darya	KZ, KG, UZ
-Chatkal	7,110	Chirchik	KG, UZ
Zeravshan[29]	*41,800*	Desert sink	TJ, UZ

73. Traditionally in Central Asia the water is used mainly for agricultural purposes. However it does not always reach the agricultural end-users due to the degraded irrigation infrastructure. Only 28% of the 47,750 km of inter-farm irrigation channels in the basin has anti-filtration linings, whilst 77% of farm intakes have flow gauges, and just 21%of the 268,500 km of on-farm channels have anti-filtration linings, which retain on average 15% more water than unlined channels.

74. By 1960, between 20 and 60 km^3 of water were going each year to the land instead of the sea. Most of the sea water supply had been diverted, and in the 1960s, the Aral Sea began to shrink. From 1961 to 1970, the Aral's level fell at an average of 20 cm a year; in the 1970s, the average rate nearly tripled to 50–60 cm per year, and by the 1980s, it continued to drop, now with a mean of 80–90 cm each year. The rate of water usage for irrigation continued to increase; the amount of water taken from the rivers doubled between 1960 and 2000, and cotton production in the region nearly doubled in the same period.

75. Government of Tajikistan intends to cooperate with its neighbors to reduce threats to international waters. Recently in November 2014 Tajikistan and Afghanistan signed a memorandum of understanding with the goal of formalizing the sharing of water data between the two countries.

76. Extreme climate conditions with low precipitation or extremely low temperatures in winter and spring occurred in 2000, 2001, and 2008. These conditions led to a reduction of water supply to the Nurek HPP. In 2002 Tajikistan had to face dry year and allow a huge discharge of water from the Nurek reservoir to maintain the agricultural lands downstream in countries sharing the Amudarya basin namely Uzbekistan and Turkmenistan. In exchange, these countries covered the power generation deficits experienced by Tajikistan through increased energy exports. The winter between

[26] https://ru.wikipedia.org/wiki/%D0%91%D0%B0%D1%80%D1%82%D0%B0%D0%BD%D0%B3

[27] Estimation: Some literature sources quote a basin area of up to 782,600 km^2. As with the Amu Darya, the water divide can only be correctly established in the mountainous part of the basin. Thus, many hydrologists do not give a figure for the total basin area but state that 142,200 km^2 of the basin area is upstream of the point where the river leaves the Fergana Valley.

[28] Estimation: The literature gives various figures for the size of the catchment area, from 58,370 km^2 to 59,900 km^2.

[29] Estimation: Due the sheer impossibility of determining the size of the catchment area, many hydrologists simply give a figure of 17,700 km^2 for the mountain part of the catchment area.
https://www.unece.org/fileadmin/DAM/env/water/publications/assessment/Russian/G_PartIV_Chapter3_Ru.pdf

2007 and 2008 was extremely cold, with air temperatures reaching –30°C. This led to a significant reduction of water flow to the Nurek reservoir. At this time the grid power load has increased, while the volume of power generation reduced, resulting in economic losses.

77. The demand for cheap and 'green' energy is increasing as well as the need to construct new HPPs and reservoirs. Given the climate change related trends and the speed of socio-economic development, energy related problems in Tajikistan and in neighboring countries will grow if projects of regional importance are not implemented and if measures on integration and diversification of energy systems are not undertaken.

78. The Government of Tajikistan is planning to resume the construction of a big reservoir at Rogun (total volume 12,400 km3, exploitable volume 8,700 km3). The future hydro-energy production at this reservoir will be used mainly to satisfy the higher energy demand of the economy including population, mining industry, and aluminum processing plant in Tursunzade.

Table 7: GEF projects and alignment to International Waters and the GEBs

ID and Name	Multi-state cooperation	Reduced pollution load in IW	Restored and sustained water ecosystems	Reduced vulnerability to climate variability	Other GEBs
73 - Water and Environmental Management in the Aral Sea Basin	☑☑	☑☑	☑☑	☑	LD/BD
830 - Enabling the Republic of Tajikistan to Prepare its First National Communication in Response to its Commitments to the UNFCCC		☑	☑	☑	LD/BD/CC
1886 - Climate Change Enabling Activity (Additional Financing for Capacity Building in Priority Areas)	☑	☑	☑	☑	LD/BD/CC
1928 - National Capacity Needs Self-Assessment for Global Environmental Management (NCSA)	☑	☑	☑	☑	LD/BD/
2175 - Support to the Implementation of the Regional Environmental Action Plan in Central Asia	☑	☑	☑	☑	LD/BD
2504 - CACILM: Central Asian Countries Initiative for Land Management Multi-country Partnership Framework Phase 1	☑☑	☑	☑	☑☑	LD/BD
3230 - CACILM: Central Asia Countries Initiative for Land Management (CACILM) Multicountry Partnership Framework Support Project-under CACILM Partnership Framework, Phase 1	☑☑	☑	☑	☑☑	LD/BD
3231 - CACILM: Multicountry Capacity Building Project	☑☑	☑	☑	☑	LD/BD
4160 - Technology Transfer and Market Development for Small-Hydropower in Tajikistan		☑	☑☑	☑☑	CC

4422 - Increasing Climate Resilience through Drinking Water Rehabilitation in North Tajikistan	☑	☑☑	☑☑	☑☑	LD/BD/CC
5301 - Enabling Country of the Transboundary Syr Darya Basin to Make Sustainable Use of their Ground Water Potential and Subsurface Space with Consideration to Climate Variability and Change	☑☑	☑☑	☑☑	☑☑	LD/CC
5903 - Climate Adaptation and Mitigation Program for Central Asia	☑	☑	☑	☑	LD/BD/CC

☑☑ - Indicates main objectives cover this GEB and was/will be primary focus

☑ - Indicates main objectives cover this GEB but with less focus

5. Land Degradation

79. Global environmental benefits resulting from GEF's focus on land degradation focal area, specifically addressing desertification and deforestation, include:

- Improved provision of agro-ecosystem and forest ecosystem goods and services;
- Mitigated/avoided greenhouse gas emissions and increased carbon sequestration in production landscapes;
- Conservation and sustainable use of biodiversity in productive landscapes; and
- Reduced pollution and siltation of international waters.

80. Land degradation is a serious and growing global issue resulting in losses to Gross Domestic Product (GDP) and local livelihoods, food insecurity, climate change, and biodiversity loss. Worldwide it is estimated to be responsible for a 3 to 5 % loss in the affected countries' GDP. Land degradation is a major factor contributing to low agricultural productivity, the incidence of which is felt most keenly by the poor, whose livelihood is often dependent on agriculture.

81. In 2002 the Global Environmental Facility (GEF) reported, "On about one-fourth of the world's agricultural land, soil degradation is widespread, and the pace of degradation has accelerated in the past 50 years". The area of land subject to desertification and land degradation is increasing each year driven by a number of factors including unsustainable land use, demographic changes and growing water scarcity. These pressures are exacerbated by climatic changes and drought.

82. Tajikistan's mountainous landscape is certainly beautiful, but it is also difficult to cultivate: only 7% of the land is suitable for economic use and out of this only 18% are arable land. Nevertheless, agriculture remains the backbone of the economy, and the poor in particular depend on it for their livelihoods. The agricultural sector contributes around 18% of Tajikistan's GDP so it declines the country's economy in land quality impact through the reduction of productivity and/or higher production costs. Furthermore, the costs associated with land degradation directly affects the livelihoods of the rural communities. Thus, the quality of soil and irrigation is crucial.

83. Inefficient land management reduces agricultural output and threatens the income and food security of an already vulnerable population. Unfortunately, land degradation, mostly due to erosion, is becoming a ubiquitous problem in Tajikistan. The country's topography has a strong influence on the types of crops that can be grown and also determines the type of machinery used, the method of soil irrigation, and the productivity of the land. Intensive agricultural activity on slopes inevitably results in erosion. Soils are washed out, and the development of ravines decreases the area of arable soils. Slopes up to 250m are widely cultivated without the implementation of any anti-erosion measures.

84. While natural factors contribute to soil erosion, unsustainable human behavior accelerates the process to an intolerable degree: it is estimated that 97% of agricultural land in Tajikistan has some level of erosion. Land degradation caused from erosion due to overgrazing is estimated to affect approximately 3 million hectares, or 85% of pastures (Asian Development Bank, 2004). In addition, excessive use of pesticides and fertilizers has resulted in the contamination of soil and waterways.

85. Although the extent of the problem is documented in Tajikistan's National Development Strategy (NDS) 2007–2015 and the Poverty Reduction Strategy (PRS) 2010-2012 (so called PRS3) adopted in February 2010, there has been relatively little national scale analysis of the cost of land degradation to the national economy.

86. A recent UNEP-UNDP Poverty-Environment Initiative (PEI) study[30] estimates the economic cost of land degradation associated with foregone production on degraded and unused agricultural land to be in the order of 1,946 million Somoni (US$ 442 million) – 7.8% of Tajikistan's GDP (2010). However, the actual cost is likely to be much higher than this as it does not take into account the off-site costs of land degradation, such as damage to infrastructure. If the value of this foregone production was evenly distributed among rural households, this would result in a benefit of US$ 583 per household per year (based on an estimate of 757,608 rural households)[31].

87. Most of national and international experts consider pastures and haymaking areas, but also natural forests as most affected by degradation. Haymaking areas are often not exclusively used for haymaking, but also for open grazing, and thus heavy degradation is widespread. Heavy degradation can be also observed along infrastructures, such as roads and water canals. An estimated 90% of rain-fed cropland is believed to show signs of degradation, of which 40% is heavy degradation. Regarding the irrigated cropland, 22% of the area is estimated to show heavy degradation, 38% light to medium degradation and 40% no degradation. Degradation in forest plantations is estimated to affect around 70% of the area. Agroforestry systems are considered the least degraded, with heavy degradation occurring on 22% of the area, light to moderate degradation on 30% of the area, and half of the area, 48% not showing any degradation.

88. The erosive processes are especially active in the foothill regions where poorly cemented sandstones, loess like loams, and similar rock predominate lending themselves to washing out and wind erosion. The two main factors underlying the process of soils degradation in Tajikistan are

[30] The Economics of Land Degradation for the Agriculture Sector in Tajikistan – A Scoping Study (2012). The overall objective of this study is to develop a framework to assess the impact of land degradation and the benefits of Sustainable Land Management.
[31] Tajik Agency for Statistics

water erosion and gully erosion. However, anthropogenic factors accentuate the erosive processes through intensive development of agriculture on slopes and unsustainable cultivation practices.

89. The incidence and causes of soil degradation vary across the country, depending on natural features, climate and land use. In the south of motley low hills there are small sites of the unfixed sand and zones of strong degradation (e.g. in Karadum and Kumjalolkum). Above these zones there are semi-fixed sands and areas of weak and medium degradation. Among the sandy massifs there are raised areas, which are strongly subjected to water erosion. In the limits of Yavan, Gozimalik, Vakhsh and other districts there are sites of different degrees of erosion, mainly caused by water. In the limits of irrigated zones, a wide variety of erosion processes are at work. On the slopes of the mountain ranges (Babatag, Aktau, Karatau), a number of sites face water erosion to varying degrees.

Table 8. Distribution of soil erosion[32]

Administrative districts and provinces	Degree of erosion (%)					
	Non-eroded	Weakly eroded	Middle eroded	Strongly eroded	Very strongly eroded	Common area
Kurgantyube group of districts	3.2	18.8	51.8	18.0	8.2	96.8
Kulyab group of districts	2.0	14.0	43.0	26.4	14.6	98.0
Sughd province	2.8	4.5	58.6	22.0	12.1	97.2
Hissar group of districts	4.3	9.4	40.2	31.5	14.6	95.7
Garm group of districts	0.5	4.2	35.1	32.9	27.3	99.5
GBAO	–	4.2	32.8	37.8	25.4	100

90. According to the Soil Research Institute under the Ministry of Agriculture, 60 percent of the irrigated territory in 1996 suffered from water erosion. The PEI Scoping Study document states an estimated 97% of farmed lands in Tajikistan have been harmed by poor irrigation services and salinization. Inefficient use of water is attributable to:

- deterioration of storage and irrigation infrastructure involving water leakage;
- weak on-farm water management. In-field water use efficiency is often only around 20 percent and is rarely greater than 40 percent (due to the incorrect quantity of water used and/or water is applied inappropriately). Often field losses are not counted since there is no monitoring of water distribution and losses at the lower end of the system;
- primary and secondary salinization due to wind and water erosion;
- water-intensive cropping patterns; and
- absence of regulatory incentives and disincentives to promote water conservation. Water charges are not related to volumes used, and are only partially collected.

91. The main problems associated with irrigation on the supply side are: (a) low river levels; (b) silting up of the main and distributary canal sections thus reducing the useable discharge; (c) excessive seepage losses from canals through cracked or broken linings or where repairs have been carried out with poor supervision using inferior materials; (d) lack of working cross regulators so that efficient water distribution is not possible, i.e. serving different areas with different water demands on rotation; and (e) power shortages (Saigal, 2003). Erosion-control measures on irrigated lands have reportedly been put on hold for need of funds.

[32] ADB TA 5941-REG: Combating Desertification in Asia. Tajikistan Country Situation paper (CSP) prepared by Shiv Saigal, 2003.

92. It is estimated that poor management and under-performing drainage infrastructure have caused salinization on 16% of Tajikistan's irrigated lands. Salinization has negatively impacted soil fertility. The Ministry of Water Resources and Land Reclamation estimates that salinization reduces cotton production by 100,000 tons per year (World Bank, 2007). Rising water tables are also of concern. It is estimated that groundwater levels of three meters or less from the surface characterize nearly 30 percent of all irrigated lands. Lands in Sughd region are in most advanced stages of land degradation due to combined problems of salinization and high water tables. The box below discusses the links between water management and land degradation in Tajikistan.

Water Management and Land Degradation

The main cause of land degradation in the valleys (lowlands) is considered to be the uneconomic use of water. The climate in Tajikistan is warm and dry in summer and crop agriculture is heavily dependent on irrigation.

