UNDP Central Asia Multi-Country Programme on Climate Risk Management

Tajikistan

Project title:	Climate Risk Management in Tajikistan
Project Objective:	Increasing resilience of rural mountain communities through agro–forestry and climate related disaster management
Expected Outputs:	Agro-forestry and related CRM approaches mainstreamed in Tajikistan
Implementing Agency:	UNDP

Project Description

Current climate related stresses and projected changes in climate result in significant social, economic and environmental risks in Tajikistan. The World Bank has identified Tajikistan as the country most vulnerable to climate risks among all European and Central Asian Countries. Economic losses associated with climate related disasters regularly exceed US$100 million annually and have been estimated as high as 5% of annual GDP over the period 1009-2008. Seventy percent of the population are dependent upon agriculture which is particularly exposed to climate related natural disasters. More than 2.1 million people are classified as food insecure by the WFP, representing more than one third of the population. Projected rising temperatures and changes in rainfall and glacial melt patterns are likely to compound existing food security, energy security and poverty challenges. They also result in more frequent and severe climate related disasters (floods, landslides, and droughts). Many of these climate risks are compounded by poor governance and land management practices.

This project seeks to build coordinated capacity at a national, sub-national and local level to respond to climate risks. It seeks to synthesize the technical and economic basis for CRM interventions, demonstrate their efficacy, identify potential funding routes for scaling up, deliver capacity building for organisations and individuals, and catalyse learning for larger scale CRM development. Consideration will be given to gender issues and to local knowledge.

A number of CRM related initiatives are being undertaken in Tajikistan. However, most are being implemented on an ad hoc basis and with little concern for up-scaling or integration into national level policy. Few interventions take into consideration the complexities and multi-sectoral impacts of climate variability and change. As a result there is very little political traction for implementing proactive and integrated adaptation responses.

As a thematic focus, this project promotes the development of productive agro-forestry as a response to climate risk. This involves establishing models to support sustainable forest management, and encourage reforestation of previously deforested land in mountainous regions. The project explores the important linkages between agro-forestry and disaster risk reduction (land stabilisation and river bank management), improved water management in agriculture (water rights, water conservation techniques), and livestock management (land access and grazing rights). It also incorporates linkages to biodiversity considerations, and the potential use of resilient indigenous cropping varieties.

In geographic terms, while focussing primarily on national level capabilities, the program will use the foothills of Gissar valley, as a pilot region for implementation of CRM interventions and financing structures at the local level.

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Acronym List

BCPR	Bureau for Crisis Prevention
CA	Central Asia
CA-CRM	Central Asian Multi-Country Programme on Climate Risk Management
CACILM	Central Asian Sustainable Land Management Programme
CAREC	Central Asian Republics Economic Commission
CDM	Carbon Development Mechanism
CER	Certified Emission Reduction
CIS	Commonwealth of Independent States
CP	Communities Programme
CRM	Climate Risk Management
DFID	Department for International Development
DIM	Direct Implementation Modality
DNA	Designated National Authority
EWS	Early Warning System
GCM	Global Circulation Model
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIFT	Green Initiative for Tajikistan
GLOF	Glacial Lake Outburst Flood
GTZ	German Technical Cooperation
ICARDA	International Centre for Research in Dry Areas
IMAC	Informal Management Analysis Centre
INC	Initial National Communication
INTESDE	International Centre of Science and Technology
ISDR	International Strategy for Disaster Reduction
JCPS	Joint Country Partnership Strategy
JICA	Japan International Cooperation Agency
MAHEM	Main Administration on Hydrometeorology and Environmental Monitoring
MCN	Multi-county Climate Network
MDG	Millennium Development Goal
MOA	Ministry of Agriculture
MOE	Ministry of Energy
MOEDT	Ministry of Economic Development and Trade
MOF	Ministry of Finance
MONP	Ministry of Nature Protection
MOWM	Ministry of Water Management
NCN	National Climate Network
NAPA	National Adaptation Programme of Action
NAS	National Adaptation Strategy
NCCC	National Commission on Climate variability and change
NPMU	National Project Management Unit
OCHA	Office for Coordination of Humanitarian Affairs
OSCE	Organisation for Security and Co-operation in Europe
PEI	Poverty and Environment Initiative
PPCR	Pilot Programme for Climate Resilience
PRS	Poverty Reduction Strategy
PRSP	Poverty Reduction Strategy Paper
MCN	Multi-Country Network
REACT	Rapid Emergency Assessment and Coordination Reaction
SDC	Swiss Development Corporation
SGP	Small Grants Programme
SNC	Second National Communication
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate variability and change
WHO	World Health Organisation
WFP	World Food Programme

1. Project Purpose

1. The Republic of Tajikistan is a low income country with GDP of approximately $5 billion and a growing population of 7 million. It is the poorest country in the Commonwealth of Independent States (CIS) region and the country most vulnerable to climate risks. With average per capita income of US$ 430 per annum, seventy percent of the population are dependent upon agriculture, a sector which is particularly exposed to climate related natural disasters. More than 2.1 million people (or almost one third of the population) are classified as food insecure by the WFP.