The irrigation and drainage infrastructure is based on large-scale systems built during the Soviet period 1930-1980. The area under irrigation increased from 450,000 hectares in 1960 to 700,000 hectares in 1990; and stabilized around 720,000 hectares. The system is complex, there are about 515 pumping stations; minor and major irrigation canals with a total length of 26,194 km; 8,320 km long various drainage line and facilities; 1,823 ameliorative and irrigation wells; 377 substations and 145.6 km of power transmission lines; 10 water reservoirs for irrigation and energy-supply purposes, and other auxiliary infrastructure. Although river water is abundant in Tajikistan it does not always reach the agricultural end-users due to the degraded irrigation infrastructure. About 60 percent of irrigated lands are served by gravity irrigation systems with hydro technical constructions built in the middle of the past century, 50% of which are now physically worn out. The technical condition of pumping stations' penstocks is of serious concern. They have been used for over 40 years and more than half of them are not working and need replacing.

The social and economic consequence of pump systems failing is extreme due to the high cost of repair and maintenance. The majority of irrigation systems are managed by farmers, who do not have the finances to maintain them; around 50% of drainage canals have not been cleaned for 20 year, resulting in groundwater degradation. While donor supported pilot studies have been successful, the benefits are temporary as after 5 years the canals need cleaning again. This highlights the need for long term funding and planning (annual maintenance budget). Prior to 1990 the government received US$250million a year to manage the system. Now they are allocated US$10million from the state budget, which is intended to be supplemented by fees for water management service amounting to 7 million Somoni (US$ 13 million) but actually only half of this is collected. In addition, it is estimated that around US$600million in capital investment is required to restore the irrigation system to its pre-1990s standard.

After payment for water supply was introduced in 1996 the reliability of water intake and water supply records has significantly decreased. Consequently, while the total area of irrigated lands increased by 3.3% from 1996 to 2008 water users report water intake decrease by up to 30%. Furthermore, the overwhelming majority of farms (about 35,000 farms) do not have the means to keep water records, and this causes difficulties in payment for water supply services. Out of 5,200 water delivery points (former collective and state owned farms), only 38 percent is nominally equipped with water metering devices (MLRWR).

There are 62,000 dekhan farmers (but unofficially there may be more than 100,000 water users) more than 50% of which cannot manage water resources properly. It is common for people near pumps to take too much water leading to waterlogging, leaving people further away from the pumps with too little water leading to low crop productivity. Water user associations are being promoted as a means of improving water management. These associations will be responsible for the management and allocation of water.

93. Tajikistan's widespread land degradation will increase the sensitivity of the land to climate change impacts, while the implications of climate change for the agriculture sector and the role SLM can play in climate change adaptation are considered to be highly significant for Tajikistan[33].

94. Tajikistan joined UN Convention to Combat Desertification (CCD) on July 16, 1997. This Convention is a multilateral environmental agreement whose purpose is to combat desertification and mitigate the effects of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements.

95. National Action Program to Combat Desertification was completed in 2001. The National Action Plan, in line with the United Nations Convention to Combat Desertification, aimed at determining factors leading to desertification and the necessary measures to be taken to prevent and/or to reduce the negative impacts of desertification and drought.

96. Furthermore, the Concept of land use in the Republic of Tajikistan was put in place in 2004. It also provides ground for afforestation and other erosion control activities in Tajikistan along with the Forestry Development Program of the Republic of Tajikistan for 2006-2015.

Table 9: GEF projects and alignment to Land Degradation and the GEBs

ID and Name	Improved goods and services of agro- and forest ecosystem	Mitigate GHG emissions and increase carbon sequestration in production lands	Sustainable use of BD in productive lands	Reduce pollution and siltation of international waters	Other GEBs
73 - Water and Environmental Management in the Aral Sea Basin	☑	☑	☑	☑☑	IW/BD
830 - Enabling the Republic of Tajikistan to Prepare its First National Communication in Response to its Commitments to the UNFCCC	☑	☑	☑	☑	IW/BD/CC
1854 - Biodiversity Conservation and Sustainable Development in the Gissar Mountains of Tajikistan	☑☑	☑	☑☑		BD/CC
1872 - Community Agriculture and Watershed Management	☑☑	☑	☑☑		BD/CC

[33] Pilot Program for Climate Resilience (PPCR). Wolfgramm et al (2011).

1886 - Climate Change Enabling Activity (Additional Financing for Capacity Building in Priority Areas)	☑	☑	☑	☑	IW/BD/CC
1928 - National Capacity Needs Self-Assessment for Global Environmental Management (NCSA)	☑	☑	☑	☑	IW/BD/CC
2037 - Dashtidzhum Biodiversity Conservation	☑	☑	☑☑		BD/CC
2175 - Support to the Implementation of the Regional Environmental Action Plan in Central Asia	☑	☑	☑	☑	IW/BD/CC
2504 - CACILM: Central Asian Countries Initiative for Land Management Multi-country Partnership Framework Phase 1	☑☑	☑	☑☑	☑	IW/BD/CC
3129 - Sustaining Agricultural Biodiversity in the Face of Climate Change	☑☑	☑	☑☑		BD/CC
3211 - Support for the Implementation of the National Biosafety Framework of the Republic of Tajikistan	☑☑	☑	☑☑		BD/CC
3230 - CACILM: Central Asia Countries Initiative for Land Management (CACILM) Multicountry Partnership Framework Support Project-under CACILM Partnership Framework, Phase 1	☑☑	☑	☑☑	☑	IW/BD/CC
3231 - CACILM: Multicountry Capacity Building Project	☑☑	☑	☑☑	☑	IW/BD/CC
3234 - CACILM: Rural Development Project under CACILM Partnership Framework, Phase I	☑☑	☑	☑☑	☑	IW/BD/CC
3237 - CACILM: Demonstrating Local Responses to Combating Land Degradation and Improving Sustainable Land Management in SW Tajikistan-under CACILM Partnership Framework, Phase 1	☑☑	☑	☑☑	☑	IW/BD/CC

3310 - Environmental Learning and Stakeholder Involvement as Tools for Global Environmental Benefits and Poverty Reduction	☑	☑	☑	☑	IW/BD/CC
4352 - Environmental Land Management and Rural Livelihoods	☑☑	☑☑	☑		BD/CC
4422 - Increasing Climate Resilience through Drinking Water Rehabilitation in North Tajikistan		☑☑	☑☑	☑☑	IW/BD/CC
4694 - Support for the Revision of the NBSAPs and Development of Fifth National Report to the CBD	☑	☑	☑☑		BD/CC
5236 - Strengthening Capacity for an Environmental Information Management and Monitoring System in Tajikistan	☑	☑	☑	☑	IW/BD/CC
5301 - Enabling Country of the Transboundary Syr Darya Basin to Make Sustainable Use of their Ground Water Potential and Subsurface Space with Consideration to Climate Variability and Change	☑	☑☑	☑☑	☑☑	IW/CC
5903 - Climate Adaptation and Mitigation Program for Central Asia	☑	☑	☑	☑☑	IW/BD/CC
6949 - Conservation and Sustainable Use of Pamir Alay and Tian Shan Ecosystems for Snow Leopard Protection and Sustainable Community Livelihoods	☑☑	☑	☑☑		BD/CC

☑☑ - Indicates main objectives cover this GEB and was/will be primary focus

☑ - Indicates main objectives cover this GEB but with less focus

6. Chemicals and Waste

97. GEF's long term goal in chemicals and waste is to prevent the exposure of humans and the environment to harmful chemicals and waste of global importance, including persistent organic pollutants, mercury, and ozone depleting substances through a significant reduction in the production, use, consumption, and emissions/releases of those chemicals and waste. Global environmental benefits resulting from GEF's objectives in the area of chemicals and waste include:

- Protected human health and environment through the reduction and elimination of mercury use and prevention of anthropogenic emissions and releases of mercury and its compounds;
- Protected human health and environment through the phase out of production and consumption of ozone depleting substances;
- Reduced risks on human health and the environment through reducing and eliminating production, use, and releases of Persistent Organic Pollutants and their waste; and
- Reduced risks on human health and the environment through sound management of chemicals and waste of global concern.

98. Tajikistan joined the Vienna Convention for the Protection of the Ozone Layer In 1996 and the Stockholm Convention on Persistent Organic Pollutants (POPs) in 2002. The Stockholm Convention on POPs for Tajikistan entered into force on September 5, 2007. With funding from the Global Environmental Facility (GEF) and assistance from the United Nations Environmental Programme (UNEP), the original NIP of Tajikistan was developed and transmitted to the COP on November 11, 2007. The Government of Tajikistan appointed the Committee on Environmental Protection (CEP) under the Government of the Republic of Tajikistan with the purpose of developing the initial National Implementation Plan (NIP) to be endorsed and submitted by the Government to the Conference of the Parties (COP) to the Stockholm Convention.

99. The Stockholm Convention (SC) on Persistent Organic Pollutants (POPs) was adopted in May 2001 with the objective of protecting human health and the environment from toxic and hazardous POPs. It entered into force on May 17, 2004 initially listing twelve chemicals as POPs[34]. At its 4th meeting of the Conference of the Parties in May 2009, the SC was amended to include the following nine new POPs in Annex A (Alpha hexachlorocyclohexane, Beta hexachlorocyclohexane, Chloredecone, Hexabromobiphenyl, Hexabromodiphenyl ether and heptabromodiphenyl ether, Lindane, Pentachlorobenzene (also listed in Annex C), Tetrabromodiphenyl ether and pentabromodiphenyl ether) and Annex B (Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride). The amendments entered into force on August 26, 2010.

[34] These can be placed in three categories: Pesticides (DDT, aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, toxaphene); industrial chemicals (polychlorinated biphenyls or PCBs); and industrial by-products (polychlorinated dibenzodioxins and polychlorinated dibenzofurans (usually referred to as dioxins and furans).

100. Pesticides include organochloric and POPs-containing ones delivered to Tajikistan in the 1980-1990s from other countries on centralized base via Republican Industrial Scientific Organization “Tajikselhozhimia” (till 1980 – “Tajikselhoztehnika”) with full responsibility for appropriate storage, effective use and reliable registration. Nowadays, POPs-containing pesticides are not imported and not re-exported. The use of some POPs-pesticides in agriculture is forbidden: DDT since 1970; aldrin – since 1973; dieldrin and chlordane since 1985; and heptachlor since 1992.

101. From 1965 to 1990, the volume of pesticides delivery to Tajikistan was from 7 to 14 thousand tons (in calculation on 100% of reactant). During this time the volumes of pesticides use changed significantly in accordance with their groups. So, the volume of insecticide-acaricides decreased from 11,1 thousand tons to 1,7 thousand tons, but the use of fungicides increased from 1,0 thousand times to 6,1 thousand times, and increased many fold the use of herbicides and defoliants. Decrease of insecticide-acaricides consumption is stipulated by decrease of organochloric pesticides use; in the middle of 1990s their import to Tajikistan was stopped.

102. Initial inventory showed that nowadays the available obsolete and forbidden pesticides are of a great concern for human health and environment. During the Soviet period, delivery of pesticides was realized in accordance with requests of firms, and their import to republic often exceeded the factual demand in 1,5 – 2 times. As a result, it was observed the accumulation of big volumes of pesticides residuals in storage facilities and Republican Productive Scientific Organization “Tajikselhozhimia”. Moreover, the following factors contributed to the above-mentioned problem:

- health care agencies issued the prohibition for use of formerly purchased preparations due to increased toxicological and ecological risk;
- inefficiency of chemicals in sphere of their application;
- termination of pesticides keeping time during long storing;
- unpractical size and quality of containers;
- breaking of packages due to their ageing;
- unsuitable preparative form;
- low stability of preparations during their storage; and
- inefficient organization of storage and registration.

103. Due to availability of significant volumes of pesticides storages, the facts of their uncontrolled use took place: pesticides were given to private persons for their use in their farm-lands and were secretly buried and thrown to the dumps. During the last years, due to sharp decreasing of pesticides import to republic, their residuals, including forbidden and obsolete pesticides, were used in farm-lands.

104. As a result of initial inventory, 17.55 tons of DDT, including 17 tons of illegally imported in 2005 – 2006 were revealed to Sugd region. Other 0.55 tons are in two households of Gissar district. In storage facilities, in packaging, destroyed due to long keeping, 42.1 tons of unfit known pesticides

were revealed and 100 tons of unknown pesticides, in composition of which DDT and its metabolites have the POPs properties. Thus, the volume of forbidden, obsolete, and unknown pesticides, which should be repackaged and eliminated, is around 160.1 tons.

105. Tajikistan has taken many steps to implement the Convention. These initiatives include legislation, regulations, programs and standards, policies, and other related measures including actions by authorities and the public. Currently Tajikistan has prohibited the production and use of chemicals both initial and newly listed in Annex A of the Convention (Article 3, paragraph 1(i)).

106. POPs issue is closely related to the management of industrial chemicals. Assurance of ecological safety and use of chemical substances, including POPs, is regulated by state legislative acts and normative-methodical documents. Accordingly, the following legislative tools impact on POPs:

- The Law on Environmental Protection (2011) and its complementary legal acts, such as the laws on Public Health Protection, on Atmospheric Air Protection, on ecological expertise, Water Code, on Production and Safe Handling of Pesticides and Agrochemicals, on Soils Conservancy, on Production and Use of Waste, on Ensuring Sanitary and Epidemiologic Safety of Population, on Quality and Safety of Foodstuff, on Licensing of certain kinds of activity, on Environmental Monitoring and on Environmental Audit;
- The Regulation on Dangerous Chemicals provides framework for the determination of programmers, policies and principles regarding the control of dangerous chemicals in terms of production, packaging, storage, labeling and handling. It also establish a dioxin/ furan limit value of 0.1 ng/m3 for the hazardous, municipal and clinical waste incinerators;
- NAPEHP[35] - National Action Plan on Environment and Health Protection (accepted in 2000) was elaborated in accordance with State Health Care Strategy and requirements of international conventions.

107. Additionally, the policy on hazardous wastes treatment and management in trans-border context is presented in the Law “On External Economic Activity” and in the Law “On State Regulation of External Trade” which obliges the subjects of external economic activity to observe legislation of Tajikistan and international norms and rules as well as to ensure the standards and criteria of safety for people during import of commodities (including hazardous wastes) and the rules on their control all over the country.

108. Some functions on coordination in sphere of improvement mechanisms on control and regulations of chemical substances use and environment protection are transferred to inter-agency committees:

[35] It is directed on joint activities with other national programs and projects in sphere of environmental hygiene: Poverty Reduction Strategy, National Program on Tropical Diseases Control; Program of Tajikistan on Supporting Healthy Life Style till 2010, which is intended to establish the database and monitoring system on environmental hygiene;

- Inter-Agency Committee on Chemical safety analyses the issues and prepares suggestions for the Government on solution of strategic problems in sphere of chemical safety; observation of requirements and improvement of mechanisms on treatment of chemical substances and biological preparations; and observation of normative and legislative acts on chemical safety. This Committee has a right to approve “The List of Chemical Substances and Biological Preparations, permitted for use in the Republic of Tajikistan”, insertion of changes, and additions to it.