2. These populations are mainly located within the mountainous regions of Tajikistan. Engaged in subsistence type agriculture, they are exposed to increasing frequency and severity of climate related impacts (snowmelt floods, landslides and drought), compounded by poor governance and land management practices. In particular, the high levels of deforestation over the last 20 years since the civil war (primarily for fuel wood), have resulted in higher levels of land degradation and soil erosion, and has increased the vulnerability of these populations to food insecurity and climate related natural disasters, such as floods, landslides and drought. Having lost their agricultural capacity, these populations have turned towards uncontrolled livestock grazing, which has in turn further reduced the level of forest cover.

3. The government of Tajikistan is increasingly aware of climatic risks to marginal populations and is willing to sensitize its policy and institutional framework to the anticipated impacts of climate change, and to address the issues associated with deforestation and productive land use, The project therefore aims to strengthen the institutional, legal and technical capacity of key institutions, with a primary focus on the Forestry Committee under the Committee for Environmental Protection, who play a central role in the management of mountainous officially classified as forested. Sustainable models of agro-forestry will be explored in typical mountainous communities in the Gissar Valley where heavy deforestation has occurred, and which are particularly vulnerable to climate related events. These interventions will have both a poverty alleviation and land stabilisation focus. Support will be provided to improving national level communication of climate risks through the media. A national CRM network will be established, a national CRM profile developed, and best practice disseminated at both a national and local level.

2. Situation Analysis

Tajikistan Climate

4. Tajikistan is already characterised by the significant inter-annual variability in its climatic parameters[1]. Due to the mountainous nature of the country, the climate is characterised by a wide-range of temperatures, humidity and rainfall. Annual mean temperature varies considerably depending on the elevation of the area in question. For example, the annual mean temperature varies from 17°C in the south to -6°C in the Pamir range[2]. The Eastern Pamir in particular is known for its drastic variations in climate. Absolute minimum temperatures in this mountain range reach -63°C whilst the maximum temperatures reach 47°C - a temperature range of over 100°C[3]. Similarly, annual rainfall varies considerably across Tajikistan. Annual rainfall in the lowland hot deserts of northern Tajikistan and the cold mountain deserts of eastern Tajikistan averages approximately 70-160 mm, compared with 1 800 mm in central Tajikistan[4].

5. Predicted climate change is likely to exacerbate the above discussed inter-annual variability and may lead to harsher conditions. An increase in temperature is already evident across Tajikistan, although there is variation in the extent of the increase (see Figure 1). Annual temperatures have

[1] Second National Communication (2008) The Republic of Tajikistan.

[2] Second National Communication (2008) The Republic of Tajikistan.

[3] Second National Communication (2008) The Republic of Tajikistan.

[4] Second National Communication (2008) The Republic of Tajikistan.

shown a trend of decreasing in high mountain areas, but increasing in the lowlands. Mean minimum temperatures during the autumn period have increased by 0.5-2.0°C whilst mean maximum temperatures have increased by between 0.5-1.0°C over the period 1940-2005[5]. Recorded rainfall shows an uneven distribution of change (see Figure 2), largely as a result of the mountainous relief of Tajikistan[6]. Annual rainfall, for example, has decreased in Eastern Pamir and Murghab, by 5-10% and 44%, respectively, over the period 1940-2005. Conversely, annual rainfall has increased in Central Tajikistan and in the mountains of Northern Tajikistan by 5-10% and 5-30%, respectively, over the same period[7]. As both current and future variability and changes need to be addressed, Climate Risk Management (CRM) is an appropriate response, integrating climate-related disaster risk reduction and climate change adaptation.