- Inter-Agency Coordination Committee on Ecological Statistics is responsible for implementation of unique state strategy and controlling of ecological statistics, elaboration of methods for monitoring of ecological statistics, coordination of elaboration criteria and evaluation of statistic ecological indicators, and characterizing the ecological condition.

Table 10: GEF projects and alignment to POPs/ODS/CHEMs and the GEBs

ID and Name	Reduction and elimination of mercury use	Phase out of production and use of ODS	Reduction and elimination production, use, and releases of POPs	Sound management of chemicals and waste	Other GEBs
15 - Programme for Phasing Out Ozone Depleting Substances		☑☑		☑☑	CC/BD
1928 - National Capacity Needs Self-Assessment for Global Environmental Management (NCSA)	☑	☑	☑	☑	IW/BD/CC
1955 - Enabling Activities for the Stockholm Convention on Persistent Organic Pollutants (POPs): National Implementation Plan for Republic of Tajikistan	☑	☑	☑☑	☑☑	BD/CC
2175 - Support to the Implementation of the Regional Environmental Action Plan in Central Asia	☑	☑	☑	☑	IW/BD/CC
2331 - Preparing for HCFC phase out in CEITs: needs, benefits and potential synergies with other MEAs		☑☑		☑☑	CC
3185 - Continued Institutional Strengthening Support for CEITs to meet the obligations of the Montreal Protocol		☑☑	☑	☑☑	BD/CC
3211 - Support for the Implementation of the National Biosafety Framework of the Republic of Tajikistan	☑☑	☑	☑☑		BD/CC
3310 - Environmental Learning and Stakeholder Involvement as Tools for Global Environmental Benefits and Poverty Reduction	☑	☑	☑	☑	IW/BD/CC
3614 - Demonstrating and Scaling Up Sustainable Alternatives to DDT for the Control of Vector-borne Diseases in Southern Caucasus and Central Asia			☑	☑☑	CC

4102 - Initial Implementation of Accelerated HCFC Phase-out in the CEIT Region		☑☑		☑☑	CC
4352 - Environmental Land Management and Rural Livelihoods	☑☑	☑☑	☑		BD/CC
5000 - Lifecycle Management of Pesticides and Disposal of POPs Pesticides in Central Asian Countries and Turkey			☑☑	☑☑	CC
5223 - Enabling Activities to Review and Update the National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants (POPs)			☑☑	☑☑	LD/CC
5236 - Strengthening Capacity for an Environmental Information Management and Monitoring System in Tajikistan	☑	☑	☑	☑	IW/LD/ BD/CC
6987 - Protect human health and the environment from unintentional releases of POPs and Mercury from the unsound disposal of healthcare waste in Tajikistan	☑☑		☑☑	☑☑	LD/CC

☑☑ - Indicates main objectives cover this GEB and was/will be primary focus

☑ - Indicates main objectives cover this GEB but with less focus

Appendix 1: References

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TECHNICAL DOCUMENT C: PROGRESS TOWARD IMPACT – CASE STUDIES

1. Introduction

1. As a part of this evaluation, three case studies have been conducted on the projects: (i) "Biodiversity Conservation and Sustainable Development in the Gissar Mountains of Tajikistan" (GEF ID 1854), (ii) "Community Agriculture and Watershed Management" (GEF ID 1872) and (iii) "CACILM: Demonstrating Local Responses to Combating Land Degradation and Improving Sustainable Land Management in SW Tajikistan-under CACILM Partnership Framework, Phase 1" (GEF ID 3237) were conducted using the Progress toward Impact (P2I) methodology developed by the GEF Independent Evaluation Office.

1.2 Definition of concepts

2. Impact is defined as positive or negative, primary and secondary long-term effects produced by an intervention, directly or indirectly, intended or unintended. This definition is used by the Development Assistance Committee Evaluation Network of the Organization for Economic Co-operation and Development (OECD/DAC 2002), the Evaluation Cooperation Group of the International Financial Institutions, and the UN Evaluation Group.

3. The goal of the GEF is to achieve environmental impact, which is defined as positive changes in biological, chemical and physical parameters that could take the following forms:

- Stress reduction: decrease, prevention or slowdown of the degradation, destruction or contamination of the components of an ecosystem *e.g. better protection/enforcement, improved management effectiveness, banning of destructive technology, waste treated, habitat restored*
- Improved environmental status: positive changes in the state of the ecosystem or any of its components. *e.g. improved water quality/ nutrient concentration, higher habitat cover, higher species population*

4. Over time, stress reduction leads to improvements in environmental status. Impact measurement thus has a time dimension, significantly longer than project duration, as many biophysical processes that the GEF aims to influence take a long time to mature—from 20 to 30 years before an ecosystem is brought back to a healthy status to 50 years before the ozone layer is restored. This time dimension is identified in terms of the following:

- Direct impact: changes attributable to an intervention; i.e. habitat restoration for a specific species, which can show quick impact (within a few years)
- Long-term impact: changes emerging over time through long-duration biophysical processes

5. Furthermore, impact has a space dimension; it can be measured at different geographical, socio-ecological, or administrative scales. Impact can be measured:

- at single sites or local administrative units and markets,
- at multiple disconnected sites, local administrative units or markets,
- across landscapes or seascapes,
- across national, regional or global markets,
- across national administrative units,
- across regions, or
- worldwide.

6. The GEF aims to influence social-economic processes to effect changes in biophysical systems: climate, biodiversity-rich ecosystems, sustainable land use systems, and so on. Large-scale impact, occurring at a landscape, seascape, market, or higher scales is measured through both biophysical and socioeconomic parameters that identify the dynamics of the system. Large-scale changes tend to have no attribution as too many actors and processes of interaction occur, but may have identification of contribution.

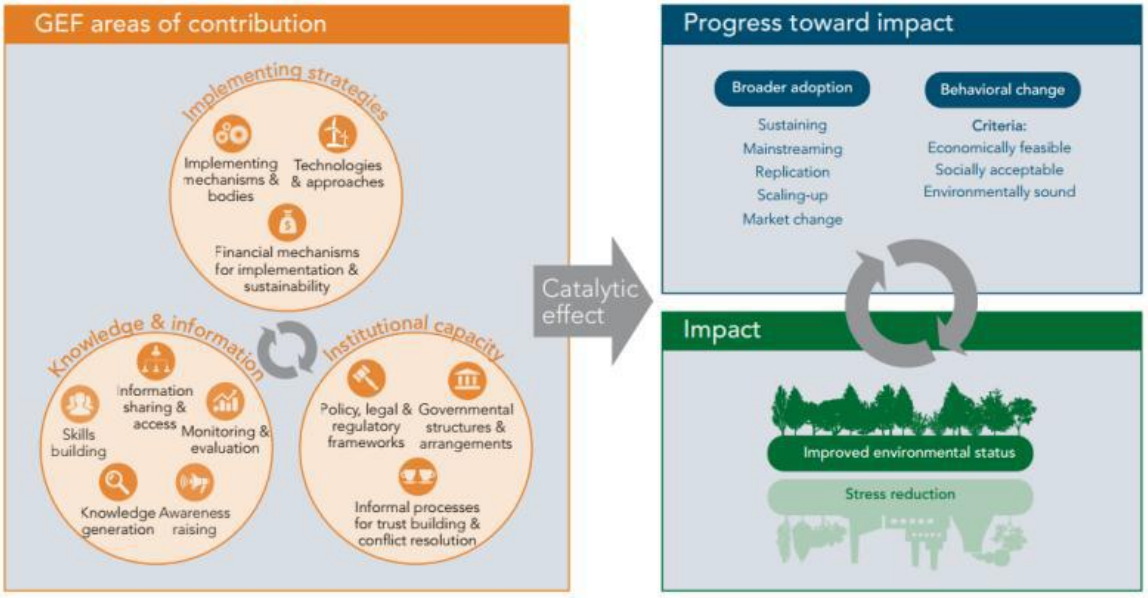
7. Impacts may have local and global significance. Saving a unique local species has global impact; it has local impact as well, as it may be a source of eco-tourism income. Globally significant impacts have local impact as well, but not all local impacts have global significance. Social and economic impacts are studied to determine whether behavior changes reduce or enhance threats and whether they lead to sustainable development.

8. Although GEF support can aim at processes taking place at different levels (local, national, regional or global), the aim is to transform the ways and systems by which humans interact with the environment. GEF contributions to such transformations typically take place through the broader adoption of the outcomes of GEF support by stakeholders through the following processes:

- Sustaining: Interventions originally supported by GEF continue to be implemented by stakeholders without GEF support to demonstrate the benefits and provide benefits for adoption by other stakeholders beyond the original project scope.
- Mainstreaming: Information, lessons, or specific results of GEF are incorporated into broader stakeholder mandates and initiatives such as laws, policies, regulations, and programs. This may occur through governments and/or through development organizations and other sectors.
- Replication: GEF-supported initiatives are reproduced or adopted at a comparable administrative or ecological scale, often in another geographical area or region.

- Scaling-up: GEF-supported initiatives are implemented in larger geographical areas, often expanded to include new aspects or concerns that may be political, administrative, economic or ecological in nature.
- Market change: GEF-supported initiatives help catalyze market transformation by influencing the supply of and/or demand for goods and services that contribute to global environmental benefits. This may encompass technological changes, policy and regulatory reforms, and financial instruments.

Figure 1. GEF Theory of Change



1.2 Some ways by which GEF catalyzes progress toward impact

a) Promoting champions - developing abilities of existing leaders to eventually take on more prominent roles, and consequently advocate GEF-supported technologies and approaches in other arenas (note: abilities refers to general leadership abilities/ opportunities rather than specific skills)

b) Building on promising initiatives - supporting components of existing initiatives that might otherwise not be supported by the original non-GEF funding sources

c) Raising the profile of initiatives - attracting new cofinancing sources (in addition to the cofinancing sources identified in the original project document), implementation priority, and other forms of stakeholder support from government and other stakeholders for existing initiatives

d) Removing barriers - supporting components that enable the removal of specific obstacles that have blocked further progress, or that have prevented existing initiatives from moving forward

e) Accelerating innovation - introducing or supporting new elements or concepts into existing management regimes (often already tested elsewhere by other actors), thereby dealing with their

inherent risks and speeding up the adoption of these innovative elements that contribute to global environmental benefits, which some countries may otherwise implement much later.

Case Study I

Biodiversity Conservation and Sustainable Development in the Gissar Mountains of Tajikistan

GEF_ID	1854
Agency	UNDP
Focal Area	Biodiversity
Title	Biodiversity Conservation and Sustainable Development in the Gissar Mountains of Tajikistan
GEF replenishment phase	GEF - 3
Type	MSP
Status	Project Completion
Trust Fund	GET
Executing partner / agency	CARE/Tajikistan
Type of executing partner / agency	NGO
PPG(s)	25,000
GEF Project Grant	975,000
Co-finance	745,000
Date of implementation start	3-Jan-06
Date of closure	31-Dec-11

1. Project summary

9. Implemented by UNDP between January 2006 and December 2011, the Biodiversity Conservation and Sustainable Development in the Gissar Mountains Project of Tajikistan received US$ 1.0 million grant from the GEF (under GEF-3 replenishment phase), with the equivalent of US$ 750,000.00 in co-financing provided by the Government of Tajikistan and other donors, for a total of US$ 1.75 million.

10. The Gissar Mountains was selected as the area of intervention for the project, due to its significant global biodiversity values and the relatively close proximity of all 3 chosen demonstration Protected Areas (PA) (Romit Zapovednik[36], Almosi Zakaznik[37] and Shirkent Natural Historical Park).

[36] Zapovednik is a strictly protected reserve maintained in its wild condition and used only for scientific research and education.

[37] Zakaznik is a reserve managed for the conservation of particular biodiversity features, such as populations of rare plants or colonies of birds, where temporary or permanent restrictions may be imposed upon certain economic activities, such as logging, mining, grazing, hunting, etc.

11. The project objectives included the strengthening of the management effectiveness and sustainability of the three selected protected areas of different types on the southern slopes of the Gissar Mountains, and thereby provide models and best practices replicable throughout the national PA system.

12. The Global Environmental Benefit to which the project was expected to contribute is: Catalyzing the improved conservation of globally significant biodiversity in Tajikistan through the demonstration of new mechanisms and approaches to effective management of protected areas and natural resources adjacent to them.

13. The project had three main components: (i) policy reform to provide an appropriate enabling environment; (ii) effective management of protected areas, including provisions for their financial viability; and (iii) development of sustainable and/or alternative livelihoods for communities living in close proximity to protected areas.

14. In the period from July to September 2015 the project was reviewed using a methodology developed by GEF IEO designed to assess progress toward impact, described in the introductory sections of this technical document. The evaluation team undertook the progress to impact assessment from the desk review level to the level of fieldwork, stakeholder consultation, and verification in all four target Jamoats. The evaluation team conducted in-depth interviews using standardized, semi-structured guides and questionnaire surveys with local government, civil society representatives, and project beneficiaries. Interviewing was also held with the GEF Focal Point staff, GEF Agency staff, and other government stakeholders.

2. Outputs and Outcomes

15. The project outcomes were identified as:

- Strengthened environmental governance provides a more sustainable land-use context for the PA system.
- New management practices are introduced and capacity built in target PAs; overall management effectiveness and sustainability of the PA system is improved.
- Practical examples are provided to stakeholders on how to achieve environmentally sustainable livelihoods around target PAs.

16. The project activities focused on the following outputs:

- The legal and policy framework for PA management and enforcement is strengthened.
- The overall regulatory framework and enabling environment for biodiversity conservation and sustainable resources use in and around PAs is strengthened and/or clarified.
- Participatory land use and natural resource management plans are effectively developed and piloted in the PAs and their buffer zones.
- Technical knowledge and management capacity of the PA staff is improved.

- Field conservation capacity of the PAs is strengthened.
- Sustainable financing mechanisms is put in place for the three PAs.
- Networking and exchange of best practices throughout the PA system is established; replication of lessons generated by the project is ensured.
- Pilot sustainable natural resources options for reducing socio-economic pressures on natural resources in and around PAs are demonstrated and long term support to sustainable development is facilitated.
- Alternative options for producing and conserving energy are clearly demonstrated helping to reduce use of fuel wood.
- Lessons are disseminated to relevant government authorities, NGOs, communities and development agencies aiming at facilitating follow up initiatives.

17. The Terminal Evaluation (TE) was completed in January 2012. This evaluation rated the relevance, effectiveness, efficiency and impacts of achieving the Project's objectives respectively, as Satisfactory, Moderately Satisfactory, Moderately Satisfactory, and Satisfactory. The overall sustainability of the Project's 3 outcomes was evaluated as Moderately Likely.

3. Environmental change

18. The project has achieved its outcomes such as building capacity for protected area management and supporting establishment of regulatory and/or institutional frameworks in Tajikistan. However, in many cases, a protected area must be effectively managed and monitored for an extended period of time before it can be determined that the targeted globally significant biodiversity has been conserved. During field visits, which included interviews with stakeholders, the team observed:

a) A limited increase of reforested areas, contributing to contain wind and water erosion of the land. Land of habitats for birds, such as the blackbird and wood pigeon, and animals, such as the forest dormouse, also increased.
b) River banks stabilization thanks to the trees planted along the river banks, contributing to reduce the risk of flooding;
c) An increase in awareness of the importance of biodiversity preservation in local populations; [38]
d) Involvement of local people in the management and conservation of the environment, through the participatory land-use and management of the forest resources[39].

19. The close involvement of local governments, mainly the local branches of Land Tenure, Forestry, and Environmental Protection departments from the design stages of the project until its completion was a key factor.[40] The four Jamoat Support Centers (JSC[41]) supported by the project still continue to function in all target Jamoats, years after project completion.

[38] Based on interviews with JRCs and meeting with stakeholders.
[39] Awareness raising and involvement of local population in the management and conservation of the environment through the participatory land-use mechanisms and joint management of the forest resources also contributed to stress reduction and improvement of the environmental status.
[40] Based on the project documentation and key informant consultations.
[41] Jamoat Support Centers are also commonly known in Tajikistan as Jamoat Resource Centers (JRC) or Jamoat Development Centers (JDC). All these centers are community based organizations, i.e. local NGOs.

Environmental Change

Environmental change reported [a]	Details [b]	Sources of information	GEF- factors contributing to change	Non-GEF factors contributing to change
Environmental status is improved at local level	due to increase of reforested areas; however, it is noted that this change is limited.	Interviews and field visit	Joint forestry management, tree nurseries and gardens, river banks stabilization	
Decrease of trees cutting	due to the introduction of energy saving and energy effective technology;	Interviews and field visit	Introduction of low cost technologies in heat insulation and fuel efficient cooking/heating stoves	
Reduced risk of flooding	through banks stabilization (planting trees along the river banks);	Interviews and field visit	River banks stabilization; decrease of wind and water erosion.	
Improved biodiversity conservation	increase awareness of the importance of biodiversity conservation	Interviews and field visit	Joint community forestry management and ecotourism; New legislation	
Involvement of local people in the management and conservation of the environment	through the participatory land-use and management of the forest resources	Interviews and field visit	Joint community forestry management and ecotourism	Other UNDP initiatives (community development, JRC)

[a] Reduction of environmental stress, improvement of environmental status, or maintained status (implying reduced stress), whether intended or unintended.

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed

4. Socioeconomic change

20. Significant socio-economic changes could be observed during field visits. The micro-credit facilities set up by the project have made a significant contribution not only to increasing the wellbeing of the population due to the involvement of a wide range of borrowers, but also supported the improvement of rural infrastructure and communications.

21. The team could field verify the following examples of microcredit funds supported by the project. In Jamoat "Sabo" of Shakhrinav district the microcredit fund supports gardening, agriculture, animal husbandry and trade. It provides loans from 1000 to 4000 Somoni with a credit rate of 3% per month for 6 months. Two greenhouses were created with the total area of 1 hectare for growing vegetables and berries, still operational today. Additional jobs were created for sellers of agricultural and forest products, and medicinal herbs. In the village Hokimi energy-efficient guest house was built, which generates income. It is visited by up to 40 people per year. It also hosts the annual children's environmental camp in which children are informed not only on the existing environmental problems in the region, but also about global issues. The microcredit fund is issuing its revenue grants to families with low-income up to 5,000 Somoni each.

22. In Jamoat "Rabot" of Tursunzade district the microcredit fund provides loans of up to 15,000 Somoni with pledge, and up to 5,000 without. The credit rate is 3% per month. More than 100 people have been introduced to a new way of grafting fruit trees (hawthorn, pear), which provides more stable and larger yield, and therefore an increase in revenues. This experience was applied to 500 households. 120 kg of walnut seed, which is superior in quality to local varieties were purchased and distributed among 30 households. When it begins to bear fruits an increase in revenues will occur. An energy-efficient guest house and furnaces were built. The micro-lending fund also rebuilt two bridges in the villages of Rabot and Rabot 2 from its own revenue.

23. In Jamoat "Honakoi Kuhi" of Hissar district the microcredit fund has reached more than 1,000 customers since 2009. It provides loans from 1,000 to 15,000 Somoni for up to one year with credit rate from 2.7 to 3%. A vineyard nursery was created. An old vineyard was sold and the arborvitae was purchased to be planted along the roads. About 60 people were provided with the seeds of a walnut. MLF constructed the bridge in Jamoat and helped poor families to earn 5,000 Somoni from its own revenue.

24. In Jamoat "Romit" of Vahdat district the microcredit fund provides microloans from 1,000 to 6,000 somoni with credit rate from 2.7% to 3% per month. The total number of recipients up to date is more than 1000 people, 30% of them are women. The revenues generated from the microloans could finance the setup of 3 arboretums, 2 apiaries, 1 ha of garden and 8 greenhouses. A guest house in Yavroz and 2 energy-efficient furnaces were also built. This experience is actively adopted and replicated by the local population. For example, they have created 10 gardens in the village of "Hushon" and 4 or 5 apiaries in the village of "Yafrak". Revenues generated by the microcredit fund could also be used to build the mud flow prevention facilities in 3 villages (Yavroz, Sorbo and Hushon) and grant poor families an amount from 1,000 to 5,000 Somoni.

Socioeconomic Change

SOCIOECONOMIC CHANGE REPORTED [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
Positive Socioeconomic Impact – Income generating activities	89 households in four target Jamoats involved in range of income-generating activities. 64 households in four target Jamoats involved in energy improving insulation of their houses and/or installing more efficient stoves for cooking and heating. 5 guest houses in four target Jamoats under construction, based on low carbon footprint and energy efficiency principles.	TE (Phase 1 P2I)	Support micro-projects leading to environmentally sustainable income-generation; introduction of energy saving and energy efficiency techniques; initiative of community based ecotourism; initiative of joint forestry management; creation of micro-lending organizations.	

[a] Income, education, health, community relationships, treatment of marginalized groups, gender roles, etc., whether intended or unintended.

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed

5. Capacity and governance changes

25. The project focused its capacity building efforts on four Jamoat Support Centers (JSCs) and conducted a number of environmental education activities both at the individual and institutional level. This had a number of positive results in terms of capacities created. In Jamoat Sabo of Shahrinav district, ten farms having been able to conclude agreements for the land lease with the local forestry department. A “Plan of joint actions” was developed together with the District government. New agricultural crops techniques have been adopted by neighboring villages (e.g. farmers from "Bahodur"). The project also assisted in the creation of five common interest groups (CIGs), which facilitated learning and knowledge exchange, an expansion of areas of interest, and the dissemination of knowledge on various topics. About 2,000 women from Jamoat Sabo have benefited from ecological training and awareness raising activities, and a month-training specifically targeted to women leaders. All these activities are still being continued today by the Sabo JSC.

26. In the Jamoat "Rabot" of Tursunzade district, the project held seminars for the general public and schoolchildren on biodiversity, as well as trainings on forest management. 5 lease contracts (contract between forestry and residents) were signed, covering a total area of 1.5 thousand hectares. 10 high quality information leaflets, brochures on the indicative species were issued and widely distributed. Women were trained specifically on the collection, drying and processing medicinal plants. The new knowledge, technology and approaches were disseminated and it is used and replicated by people not directly targeted by the project.

27. In the Jamoat "Honakoi Kuhi" of Gissar district, environmental awareness among the population was boosted by 100 training seminars on the topic of "Ecology and global environmental problems", held in 23 villages. A series of theatre recitals on environmental topics were designed and performed in the Jamoat. Trainings for women included methods for collecting, drying, processing and proper storage of medicinal plants. The project involved staff of Jamoat, District branches of Emergency and Forestry departments to participate in the seminars, increasing in this way also the capacity of government officials and other civil servants. Trainees are disseminating the knowledge acquired at their jobs and even at meetings of Hukumat[42]. Women benefited from training on home economics and sewing.

28. In the Jamoat "Romit" of Vahdat district, more than 400 people supported the initiative to change the status of the reserve "Romit" to protected area, and participated in seminars which discussed this issue. More than 200 women were trained in modern methods of collecting, drying and storage of medicinal herbs. A methodology of accounting of trout and bear was developed. Today, the JSC continues developing environmental training guidelines for beekeepers and gardeners. Workshops and seminars are still being conducted as well, aiming at improving the knowledge of reserve staff and the involvement of the local population. A big achievement in capacity building among schoolchildren is the decision to allocate one hectare in the village to create a school-based pilot forestry. In addition, the Romit Reserve Museum was rebuilt and converted into Information and Environmental Center, which is still operational. Based on it, CEP

[42] Based on interviews with JRCs and meeting with stakeholders.

established a similar Information and Environmental Center in the National Park "Shirkent" in Sughd province.

29. The project was also instrumental to a number of institutional capacity building initiatives and results. A noteworthy example is the creation of an inter-ministerial working group, facilitated by a Member of Parliament (Chairman of the Committee on Legislation and Human Rights), to bring in the relevant legal and technical expertise and fast-track the process of drafting new legislation, namely the law “On Protected Areas" and the Forest Code. The management plan template designed by the project was used in the development of management plans of protected areas outside the project area. The experience of participatory forest management has spread beyond the project sites in Roshtkala, Ishkashim and Darvaz districts.

Change in Capacities for Achieving Environmental Benefits

REPORTED CHANGE IN CAPACITIES [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
Some cases of replication of new approaches to protected areas and biodiversity management in the Gissar Mountains	Demonstration activities on sustainable approaches to livestock and pasture management; community and joint management forestry initiatives; community-based tourism; and other appropriate and viable natural resource management initiatives identified in partnership with local communities, such as bee keeping and small-scale agricultural schemes	TE (Phase 1 P2I)	Support provided for environment friendly approaches to: Pasture lands management; Joint forestry management; Ecotourism; Tree nurseries; Gardens; River banks stabilization; Bee-keeping; Energy conservation; Etc.	
Awareness raised on the importance of biodiversity conservation and its monitoring	96 employees of PAs and forestry units and 337 members of local communities attended various seminars and training sessions on monitoring target PAs. Capacity was also developed in two other respects: among PA staff from 20 PAs through repeated application of the METT, improving their understanding of what constitutes effective management; and among the legislature, members of parliament, President's Office and also the treasury, through working groups and other means of developing their understanding of PAs and how to sustain ecosystem services. A partnership was made with Fauna & Flora International (FFI), who had funds from the Darwin Initiative to develop a National Conservation	TE (Phase 1 P2I)	Joint PA land and forest management practice; skills building and awareness raising; trainings on sub-project preparation in communities and CIGs;	

	Training Programme. This comprised a series of 6 training modules on biodiversity conservation related topics (ecosystem services, PAs management, biodiversity monitoring, sustainable livelihoods, forest management, project planning and management). Each module was delivered twice, with up to 15 trainees per course (i.e. total capacity of 180 places, of which at least 125 were filled). Although courses were open to anyone able to cover their own costs, some of the modules were tailored to meet at least specific interests of the Project.			

[a] Awareness, knowledge, skills, infrastructure, information management systems, etc.

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed; typically assessed through change in mass behavior (e.g. compliance with regulations, participation)/ institutional activities

Change in Governance Architecture Enabling Achievement of Environmental Benefits

REPORTED CHANGE RELATED TO GOVERNANCE [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
Knowledge was used for management/ governance	Analysis of the distribution and conservation status of 1,486 species of endemic and sub-endemic vascular plants in Tajikistan has shown that endemics are the most numerous in the Gissar-Darvasian geo-botanical region, corresponding to the Gissar Mountains, and the Zeravshan region immediately to the north. The household survey provided the basis for designing community development programs. Developed a set of some 20 maps for the 3 demonstration PA	TE (Phase 1 P2I)	PA Management Plan which is developed in the frame of project was used in another GEF project for Dashtidzhum reserve; JRCs and NGOs involved in GEF funded projects actively participated and received grants from the SGP.	
New protected areas law and Forest Code adopted by Presidential Order in 2011	New protected areas law and Forest Code adopted by Presidential Order in 2011, the relatively quick passage of legislation being due to the establishment of inter-ministerial working groups to	TE (Phase 1 P2I)	Financial, organizational and expert support to the Working Group.	

	fast-track the process i.e. 1993 Forest Code (revised version adopted on 2.08.2011); and 2002 Protected Areas Law replaced by the Law of the Republic of Tajikistan on specially protected natural areas (adopted on 26.12.2011). The legal and policy framework has been significantly strengthened as a result of this output. The new Forest Code, provides an overarching framework for conservation and sustainable management of forest biodiversity and other resources. It recognizes the ecosystem services function of forests, provides for joint management of forests by the state and users, and permits funds from fee-based services and sales of forest products (including confiscated products) to be re-invested in forest management. The new Code is much more articulate, with terms clarified and, for example, new articles that			

	specify types of forest lands and violations of the Code			
Creation of an inter-ministerial working group, facilitated by a Member of Parliament (Chairman of the Committee on Legislation and Human Rights), to bring in the relevant legal and technical expertise and fast-track the process of drafting new legislation.	Established in April 2008, the Working Group comprises six specialists from the Protected Areas Agency, Forestry and Hunting Agency and the Forest Institute, to develop subsidiary legislation for management of PAs and forests (i.e. normative legal acts, such as regulations, directions and instructions)	TE (Phase 1 P2I)	Financial, organizational and expert support to the Working Group.	A wide range of governmental, non-governmental and community-based organizations have been involved in the Project from the outset. The Project was conceived as an idea by local NGOs. The project developed good, close relationships with many of its key stakeholders, resulting in some very effective formal and informal partnerships. These include inter-ministerial working groups to address new legislation, resulting from PMU's close collaborative work with Chairman of the Committee on Legislation & Human Rights; cementing a strong bond between

				PAs and respective JRCs, enabling local communities to become involved in the management planning process; and bringing the MLF into partnership with JCRs to help promote its micro-loans.
Replication of lessons has been limited, albeit with a few good examples, such as the use of inter-ministerial working groups to fast-track the changes in legislation needs to create the necessary enabling environment in support of Project interventions, and the application of the management plan format to other PAs.	The management plan format, approved by the PAs Agency in June 2010, has been used as the basis to prepare management plans for other PAs, specifically Tajik National Park (as part of the preparatory work for its nomination for World Heritage listing) and Tigria Balka Zapovednik (supported by WWF). Also, Dashti Djum Zapovednik is likely to have its management plan revised in line with the new format.	TE (Phase 1 P2I)	Currently, it has a massive unimplemented plan, developed 7-8 years ago by a World Bank–GEF project. Management plans for the remaining 12 zapovedniks are due to be prepared using this model.	