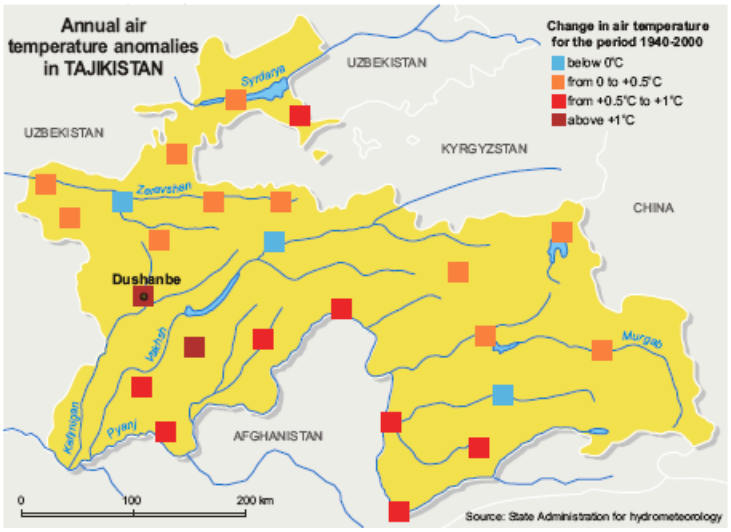
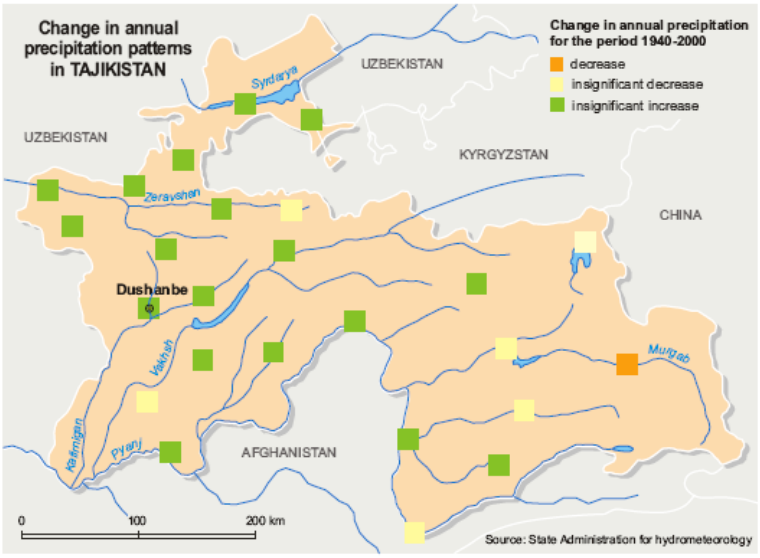


Figure 1. Temperature changes across Tajikistan for the period 1940-2005 (Source: Second National Communication. 2008. Republic of Tajikistan).



[5] Second National Communication (2008) The Republic of Tajikistan.
[6] Second National Communication (2008) The Republic of Tajikistan.
[7] Second National Communication (2008) The Republic of Tajikistan.

Figure 2. Rainfall changes across Tajikistan for the period 1940-2005 (Source: Second National Communication. 2008. Republic of Tajikistan).

Impacts of Climate Change on key sectors

6. Tajikistan is vulnerable to a range of potential stresses and climate related disasters, with serious environmental and socio-economic implications. Key impacts are felt in the availability and quality of water supply, a reduction in agricultural productivity, increased energy shortages from less effective hydropower, and threats to human health. If timely sustainable CRM measures combined with suitable policy and institutional changes are not implemented, many hard-won development gains are likely to be jeopardized.

7. Floods and landslides caused by intense rainfalls and rapid melting of snow, due to higher temperatures are already causing considerable damage to infrastructure and hydropower stations resulting in additional power shortages[8]. The impacts of climate variability on the agriculture sector are already having major socio-economic consequences[9]. For example, higher temperatures, changing rainfall patterns and an increase in the frequency of extreme weather events will severely affect the agriculture sector by resulting in: i) a decrease in productivity; ii) a deterioration of grasslands; and iii) more frequent pest outbreaks.

8. At present, drought is a significant threat to development and livelihoods in Tajikistan. For example, a severe drought during 2000-2001 in Tajikistan resulted in chronic malnutrition of a large proportion of the population because it reduced water supplies (i.e. drinking and irrigation water) and the population was forced to eliminate meat and dairy from its diet[10]. During this drought, access to water from the Amu-Darya River was reduced by half[11]. Drought disasters are likely to become more frequent and of a magnitude greater as a consequence of global warming, unless steps are put in place to reduce the vulnerability of communities and ecosystems to such climate-related disasters.

Food security

9. Seventy percent of Tajikistan's total population lives in rural areas and is dependent on the agriculture sector. Despite the fact that only 7% of the country is arable (of which only 5% is cultivated due to the mountainous nature of the country)[12], Tajikistan's agriculture sector[13] is the most important component in the economy. In fact, Tajikistan is an important source of agro-biodiversity and is one of the main centres of origin for cultivated plants worldwide[14]. The sector contributes 50% towards employment and 20% towards GDP. It is vital to future sustainable economic development in Tajikistan[15]. The predicted reduction in crop and livestock productivity as a result of climate change and variability is therefore likely to have a considerable impact on food security, livelihoods and Tajikistan's economy.

10. Although availability of food is not generally an issue within Tajikistan, the rising cost of food over recent years[16] is likely to continue to exacerbate food insecurities. During 2008, 1.5 million people were classified as food-insecure and a further 650 000 people were found to be critically food-

[8] Second National Communication (2008) The Republic of Tajikistan.