[a] Refers to decision-making processes, structures and systems, including access to and use of information; includes laws, administrative bodies, policy frameworks, trust-building and conflict resolution processes, information-sharing systems, etc.

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed; typically evidenced by enactment, implementation and/ or enforcement of legislation and other binding agreements, and regular allocation of resources for implementation

Negative or Absent Impacts

NEGATIVE CHANGE REPORTED [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-RELATED FACTORS LINKED TO NEGATIVE RESULT	NON-GEF FACTORS LINKED TO NEGATIVE RESULT
Lack of systematic impact monitoring	due in part to (i) weaknesses in the choice and application of the LFM indicators and, specifically, (ii) the absence of any comprehensive re-assessment of METT scores for all PAs to inform the MTE about progress achieved to date towards meeting the Project's objective. The long-term monitoring work was discontinued following the MTE as the methods were considered to be flawed and many of the selected indicator species of dubious value for management purposes. These were	TE (Phase 1 P2I)	None	Although the Project has achieved its performance indicator for financing PAs, with financing from the State budget having increased by 50% for the 3 demonstration PAs; this is fairly meaningless as the budgets are completely inadequate to manage PAs effectively, let alone attract a new generation of graduates to consider a career in PAs management. Furthermore, analysis of this indicator (Financing of the Zapovedniks and National Parks System in Tajikistan) shows that a 50% increase in the annual budget of a PA such as Almosi (US$ 555)

	subsequently removed from the LFM on the advice of the CTA. Instead, the CTA proposed that a simple monitoring manual be developed for use by PA staff system wide			would have negligible impact if annual inflation (6%) and annual increments (20%) in staff salaries are taken into account. Inflation apart, the validity of an indicator set at a target that equates to an increase of 4.5 cents per hectare is verging on the ridiculous.

[a] May refer to actual negative changes or to lack of improvements where change was expected, implying failure of interventions to achieve impact; includes both environmental and social impacts

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed

6. Broader Adoption Processes

30. The GEF's objective to play a catalytic role was found to be a key element of the project strategy. However, such catalytic effect is high at the local level only. Broader adoption occurred mostly for outcomes 2 and 3. Outcome 2 focused on demonstrating effective management planning in the three target PAs, so that the experience and best practices may be used across the PAs system. Networking and exchange of best practices throughout the PA system has been among the main success stories of this project, especially in the replication of some initiatives generated by the project in other PAs.

31. The piloting of a wide range of approaches to developing sustainable livelihoods in areas bordering PAs under Outcome 3 was intended to encourage communities to conserve the environment. The project demonstrated that it is possible to get benefits from the environment, without direct negative impacts, in a number of different ways, such as eco-tourism, bee keeping, seedlings sale and productivity increasing through conservation areas. All this stimulated some behavioral change of the local population.

32. Communities have generally shown great interest, less so local governments, especially in as far as the conservation and sustainable management of PAs are concerned. This is mostly due to the lack of funding for the management of all conservation areas. Catalytic financing from the Government and other donors has not been forthcoming at the expected level, and has been limited. Overall, some cases of broader adoption of outcomes (less in form of mainstreaming and more in form of replication) have occurred at the local level.

Broader Adoption of GEF-Supported Interventions Leading to Environmental Benefits

GEF-SUPPORTED INTERVENTION ADOPTED [a]	BROADER ADOPTION PROCESS TAKING PLACE [b]	SOURCES OF INFORMATION	GEF-SUPPORTED FACTORS/ ACTIVITIES CONTRIBUTING TO BROADER ADOPTION	NON-GEF FACTORS/ ACTIVITIES CONTRIBUTING TO BROADER ADOPTION
An inter-ministerial working groups was set up to draft new legislation, the JRCs and MLF with their environmental and sustainable livelihood agendas, and the newly adopted standards and best practice in PAs management and financial planning	These relationships, mechanisms and practices have grown from strength to strength and there is everything to suggest that they will outlive the project, develop further and become more widely applied. However, even though there has been a noticeable improvement in current levels of financing PAs by the State, this is inadequate for management purposes in the case of most PAs. The Project has had a significant impact among the local communities through jamoats, reinforced by micro-loan opportunities established by the MLF and available via the JRCs. The MLF has been notably successful in establishing these revolving funds and it is likely that this financing mechanism can be sustained in the future.	TE (Phase 1 P2I)	Financial and organizational support from the project	Financing from the State budget increased by 50% for the 3 demonstration PAs
Lessons learned and experience gained from this Project have been collated and	A book was produced and distributed to government agencies, universities and schools in 2008 to raise awareness about Tajikistan's PAs. Publication of a regular Newsletter, Navruzgoh, for which CEP has	TE (Phase 1 P2I)	Replication of lessons generated by the project is ensured through: dissemination of lessons learned to relevant	Little evidence of best practices and know-how having been documented for

disseminated in the form of guidance for others undertaking similar activities in Tajikistan.	taken ownership; and the second being a national staff conference that has been held annually since 2009. Both are reported to have been successful. No substantive progress in developing a GIS-based information system had been achieved by mid-term, as reported in the MTE. Developed a set of some 20 maps for the 3 demonstration PAs.		government authorities, NGO's, communities and development agencies; development of monitoring protocols; community awareness and participation; publication of a regular Newsletter, Navruzgoh; support to a national staff conference.	replication purposes

[a] Technologies, management approaches, financing instruments, implementing bodies, legal frameworks, environmental monitoring systems, skills training systems, etc.

[b] Type of broader adoption process/es, stakeholders adopting the intervention, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed, any environmental and social impacts beginning to emerge

7. Contributing and Hindering Factors

33. Integrated long-term planning for biodiversity within the broader planning framework is essential for achieving successful implementation, broader adoption and progress toward impact. Communication between local governments, civil society and community based organizations, and with all stakeholders was a critical component in crafting a plan that is broadly supported by the PAs administration.

34. Awareness raising and education on biodiversity conservation is another important contributing factor. It is a building block for sustainable biodiversity conservation. Broader adoption processes initiated using project resources - workshop/ conferences held on project lessons.

35. Making the case for biodiversity through political endorsement and a receptive political and institutional environment has been crucial. The value of biodiversity areas and ecosystem services needs to be properly expressed, such as its value for tourism, water management and ecosystem-based adaptation in the context of climate change.

36. Active stakeholder engagement has been an essential contributing factor, as it was good project design and highly relevant technology/approach such as micro-credit facilities that benefit local beneficiaries, participatory land-use and forestry management have been considered as contributing factors.

37. Management of all conservation areas must be adequately funded for the sustainable management of biologically diverse and sensitive areas. Adequate funding and various mechanisms are required to ensure the project gains momentum. Very limited follow-on funding from government was found.

Table 1. Summary of factors affecting broader adoption and impact

Project-related Factors		Context-related Factors
Contributing Factors	• Highly relevant technology/approach (micro-credit facilities that benefit local beneficiaries, participatory land-use and forestry management) • Broader adoption processes initiated using project resources (workshop/ conferences held on project lessons) • Good engagement of key stakeholders (involving local people and governments in decision making) • Good coordination with/ continuity of previous/ current initiatives (lessons learned used) • Good project design • Adaptation of project to changing contexts • Extended implementation period (one-year no-cost extension)	• Country support (cofinancing)

Hindering Factors	• No activities to sustain momentum (No follow-on funding from government) • Poor project management (at early stages) • Insufficient time for implementation	• Lack of other stakeholder support (donors, private sector)

8. Conclusion

38. The project has successfully met three impact drivers: stakeholder ownership and support, effective financial mechanisms, and adequate information flows. At the local level, ownership was developed due to community socioeconomic welfare increase as a result of a particular intervention. Stakeholders have strong ownership of the process - they in fact are transformed from "stakeholders" to "results owners."

39. Although stakeholders have generally shown great interest, government ownership has been limited and has not been relevant to the conservation and sustainable management of PAs. The project could not establish an effective financial mechanism which may include a range of approaches, such as trust funds, markets for sustainable livelihoods, small grants programs, and incentives from and markets for certified products. As with stakeholder ownership, financial factors play important role at many different levels, from alternative income-generating activities for local communities to national government budgeting for competing development priorities.

40. The project has used the Management Effectiveness Tracking Tool (METT), which records scores to questions that measure the progress of protected areas in achieving management effectiveness. The tool has been developed to provide a quick overview of progress in improving the effectiveness of management in individual protected areas; it provides data that could be useful as background information for impacts.

OVERALL RATINGS

Environmental impact

[X]	RATING	DESCRIPTION	EVALUATOR REMARKS
	High impact achieved	Stress reduction occurring or environmental status improving at a large scale (i.e. across the landscape/ seascape or market)	
X	Impact achieved	Significant stress reduction occurring or environmental status improving at low scales (i.e. in specific or disconnected areas)	Field observation identified that current level of environmental impact is not enough to fully address all factors putting pressure on the neighboring PAs, but may lead to environmental status improving at local scale. I.e. environmental status is improved at local scale, but disconnected.
	Some impact achieved	Stress reduction occurring or environmental status improving at low scales (i.e. in specific or disconnected areas) but extent of impact not significant compared to the dedicated resources	
	No impact achieved	No positive environmental impact observed	
	Negative impact	Some negative impacts observed	
	Unable to assess	Available information insufficient	

Broader adoption by stakeholders of GEF-supported initiatives

[X]	RATING	DESCRIPTION	EVALUATOR REMARKS
	Highly successful	Broader adoption of most GEF-supported initiatives taking place at a large scale (i.e. across a country, region or market)	

	Mostly successful	Broader adoption of some GEF-supported initiatives taking place at a large scale; other initiatives also adopted but mostly at lower scales	
X	Successful	Broader adoption of GEF-supported initiatives taking place at low scales (i.e. within local administrative units or markets)	Cases of the broader adoption were found at low and few cases even at large scales. Most of them can be considered as a replication and less in form of mainstreaming.
	Partially successful	Plans for broader adoption, which are well-established with supporting resources and institutional framework in place, but mostly not yet implemented	
	Unsuccessful	GEF-supported initiatives not adopted or expanded on by stakeholders beyond project duration and resources	
	None	No significant broader adoption taking place (Note: plans for broader adoption may exist but implementation unclear)	

Case Study II

Community Agriculture and Watershed Management

GEF ID	1872
Agency	World Bank
Focal Area	Multi Focal Area
Title	Community Agriculture and Watershed Management
GEF replenishment phase	GEF - 3
Type	FSP
Status	Project Completion
Trust Fund	GET
Executing partner / agency	Ministry of Agriculture and Rural Development
Type of executing partner / agency	Government
PPG(s)	205,000
GEF Project Grant	4,500,000
Co-finance	13,300,000
Date of implementation start	25-Nov-04
Date of closure	30-Apr-11

1. Project summary

41. The Community Agriculture and Watershed Management project was implemented by the World Bank between November 2004 and April 2011. It received a US$4.5 million grant from the GEF (under GEF-3 replenishment phase), with the equivalent of US$13,300,000.00 in co-financing provided by the Government of Tajikistan and other donors for a total project budget of US$18.0 million including beneficiaries contribution US$3.4 million along with co-financing [43] and other grants[44].

42. The project objective was to build the productive assets of rural communities in selected mountain watersheds, in ways that sustainably increase productivity and curtail degradation of fragile lands and ecosystems.

43. The global environmental objective was to protect globally significant mountain ecosystems by mainstreaming sustainable land use and biodiversity conservation considerations within agricultural and associated rural investment decisions.

[43] Co-financing came from: AKF/MSDSP - US$100,000.00; UNDP - US$84,000.00; WHH -US$345,000.00

[44] Separate World Bank-executed project on Capacity Building in Geospatial Analysis (US$160,000.00) and DfiD-funded Rural Vulnerability and Resilience Study (US$200,000.00)

44. In the period from July to September 2015 the project was reviewed using the P2I methodology described in the introductory chapter of this technical document. In-depth data gathering was conducted in four (of 39) target Jamoats located in the four districts Aini, Panjakent, Mastchohi Kuhi and Tajikabad. The evaluation team interviewed representatives of local governments, civil society and project beneficiaries using standardized, semi-structured guides and questionnaire surveys. Interviews were also held with the GEF Focal Point staff, GEF Agency staff and government stakeholders.

2. Outputs and Outcomes

45. The Project core components included rural production investments, institutional support and capacity building; and project management. Project activities focused on farm productivity investments; land resource management; and rural infrastructure. The Implementation Completion and Results (ICR) report was completed in December 2012, one and a half years after the end of the Project. The overall performance ratings are provided in the Table 1 below.

Table 1. ICR Ratings Summary

Performance Rating by ICR	
Outcomes	Satisfactory
GEO Outcomes	Satisfactory
Risk to Development Outcome	Moderate
Risk to GEO Outcome	Moderate
Bank Performance	Satisfactory
Borrower Performance	Moderately Satisfactory

3. Environmental change

46. The project contributed to reduce the environmental pressure through the creation of gardens on terraces helps to conserve the soil and prevent wind erosion. Fruit trees in the gardens just started entering in production which is benefiting the project beneficiaries. Power-saving technologies, such as solar heaters and driers and water mills, are estimated to save at least 260 thousand KW/hours per year. Additionally, 25 micro-hydro units have been rehabilitated or established. All these measures reduced the pressure on environment.

47. The use of biological methods for plant protection as alternatives to chemical control in at least 210 ha and the establishment of more than 5,300 beehives helping to revitalize an important

economic activity as well as a critical ecological process for agricultural productivity and biodiversity conservation in the long term.[45]

48. Water saving technologies in irrigation in subprojects are estimated to save at least 250 cubic meters a year.[46] An irrigation network covering 30 villages was repaired, and water supply pipelines of 550 households, which allows a more rational and efficient use of water for irrigation and household purposes, while at the same time preventing water erosion and soil salinization, as well as reducing the use of pesticides and fertilizers.

49. Improvement of pastures and their effective control enable to increasing of their productivity and natural restoration. The introduction of Yak breeding reduced the pressure on pastures. Corrals built by the Project on the summer pastures helped livestock conservation.

[45] Reported by several key informants.
[46] According Project Documents.

Environmental Change

ENVIRONMENTAL CHANGE REPORTED [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
sustainable land management	Project Development Objectives were achieved as indicated by the percentage of sustainable subprojects (85%) and by the area of Project land now under sustainable land management (96,600 ha)	TE (Phase 1 P2I)	The Global Environmental Objective of integrating sustainable principles into agricultural and rural development decisions was achieved through 1) the number of hectares under sustainable land management (96,600), 2) integration of environmental monitoring and impact assessment into rural subprojects, and 3) through the replication of best practice to other areas of the country - over 9,000 trained	
Preservation and documentation of live indigenous plant specimens.	Several missions were conducted by the Institute of Botany resulting in the identification of over 300 endemic and rare plant species including fruit trees. The Institute also updated the Tajikistan Red Book with their findings.	TE (Phase 1 P2I)	Financial and organizational support	

[a] Reduction in environmental stress, improvement in environmental status, or maintained status (implying reduced stress), whether intended or unintended.
[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed

4. Socioeconomic change

50. Significant socio-economic changes were observed during field visits. Small grants for environmentally friendly economic activities were awarded to more than 5,000 beneficiaries. According to interviewees from the JRC in Urmetan, 220 such activities were designed after project completion. Some of them managed to obtain funding from other donors.

51. The Project was implemented through Community-Driven Development (CDD) and Common Interest Groups (CIG) approaches, in a way to bring direct economic benefits to the population in the form of sustainable livelihoods while conserving the environment. These included bee-keeping, blacksmith shops, livestock and yak development, poultry farming, greenhouse establishment, vineyards and plant nurseries, use of biogas and solar energy, horticulture, lemon, potato and annual crops growing, establishment of small enterprises for agricultural processing, among others. Besides the initiatives directly targeting environmental conservation through the provision of sustainable livelihoods, the project also supported the upgrading and reconditioning of rural infrastructure and communications. During field visits to Jamoat Urmetan of Aini district it was found that all the water supply pipelines built for 550 households are still functioning today.

52. Poverty, gender and social inclusion were all part of the objectives of the CAWM project. Female participation in sub-projects was also a main goal of the project and in fact over 40% of project beneficiaries were women. The CCD and CIG approaches piloted by the CAWM project for the first time in Tajikistan were replicated by a number of other projects, including the Biodiversity Conservation project (GEF ID 1854). Greater social cohesion occurred through the sharing of experiences and interactions across Jamoats and watersheds.

Socioeconomic Change

SOCIOECONOMIC CHANGE REPORTED [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
Poverty Impacts, Gender Aspects, and Social Development	Female participation in subprojects was also a main goal of the Project and over 40% of project beneficiaries were women. Social development can be defined in this context as expanding participatory methods (a la CDD) in decision making through the CIG model. Greater social cohesion can also be claimed through the sharing of experiences and interactions across Jamoats and watersheds.	TE (Phase 1 P2I)	Introduction of new approaches such as CDD and CIG	
Improved Rural Livelihoods	In 2010 the CAWMP won the World Bank award for "Improving the Lives of People in the Europe and Central Asia Region". The Project was recognized for its achievements in improving rural livelihoods, increasing agriculture production, improving land resource management including pasture improvement, rural infrastructure rehabilitation, and involving the rural population.	TE (Phase 1 P2I)	Allocation of significant funds for rural infrastructure rehabilitation and development sub-projects	
Poverty Eradication	The cumulative number of households in Project areas that undertook rural investments was greater than 43,000	TE (Phase 1 P2I)	Wider involvement of local population	

	and of those 50 percent are now above the poverty line.			

[a] Income, education, health, community relationships, treatment of marginalized groups, gender roles, etc., whether intended or unintended.

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed

5. Capacity and governance changes

53. Besides introducing viable options for bottom-up approaches to sustainable environmental and natural resource management, the CAWM project contributed to capacity building in a number of other ways. It supported the Institute of Botany of the Academy of Sciences in conducting a study on biodiversity in the watersheds and collected rare and endangered species of plants. The project set up 50 demonstration plots for agricultural crops and gardens, using the Farmer Field School approach. A series of trainings contributed to improve the skills of JSC and CIG members. Shepherds were trained on sustainable pasture management. Women were trained on processing and storage of fruits and vegetables, dairy and livestock production as well as processing of wool, leather and others. CIG leaders learned project design skills, and as we has seen earlier this led to the design of 220 sub-project after completion, some of which succeeded in sourcing out the necessary finding.

54. To note, in 2010 the CAWM project won the World Bank award for "*Improving the Lives of People in the Europe and Central Asia Region*", a recognition for its achievements in improving rural livelihoods, increasing agriculture production, improving land resource management including pasture improvement, rural infrastructure rehabilitation, and involving the rural population.

Change in Capacities for Achieving Environmental Benefits

REPORTED CHANGE IN CAPACITIES [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
Project awareness raising	Project awareness raising, e.g., meetings, workshops, were attended by more than 70% of beneficiaries	TE (Phase 1 P2I)	Arrangement of adequate awareness raising and participation programs	
Dissemination activities on experience and knowledge generated	Materials were prepared, published and shared in several formats: a book on Project achievements; Project leaflets; several technical brochures with different topics; 3 radio programs; a 20-minute film about achievements in watersheds; published articles in the Republican newspaper and agriculture magazines. Materials distributed among ministries, agencies, research institutes, international and national NGOs	TE (Phase 1 P2I)	Arrangement of adequate KM strategy	
Farmer competitions	Awareness was created on good practices that can be replicated extensively by small farmers for pasture management, efficient irrigation technologies and integrated pest management	TE (Phase 1 P2I)	Arrangement of adequate KM strategy	
Built local knowledge	At the local and watershed levels through the participatory methods of the CIG model, it built local knowledge of best practice not only in productive	TE (Phase 1 P2I)	Arrangement of adequate KM strategy	

	asset building, but also with business plans, fiduciary requirements and environmental impacts.			

[a] Awareness, knowledge, skills, infrastructure, information management systems, etc.

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed; typically assessed through change in mass behavior (e.g. compliance with regulations, participation)/ institutional activities

Change in Governance Architecture Enabling Achievement of Environmental Benefits

REPORTED CHANGE RELATED TO GOVERNANCE [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
Institutional Change/ Strengthening	The project supported increased knowledge at the PMU and Government levels of how bottom-up approaches can be successful. Among other donors – it demonstrated a new way of doing development in a country where a substantial proportion of the population live in rural areas and that local empowerment can improve livelihoods, if the will is there.	TE (Phase 1 P2I)	Multi-level capacity building approach. The model introduced under the Project was completely new for Tajikistan. It was contrary to the humanitarian aid-type of development that rural communities and the donor community were used to. In this regard, institutional strengthening occurred at many levels.	
Government initiative to request further support, and linked to other programs	Request letter from Deputy Prime Minister, and Endorsement of GEF Application by Committee on Environmental Protection. This is in relation to the ELMARL project further supported by GEF and WB. Although, rural investments under CAWM are designed to be sustainable, new financing would enrich the benefits from such investments to beneficiaries (i.e.	TE (Phase 1 P2I)	Good relationships with all stakeholders lead to increase of the country ownership level.	

	depth) as well as replicate activities in new locations (i.e. scope)			

[a] Refers to decision-making processes, structures and systems, including access to and use of information; includes laws, administrative bodies, policy frameworks, trust-building and conflict resolution processes, information-sharing systems, etc.

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed; typically evidenced by enactment, implementation and/ or enforcement of legislation and other binding agreements, and regular allocation of resources for implementation

6. Broader Adoption Processes

55. The CAWM project included arrangements within its design to facilitate replication, mainstreaming and eventually up-scaling. Replication has been observed at the local level in all the jamoats visited by the evaluation team. On average 2-3 subprojects are being independently replicated in each village by individuals, resulting in an estimated 800 replications for entire project. The most common cases of replication were observed in horticulture, bee-keeping, woodlots and poultry farms. It is worth noting the higher than planned in kind contribution from beneficiaries, estimated at US$3.4 million, as reported by the ICR and confirmed from interviews with representatives of the GEF Agency as well as the Farmers Advisory Services of Tajikistan.

56. The CAWM concept and community-based approach was adopted by a large scale 6-year IFAD project in Khatlon, targeting a total of 18,000 households, and focusing on three main components that are similar to those of the CAWM project: 1. Rural productivity investments; 2. Institutional capacity building of local structures; and 3. Project management. The IFAD project also set up similar grant approval committees and mechanisms for sub-projects. Adoption of elements of the CAWM approach has been observed with other organizations, including the AKF/MSDSP on natural resource management issues for village planning.

Broader Adoption of GEF-Supported Interventions Leading to Environmental Benefits

GEF-SUPPORTED INTERVENTION ADOPTED [a]	BROADER ADOPTION PROCESS TAKING PLACE [b]	SOURCES OF INFORMATION	GEF-SUPPORTED FACTORS/ ACTIVITIES CONTRIBUTING TO BROADER ADOPTION	NON-GEF FACTORS/ ACTIVITIES CONTRIBUTING TO BROADER ADOPTION
Replicable subproject models for small farmers	On average 2-3 subprojects are being independently replicated in each village by individuals; with an estimated 800 replications for entire Project. The most common were in horticulture, bee-keeping and woodlots	TE (Phase 1 P2I)	Creation of adequate mechanisms for learning and replication	
Demonstration of CDD in Tajikistan contributing to IFAD Khatlon Livelihood Project and adoption by other organizations	The CAWM concept and approach was adapted for a large scale 6-year IFAD project in Khatlon (18,000 households) focusing on 3 components: 1. Rural productivity investments; 2. Institutional capacity building of local structures; and 3. Project management with similar grant approval committees. Adoption of elements of CAWMP's approach with organizations, e.g., NRM aspects by AKF/MSDSP for village planning	TE (Phase 1 P2I)	Creation of adequate mechanisms for learning and replication	

[a] Technologies, management approaches, financing instruments, implementing bodies, legal frameworks, environmental monitoring systems, skills training systems, etc.

[b] Type of broader adoption process/es, stakeholders adopting the intervention, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed, any environmental and social impacts beginning to emerge

7. Contributing and Hindering Factors

57. The design of the institutional structure and sub-granting mechanisms clearly demonstrated a participatory approach whereby the ideas came from individuals and the CIGs were instrumental in bringing together people and ideas. This was in contrast to the past approaches where most activities focused on humanitarian aid rather than support for environmentally friendly agricultural production. Ultimately, changing this perception and attitude became one of the most important challenges during the implementation process.

58. The project drew on the existing institutions, such as the JDCs built under the UNDP Rural Reconstruction and Development Program, and reinvigorated them towards a new development goal. JDCs continued their existing decision-making capacity, but were transformed to act as a clearinghouse for CIG and village investments, identifying new sources of funding and facilitating clearances and registrations for sub-projects.

59. Active stakeholder engagement has been an essential contributing factor to the project efforts. Key stakeholders who were involved directly in the project include village leaders and village members, women, local government representatives, technical staff of the line ministries located primarily at the district level. NGOs provided technical assistance during the facilitation and proposal development phase at the village level and JDCs acted as decision-makers and comprised elected officials from the communities.

60. Awareness raising and training as a prerequisite before investment was integral to sustainability since local knowledge contained gaps in more modern and environmentally-sustainable techniques. For example, individuals participated in training of pasture management and animal husbandry by the Institute of Husbandry of Tajik Academy of Sciences and the Agrarian University of Tajikistan.

61. Not all the risks identified in the project document were addressed by mitigation measures. Institutional capacity was correctly identified as a significant risk at the outset. However, it may have been underestimated. Given the rather complex institutional framework to implement sub-projects at the Jamoat level, it might have been worthwhile to do more thorough preliminarily analyses to identify the potential constraints to the CDD model, and viable ways to address them.

Table 2. Summary of factors affecting broader adoption and impact

	Project-related Factors	Context-related Factors
Contributing Factors	• Highly relevant technology/approach (income generation sub-projects, modern agricultural technology etc) • Broader adoption processes initiated using project resources (workshop/ conferences held on project lessons) • Good engagement of key stakeholders (involving local people and communities in decision making) • Good coordination with/ continuity of previous/ current initiatives (lessons learned used) • Good project design • Adaptation of project to changing contexts	• Country support (cofinancing) • Other stakeholder support (donors, private sector)
Hindering	• Risks identification.	• Lack of stakeholders institutional capacity

8. Conclusion

62. The three main successfully met impact drivers are stakeholder ownership and support, effective financial mechanisms, and adequate information flows. At the local level, ownership was developed through the socio-economic as well as livelihood incentives provided to the communities.

63. The Government requested to sustain and replicate many of the activities introduced by the CAWM through the *Environmental Land Management and Rural Livelihoods Project (ELMARL),* which is jointly co-financed through the Pilot Program for Climate Resilience (PPCR) and the GEF. Modeled after CAWM, the ELMARL project includes components on building rural productive assets and local knowledge management that support rural populations in planning, implementing and managing rural investments.

OVERALL RATINGS

Environmental impact

[X]	RATING	DESCRIPTION	EVALUATOR REMARKS
	High impact achieved	Stress reduction occurring or environmental status improving at a large scale (i.e. across the landscape/ seascape or market)	
X	Impact achieved	Significant stress reduction occurring or environmental status improving at low scales (i.e. in specific or disconnected areas)	Field observation identified that positive environmental impact occurred at local scale.
	Some impact achieved	Stress reduction occurring or environmental status improving at low scales (i.e. in specific or disconnected areas) but extent of impact not significant compared to the dedicated resources	
	No impact achieved	No positive environmental impact observed	
	Negative impact	Some negative impacts observed	
	Unable to assess	Available information insufficient	

Broader adoption by stakeholders of GEF-supported initiatives

[X]	RATING	DESCRIPTION	EVALUATOR REMARKS
	Highly successful	Broader adoption of most GEF-supported initiatives taking place at a large scale (i.e. across a country, region or market)	
	Mostly successful	Broader adoption of some GEF-supported initiatives taking place at a large scale; other initiatives also adopted but mostly at lower scales	
X	Successful	Broader adoption of GEF-supported initiatives taking place at low scales (i.e. within local administrative units or markets)	Cases of the broader adoption, most of which being replications, were found at local level.
	Partially successful	Plans for broader adoption are well-established with supporting resources and institutional framework in place, but mostly not yet implemented	

	Unsuccessful	GEF-supported initiatives not adopted or expanded on by stakeholders beyond project duration and resources	
	None	No significant broader adoption taking place (Note: plans for broader adoption may exist but implementation is unclear)	

Case Study III

Demonstrating Local Responses to Combating Land Degradation and Improving Sustainable Land Management in SW Tajikistan

under the CACILM Partnership Framework, Phase 1

GEF_ID	3237
Agency	UNDP
Focal Area	Land Degradation
Title	CACILM: Demonstrating Local Responses to Combating Land Degradation and Improving Sustainable Land Management in SW Tajikistan-under the CACILM Partnership Framework, Phase 1
GEF replenishment phase	GEF - 3
Type	MSP
Status	Project Completion
Trust Fund	GET
Executing partner / agency	UNDP DEX (Communities Programme)
Type of executing partner / agency	Multilateral
PPG(s)	25,000
GEF Project Grant	975,000
Co-finance	1,053,000
Date of implementation start	15-Feb-07
Date of closure	29-Apr-11

1. **Project summary**

64. The project was a part of the GEF/ADB Central Asian Countries Initiative for Land Management (CACILM) and was the first Sustainable Land Management (SLM) project to be implemented in the Central Asia sub-region. Within that context, the project goal was to contribute to "The improvement of the sustainability of arid climate irrigation land management in Tajikistan in order to safeguard the livelihoods and economic well-being of rural populations and the functional integrity of national ecosystems". The SLM project in Tajikistan was specifically designed as a demonstration initiative.

65. The project was implemented in four Jamoats (sub-districts) of four districts (one per each district) located in the southern part of the Khatlon Oblast (province) in the South of Tajikistan.

Project Objectives / Goals

66. The overall goal of the project was: “The improvement of the sustainability of arid climate irrigation land management in Tajikistan in order to safeguard the livelihoods and economic well-being of rural populations and the functional integrity of national ecosystems”. The project specific objective was: “To demonstrate the potential to implement replicable Sustainable Land Management initiatives at the local level in Tajikistan and to build the capacity of local structures to do this”.

67. The project’s actual implementation started in April 2007 and the closure date of the Project was December 2011. The total Project budget was US$ 2,053,000, of which US$ 25,000 was granted for the design (through a PDF A) and US$ 975,000 for implementation, making a total GEF contribution of US$ 1,000,000. The national executing agency responsible for the project from the side of the Government was the National Land Agency.

68. The project was reviewed using the P21 methodology described in the introductory sections of this technical document. The evaluation team undertook the progress to impact assessment from the desk review level to the fieldwork, stakeholder consultation, and verification. In-depth data gathering was conducted in all four target Jamoats and interviews were conducted using standardized, semi-structured questions and questionnaire surveys with local government, civil society representatives and project beneficiaries as well as the Project staff of the executing agency.

2. Outputs and Outcomes

69. The project outcomes were:

(i) Local government and civil society structures have the capacity and awareness to regulate, plan and monitor sustainable management of irrigated land.
(ii) Appropriate and viable local level initiatives for improving sustainability of land and water management tested and available for replication.

70. The first outcome was supported by the following three outputs:

(i) Increased awareness at all levels within the project area of land degradation and unsustainable land management issues
(ii) Regulatory and operational capacity of Jamoat (local district authorities) and civil groups (JRC’s and village committees) to manage land resources sustainability is increased
(iii) Establishment and capacity development of Water User Associations to collaboratively plan and manage water and land more effectively

71. The following four outputs supported the second outcome:

(i) Appropriate approaches and techniques for addressing immediate land degradation problems of land users tested and demonstrated

(ii) Increased technical and managerial capacity of 'dehkan' farmers to sustainably manage land and water resources
(iii) Replicable models for sustainable reduction of wind and water erosion
(iv) Dissemination of best practices and lessons learned regarding appropriate local level approaches to improving sustainable land management

72. The expected outcomes of GEF-supported activities on SLM also included the following:

(i) Institutional and human resource capacity is strengthened to improve sustainable land management planning and implementation to achieve global environment benefits within the context of sustainable development.
(ii) The policy, regulatory and economic incentive framework is strengthened to facilitate wider adoption of sustainable land management practices across sectors as a country addresses multiple demands on land resources for economic activities, preservation of the structure and functional integrity of ecosystems, and other activities.
(iii) Improvement of the economic productivity of land under sustainable management and the preservation or restoration of the structure and functional integrity of ecosystems.

73. The Terminal Evaluation (TE) of the CACILM project was completed in January 2012, just one month after the end of the project. The TE gave the project the overall rating 'highly satisfactory'. According to the TE, the project has addressed the full range of issues associated with SLM, from creating *de facto* protected areas through sustainable utilization of forest resources and community forestry initiatives, or the repair of key parts of the infrastructure system, to crop diversification, appropriate and sustainable technologies such as bio-drainage, shelterbelts, among others, or reducing pressure on resources through fuel efficiency. The project also supported the organization and empowerment of local governance institutions, civil society and community-based organizations. The TE indicates that the project has focused more on process than results (section 4.3, para 1) and it then ticks off the so-called "indicators" one by one as a measure of achievement without explicitly concluding on whether either of the two outcomes have been achieved. The TE concludes that sustainability of interventions is not guaranteed, there is no guarantee that any catalytic effects will take place.[47]

3. Environmental Change

Achievements at project completion stage

74. During the field work in the project sites and interviewing the project stakeholders and beneficiaries[48], it was found out that as a consequence of the demonstration of the experimental practices the positive environmental changes occurred by the end of the project through:

[47] Final Evaluation
[48] The field work in project sites was conducted in July-August, 2015

- Jamoat level joint planning and development to reduce land degradation
- Improved agricultural and water management practices to reduce land degradation
- Erosion control through forestry and tree planting
- Decreased pressure on forests through energy efficiency and energy alternatives

75. Specifically, the project supported the creation of *de facto* protected areas through sustainable utilization of forest resources and community forestry initiatives. Biodiversity has been recovered as a result: the team could observe that the variety of birds and animals has significantly increased due to the preservation/protection of 126 ha of Tugai forests through Tugai Community Forest Management experience in Jamoat Nuri Vakhsh of Jilikul District. The *saxaul* plantation in 25 ha also produced good results – the seedlings were grown up to 2-3 meters. Protection altogether around 500 ha of semi- desert territories was maintained and being fenced against cattle grazing in jamoat Jura Nazarov of Shaartuz District (it was secured by a forestry officer of the district forestry department).

76. Unfortunately, the field observations identified that the Tugai Forest is under the risk of extinction due to the fact that the 5-year Agreement signed in 2008 between the three local communities and the Hukumat expired in 2013. Since then, no further efforts were made towards the renewal of the Agreement. The leasehold agreement for the 126 ha of Tugai forest was structured as three different agreements, valid for 5 years, between village committees each represented by a single person (leaseholder) and signed by him and the Hukumat.

77. During the field visit, it was found that out of the three leaseholders, one had recently migrated to Russia and the other two leaseholders, by their own initiatives and voluntary efforts, are trying to protect the Tugai forest from illegal cutting and cattle grazing, although they don't have any official authorization to do so due to the expiration of the 5-year Agreement. Due to limited financial resources, the district forestry department has no possibility to hire forestry officers to secure officially the Tugai forest on a full time basis. The representatives from the district forestry department visit the Tugai forest only once a month. The leaseholders noted that it is quite difficult to approach the new staff of the Hukumat to share with them their experience as they had done with the previous staff of the Hukumat. This situation hinders the negotiation of the renewal/or extension of the old agreements.[49]

78. The TE noted that the strength of tenure or proprietorship, which is what motivates the local community to invest their time and efforts in protecting the Tugai forest, is directly correlated to the duration of that agreement. The TE predicted that there is no guarantee that they will have their leasehold renewed or that the state will not place unacceptable conditions on any further leasehold. In fact, the TE recommended to negotiate a new agreement with the Tugai forest management department in the Hukumat before the end of the project, even though by that time the agreement had another two years to run. Now as the project is completed, negotiating the renewal of the agreement with the facilitation by UNDP is the only opportunity to build on the successes achieved thus far. There are tens of different "off-the-shelf" agreements that can be brought to the table, all

[49] Field interview with a member of the Tugai Forest Protection Committee/leaseholder

of them technically viable, but none of them will be as useful as an agreement that is negotiated between the local community and the Hukumat. UNDP third party facilitation would mediate in the asymmetrical distribution of power in the relationship between the two parties. It is critical that these negotiations oriented towards the development of the "second generation" agreements are carried out with the full participation of the local communities and that their interests and opinions are heard during the process.

Appropriate and sustainable technologies

79. A total of 27,500 seedlings were planted in the four districts. Commercial plantations of orchards on poor and abandoned lands were established in 27 ha in all four target Jamoats. Additionally, four small scale nurseries were established in 1 ha – in each of them around 5,000-15,000 seedlings were grown. Shelterbelts were established in 9.2 ha. Bio-drainage on waterlogged lands was established in 1 ha. River/canal side tree planting was done in 1 ha to prevent bank erosion. The team could visit a case of replication of shelterbelts in Jilikul and Shaartuz district, where farmers declared they are convinced that this technology increased the productivity of the land.[50]

80. The project Mid-term Evaluation (MTE) noted that the experience of planting trees for the bio-drainage of waterlogged areas is an innovative initiative that was effectively promoted by the project. It has attracted attention and was appreciated by Jamoat and Hukumat authorities. According to the TE, the use of trees for bio-drainage as a means to improve waterlogged land appeared to be working, but time is needed to fully assess the effects of this on large areas of waterlogged land. In fact, during the field visits it was found out that the bio-drainage component wasn't working any longer due to the lack of economic profitability. In one of the targeted Jamoat in Kumsangir district, due to the lack of stakeholder support both from local authorities and farmers, the planted trees in waterlogged land were pulled out for growing rice and corn. This is more profitable for farmers – on average, farmers harvest 4 tons of rice per ha, which they can sell on the local market at the price of 3 Somoni/kg.

Reduction of pressure on resources through fuel efficiency

81. About 40 energy efficient stoves in the four targeted Jamoats and a small scale hydropower station in Jamoat Nuri Vakhsh of Jilikul district were constructed with support from the project. Unfortunately, field observations identified that use of the stoves is low, as some local users did not have the expertise to use the new technology. In the Qum village of the Jilikul district, the participants of the demonstration training on the construction and usage of the efficient stoves were mainly men. Language barriers played also a role. This village is located in a remote area. The inhabitants are Uzbek ethnicity and don't speak Tajik at all. In fact, the national members of the evaluation team had to conduct the field interviews with an interpreter.

82. The 5 KW generation unit that provided electricity to 14 households in the Qum village of Jilikul district currently is not working. It was damaged by mudflow during last summer. Households

[50] From the observations and interviews during the field visit in Jilikul district

cannot allocate enough funds to replace or repair the spare parts of the generator. At the time of TE mission the generator was still in use and very much valued by the community.

Environmental Change

ENVIRONMENTAL CHANGE REPORTED [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
Some. The use of trees for bio-drainage as a means to improve waterlogged land appears to be working well but it will need time to fully assess the effects of this on large areas of waterlogged land.		TE (Phase 1 P2I)		
None. The trees for bio-drainage component are not there any longer.	In one of the target jamoat in Kumsangir due to the lack of stakeholder support (local authorities at Hukumat & Jamoat levels and farmers) the planted trees for bio-drainage in waterlogged land were pulled out for growing rice	Field trips and interviews (July, 2015)	Inappropriate/insufficient approach with, and poor engagement of key stakeholders	

[a] Reduction in environmental stress, improvement in environmental status, or maintained status (implying reduced stress), whether intended or unintended.

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed

Negative or Absent Impacts

NEGATIVE CHANGE REPORTED [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-RELATED FACTORS LINKED TO NEGATIVE RESULT	NON-GEF FACTORS LINKED TO NEGATIVE RESULT
Very fragile gains were achieved by project and there are considerable vulnerabilities as a result of the likely future events.	The project was coming to an end at a time when there is considerable uncertainty beyond control of the project. It would place enormous stress on the system and is going to require considerable planning and management by the local administration.	TE (Phase 1 P2I)	None	Returning migrants, increasing fuel prices, uncertainties with neighboring countries were cited as uncertain challenges.
The trees for bio-drainage component are not there any longer	In one of the target jamoat in Kumsangir - the planted trees for bio drainage in waterlogged land were pulled out for growing rice	Field trips and interviews (July, 2015)	Inappropriate/insufficient approach with and poor engagement of key stakeholders	

[a] May refer to actual negative changes or to lack of improvements where change was expected, implying failure of interventions to achieve impact; includes both environmental and social impacts

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed

4. Socioeconomic change

83. The activities to plant trees on poor and abandoned land and greater emphasis on commercial forestry use has generated much interest from both farmers and local authorities, which helped catalyze existing ideas into practical actions, particular interest was shown in the planting of orchards with apricot, peach, almond trees[51] were turned into a valuable source of income.

84. The agricultural knowledge of private farmers, landless families and rural unemployed women was considerably improved due to the establishment of four Farmer Field Schools (FFS) in the targeted Jamoats. As a result of the introduction of innovative farming practices and the provision of high quality seeds the local farmers were able to support their families and produce for the local market. This knowledge led to rational and efficient use of water and land resources, increased productivity and improved economic wellbeing of the farmers.

85. The establishment of Water User Associations (WUA) in Kumsangir and Jilikul districts and the rehabilitation of some irrigation structures (gateways, water control gates) significantly improved the irrigation of lands and thus resulted in increased land productivity. The rehabilitation of one irrigation station in Jura Nazarov jamoat improved the irrigation of around 300 ha of land.

86. The project's microfinance work led to service loans to approximately 255 farming households, including 73 female-headed households. The microfinance program provided easy access and low interest rate loans to the farmers in all four target jamoats.

87. The TE reported that participation by stakeholders is at the heart of the SLM project. An example of this is the micro-finance component. As recommended by the Mid-Term Evaluation (MTE), the micro-finance activities were moved from the regional microfinance institution VakhshMicroFin to a local micro-finance one, the "Rushdi Obshoron" located in Shaartuz, which used the Land Degradation Units (LDUs) and the FFS consultants as loan officers, legally paying for their services. However, during the field visits the team found that the microfinance organization "Rushdi Obshoron" in Shaartuz is now under the risk of closure because of new requirements[52] recently introduced by the National Bank of Tajikistan. At present, "Rushdi Obshoron" runs with 2.5 million Somoni and is looking for the possibility to merge with two other local micro-finance institutions, the "Mehnatobod" in Bokhtar district, and "Vorukh" in Isfara district, with the aim of refill/filling up the capital and avoid the closure. Today, the LDUs and FFS consultants serve as loan officers at "Rushdi Obshoron" only in the Jilikul and Qumsangir districts.

88. The TE reports that women have an important role to play in SLM, but their participation in activities such as the FFS and access to micro-credit was constrained by cultural barriers. The TE further states that currently there are 107 dehkan farms who are active "clients" of the project, out of which fifteen are women (i.e. are head by a woman). The issue of low number of women can be

[51] Observed during the field trips

[52] The new requirements include: (1) the microfinance organizations (MFO) with the capital of less than 2 million Somoni will be closed by October 01, 2015; (2) the MFOs with capital of less than 3 million Somoni will be closed by January 01, 2016; (3) the MFOs, whose capital is less than 4 million Somoni will be closed before April 01, 2016.

explained by the limited number of dehkan farms that are officially headed by them. The project had a priority for women while granting the micro-credits, but nevertheless not that many women have come forward and ask for it.

Socioeconomic Change

SOCIOECONOMIC CHANGE REPORTED [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
Stakeholder participation in SLM activities was high	The micro-finance programme was moved from VakshMicroFin to a local micro-financing union (Rushti Obshoron) in Shaartuz that did want to use the LDUs and FFS Consultants as loan officers and could legally pay for such services. These staffs are a crucial part of how the microfinance union operates and so are likely to continue to fulfill both functions post project.	TE (Phase 1 P2I) Field visits and interviews (July, 2015)	Quick response to this challenge	At the time of the MTE the regional microfinance institution (VakshMicrofin) was legally constrained from using the JRCs as a service provider which affected the JRCs ability to continue with the LDUs as well as making microcredit unaffordable due to raising interest rates. The "Rushdie Obshoron" of Shaartuz is under threat of closure. According to the new requirements of the National Bank.
Women participation in FS and micro-finance was hindered by cultural issues	The issue of low number of women is explained by limited number of dekhan farms that are officially headed by them. The Project has a priority for women while granting the micro-credits, but nevertheless not that many women have come forward.	TE (Phase 1 P2I)		Gender relations, cultural norms

Project's microfinance work led to serviced loans to approximately 255 farming households, including 73 women-headed households	The micro hydroelectricity generation has been an interesting experiment and one that has been largely carried out as a self-help exercise. The one unit that is working has used parts that can all be acquired easily in local markets and provides sufficient electricity (5 KW) to light 14 households. Project also distributed fuel efficient stove appears to have worked well and can provide financial savings to a household. Despite the fact that the demonstration of energy-efficient double-chamber furnaces Nepal focused on improving women's reproductive activities, the expansion of this activity has not continued. During field visits, examples of the widespread use of such furnaces were not observed. The new technology did not meet women expectations. In the summer of this year, due to mudslides, the water level in the river rose by 2-3 meters and the	TE (Phase 1 P2I) Field visit and interview (July, 2015)	In some places only women were involved in practical trainings on the construction and usage of efficient stoves (Kumsangir), in other places men were majority participants of trainings (Shahrtuz, Kabodian, Jilikul). In one household in Jilikul the Nepalese oven is not used: one of the reasons reported was that the hole for firewood is too small - you need to chop wood in small amounts. Another respondent failed to properly install them and use them (Kumsangir)	Gender relations, cultural norms, language constraints

	mini generator is out of order. Now it is stored in the barn a farmer.			

[a] Income, education, health, community relationships, treatment of marginalized groups, gender roles, etc., whether intended or unintended.

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed

5. Capacity and Governance Change

89. Individual and institutional capacity strengthening occurred at different levels. Here are a few examples of the support to the organization and empowerment of local governance institutions, civil society and community-based organizations.

90. FFS targeted private dehkan farmers, landless families and rural unemployed women and their families. Through FFS and through effective work carried out under the forestry component farmers became aware of possible solutions to land salinization, stopping of gullies, and managing irrigation water. The local consultants (irrigation, FFS and forestry) have increased their skills and abilities. Some of them continue to provide their services to local communities and local government either in their current capacity as extension workers or as private individuals. During the field visits to Shaartuz and Kumsangir districts it was observed that the LDU units still exist and both LDU and FFS consultants provide individual consultation and advices to the local farmers. Furthermore, a local dehkan farmers association was established to work on SLM technologies. Baseline surveys were carried out at the beginning of the project on awareness and perception of land use issues as well as basic indicators on the status of land/degradation in the project area.

91. The establishment of the Tugai community-managed forest has been an important development supported by the project. It marked a significant example of how to manage forests and provides valuable lessons for the development of community forestry in Tajikistan. However, as the leasehold arrangements were for five years and expired, now communities are not investing in the Tugai forest because they have little security of tenure. Furthermore, there are numerous restrictions on what they can and cannot do with the forested areas. The security of tenure, and in particular the length of tenure, will directly affect the level of investment by the participating local communities in protecting the forest.

Change in Capacities for Achieving Environmental Benefits

REPORTED CHANGE IN CAPACITIES [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
Acquired skills in new agricultural technologies through FFS	The project has had a profound effect in upgrading skills from the FFS to the LDUs and their capacity to carry out land use planning and to represent their constituent's interests in the planning process.	TE (Phase 1 P2I)	Trainings were not conducted in the trainees' native language	
A local 'dekhan' Farmers Association was established working on the SLM technologies.	Baseline surveys were carried out at the beginning of the Project on awareness and perception of land use issues as well as basic indicators on the status of land/degradation in the Project area.	TE (Phase 1 P2I) Observation and interviews with the farmers (July, 2015)	Due to expansion and many cases of replication of shelterbelts the improved productivity of land occurred (Jilikul)	

[a] Awareness, knowledge, skills, infrastructure, information management systems, etc.

[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed; typically assessed through change in mass behavior (e.g. compliance with regulations, participation)/ institutional activities

Change in Governance Architecture Enabling Achievement of Environmental Benefits

REPORTED CHANGE RELATED TO GOVERNANCE [a]	DETAILS [b]	SOURCES OF INFORMATION	GEF-SUPPORTED ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE	NON-GEF ACTIVITIES/ FACTORS CONTRIBUTING TO CHANGE
Establishment of the Tugai community management forest	A 5 years leasehold agreement was negotiated with the Hukumat and the three participating villages. The five years have now passed and the communities are not investing in the Tugai forest as they have little security of tenure. Furthermore, there are numerous restrictions on what they can and cannot do with the forested areas.	TE (Phase 1 P2I) Field visits and interviews (July 2015)	Facilitation of concluding of different "off-the-shelf" agreements	Tajikistan is in transition from a controlled and centralized economy to something which will resemble a free-market economy. Neither of these two states readily recognizes common property which is essentially what project initiative was directed
Communities are extremely concerned on their ability to protect the forest	One leaseholder went to Russia to work, the other two volunteer every 10 days to watch the forest. There is no interest on the part of the new leadership in the Hukumat. Sometimes, the district department of ecology comes to check the forest. Tenants think that the new leadership in the Hukumat is not willing to extend the agreement or to conclude a new one that gives them formal authority for the protection of forests.	Field visits and interviews (July, 2015)	None	Lack of governmental support and lack of cooperation between community and Hukumat

[a] Refers to decision-making processes, structures and systems, including access to and use of information; includes laws, administrative bodies, policy frameworks, trust-building and conflict resolution processes, information-sharing systems, etc.
[b] Before/ after, quantitative/ qualitative, scale of change in relation to targeted area/ unit and scale of environmental concern being addressed; typically evidenced by enactment, implementation and/ or enforcement of legislation and other binding agreements, and regular allocation of resources for implementation

6. Broader Adoption Processes

92. The SLM project helped in the development of a fledgling community forest management system and the inclusion of ecosystem resilience in the rural development agenda. The project operated in a context characterized by important structural changes in Tajikistan's policy context. Along with other donor supported initiatives, the SLM project leveraged a number of far reaching reforms and legislation in the agricultural and water sectors, and some crucial follow up actions, including the dehkan farmers debt forgiveness initiative from so-called Future Companies debts, and the development of Water User Associations.

93. Many cases of replication of the project initiatives were found. For example, many farmers not involved in the project have established trees shelterbelts at their land plots. The financing of extension services in the SLM Project have been studied with interest by UNDP and "scaled up" to other projects. The TE stated that approach followed by the SLM Project has been influential for the design of the UNDP Rural Development Programme being implemented in Soghd oblast and the Zerafshan Valley. It is likely it will influence other future initiatives, among which a DFID-funded project designed as a continuation of the existing programme. [53] To note, the use of extension services have proved expensive in other areas and requiring continued external support.

7. Contributing and Hindering Factors

94. All the project interventions have been in line with national policy agenda. The project was also consistent with the National Strategy for Combating Desertification (2002), National Biodiversity Conservation Action Plan (2003), and the country's Poverty Reduction Strategy Plan (2002). At the level that the Project has been working there is a genuine self-interest in ecosystem resilience which is likely to have provided strong motivation for local participation.

95. The project collaborated with the Water User Association Project (Winrock/USA). The WUA project operated at the scale of water units, whereas the SLM Project was able to work at the level of groups of dehkan farmers. The WUA Project and SLM Project were able to complement each other.

96. The implementation of the proposed SLM approach facilitated by the project has built local capacities, and empowered the targeted communities to organize and resolve complex problems. Importantly, the idea that development, be it economic or social, must be founded on the ecosystem ability to provide for society has been gradually introduced, as it has the Idea that the ecosystem requires broad participation of all its users, with clearly understood levels at which decisions are made. In all project sites communities and dehkan farmers have been able to participate in the decision-making process. The "vehicle" for this participation appears to have been the linkage with the FFS, LDU, JRC and Jamoat, which is further linked to the microfinance programme. Gender relations, cultural constraint and language barriers are the main hindering factors in applying new technologies.

[53] Interviews with UNDP.

8. Conclusion

97. The project was a demonstration effort that relied on replication to achieve its impacts, following the demonstration of innovative tools and approaches to SLM. The project did this through testing of new approaches (institutional, technical and financial), which were then made available for replication and upscaling. It did that by providing support and facilitation to local governance to resolve the challenges deriving from the historical system of land use and administration, and by introducing a number of appropriate technologies and methodologies for improving land and water management, and agriculture at the local scale.

98. Stress reduction has occurred and even environmental status has been improved at the local level in some cases, hence the extent of impact is not significant. In some cases it is too early for real visible impacts, except at a micro and local level.

99. A final point needs to be made concerning the sustainability of project outcomes. In some cases, it was observed during field visits that not all the beneficiaries were able to use the new technology introduced by the project. Gender relations, cultural constrain and language barriers have been the main reasons for that. It was also observed in some separate cases that there was lack of local government support, resulting in lack of cooperation between the community and the Hukumat. Availability of funding is also an issue. The continuation of interventions and its expected catalytic effects are moderately likely to occur.

OVERALL RATINGS

Environmental impact

[X]	RATING	DESCRIPTION	EVALUATOR REMARKS
	High impact achieved	Stress reduction occurring or environmental status improving at a large scale (i.e. across the landscape/ seascape or market)	
	Impact achieved	Significant stress reduction occurring or environmental status improving at low scales (i.e. in specific or disconnected areas)	
X	Some impact achieved	Stress reduction occurring or environmental status improving at low scales (i.e. in specific or disconnected areas) but extent of impact not significant compared to the dedicated resources	Stress reduction has occurred and even environmental status has been improved at local scales in some cases but extent of impact is not significant. In some cases it is too early for real visible impacts, except at a micro and local levels.
	No impact achieved	No positive environmental impact observed	
	Negative impact	Some negative impacts observed	
	Unable to assess	Available information insufficient	

Broader adoption by stakeholders of GEF-supported initiatives

[X]	RATING	DESCRIPTION	EVALUATOR REMARKS
	Highly successful	Broader adoption of most GEF-supported initiatives taking place at a large scale (i.e. across a country, region or market)	
	Mostly successful	Broader adoption of some GEF-supported initiatives taking place at a large scale; other initiatives also adopted but mostly at lower scales	

X	Successful	Broader adoption of GEF-supported initiatives taking place at low scales (i.e. within local administrative units or markets)	Cases of broader adoption in the form of replication were found at the local level.
	Partially successful	Plans for broader adoption well-established with supporting resources and institutional framework in place, but mostly not yet implemented	
	Unsuccessful	GEF-supported initiatives not adopted or expanded on by stakeholders beyond project duration and resources	
	None	No significant broader adoption taking place (Note: plans for broader adoption may exist but implementation unclear)	

ANNEX 1

PHOTO LOG

1. Gardens in Ramit

2. Gardens in Gissar

3. Nurseries in Gissar

4. Jamoat Resource Center in Vahdat district

5. Jamoat Resource Center in Urmetan

6. Micro-lending Organization in Urmetan

7. Gardens in Urmetan

8. River banks stabilization in Gissar

9. Gardens in Tajikabad

11. The spare parts of broken generator stored in the household's barn (village Qum of Jilikul)

12. Traditional Tajik stove for cooking, Jilikul district

13. Energy-efficient stove used in one of the household in Jilikul district

14. Energy efficient stove that is not often used in one of the household in Jilikul district

15. Almond tree plantations on the waterlogged land (Jilikul district)

16. Orchards plantation (peach trees) – significant source of income for the Dekhan farm - project beneficiary in Kumsangir district

17. Canal side tree planting to prevent bank erosion, project site in Kumsangir district

18. Replication of shelterbelts by farmers in Shaartuz

19. Almond tree plantations on the waterlogged land became a good source of income, Kabadiyan

20. Rehabilitated irrigation facilities in Kabadiyan

23. Water Users Association’s equipment in Kulyab District