[9] World Bank (2008) Adaptation Report.

[10] World Bank, 2009. Adapting to Climate Change in Europe and Central Asia.

[11] Second National Communication (2008) The Republic of Tajikistan.

[12] Curtain, M. 2001. Environmental profile of Tajikistan. Asian Development Bank.

13 Cotton is Tajikistan's main cash crop and accounts for approximately two-thirds of the gross production value in the agriculture sector. Tobacco, silk, fruits and vegetable are also exported. Livestock is also an important component of the agricultural sector.

[14] UNDP-GEF "Sustaining Agro-biodiversity in the face of climate change: vulnerability and adaptation" prodoc, 2009.

[15] Second National Communication (2008) The Republic of Tajikistan.

[16] During 2008, food prices rose by 26% (Central Asia Regional Risk Assessment: Responding to Water, Energy and Food Insecurity. UNDP Regional Bureau for Europe & CIS 2009).

insecure by a 2008 Food Security Monitoring survey undertaken by the World Food Programme (WFP)[17].

Climate-related disasters

11. Climate-related disasters are particularly problematic in Tajikistan. Tajikistan has been identified as the country within Eastern Europe and the CIS that has suffered the greatest economic impact as a result of climate-related disasters during 1990-2008[18]. The economic loss associated with climate-related disasters in Tajikistan, for example, has been recorded to be over 70% of GDP[19]. The "compound crisis" resulted in an economic loss in excess of US$ 250 million or approximately 7% of Tajikistan's Gross Domestic Product (GDP) in 2007[20]. Similarly, the 2000-2001 drought cost Tajikistan an estimated 5% of its GDP. In fact, climate-related disasters in Tajikistan result in losses and damages exceeding US$100 million annually[21]. The proportion of the population affected by climate-related disasters is the second largest out of the 28 countries investigated[22].

12. Tajikistan's mountainous topography provides little opportunity to live away from natural hazards. There is little space away from rock-fall or avalanche zones. Even communities in the broader valleys of the country often are subject to flooding coming from the mountains and hills of Tajikistan, or neighbouring countries. These hazards are being compounded by changes in climate. The spring floods and mudslides in 2009, for example, affected 40 districts, killed 26, and displaced well over 3000 people. Furthermore, over 2000 houses, hospitals, schools and other buildings were severely damaged and abandoned. Affected communities are still struggling to rebuild their homes, damaged infrastructure and livelihoods. This indicates a low level of capacity within Tajikistan for climate-related disaster preparedness and recovery, locking a large portion of population in an ongoing poverty trap.

13. The country experienced a "compound crisis" during the 2007/2008 winter when exceptionally low temperatures triggered considerable livestock losses, reductions in agricultural productivity and breakdowns in energy infrastructure[23]. The Tajikistan Hydro-meteorological Agency (hereafter referred to as the Hydromet) reported snowfalls during this winter to be 245% greater than the average snowfalls normally experienced over winter. Day time temperatures during January 2008 averaged -15°C, when temperatures during January normally average between -1°C and 3°C. Temperatures in rural areas reached as low as -25°C[24]. This event significantly heightened existing energy, water and food insecurities; reduced economic growth; and resulted in a humanitarian crisis. The disaster response by the government and the international community was insufficient and as a result, millions of people went without electricity during a particularly harsh winter. In the months that followed, this crisis was further aggravated by rising global food costs and the onset of drought during the following spring and summer[25].

[17] UNDP-UNEP PEI country programme concept note 2009; Central Asia Regional Risk Assessment: Responding to Water, Energy and Food Insecurities. UNDP Regional Bureau for Europe and CIS. New York. 2009.

[18] World Bank (2009) Adapting to Climate Change in Europe and Central Asia.

[19] World Bank, 2009. Adapting to Climate Change in Europe and Central Asia.

[20] UNDP-UNEP PEI country programme concept note 2009; Central Asia Regional Risk Assessment: Responding to Water, Energy and Food Insecurities. UNDP Regional Bureau for Europe and CIS. New York. 2009.

[21] Information provided to the international consultant during the mission visit to the Ministry of Water Resources in Dushanbe on 6 August 2009.

[22] World Bank (2009) Adapting to Climate Change in Europe and Central Asia.

[23] Central Asia Regional Risk Assessment: Responding to Water, Energy and Food Insecurities. UNDP Regional Bureau for Europe and CIS. New York. 2009.

[24] Central Asia Regional Risk Assessment: Responding to Water, Energy and Food Insecurities. UNDP Regional Bureau for Europe and CIS. New York. 2009.

[25] Central Asia Regional Risk Assessment: Responding to Water, Energy and Food Insecurities. UNDP Regional Bureau for Europe and CIS. New York. 2009.

Water and energy security

14. Current climate variability is already adversely impacting on the most important sectors in Tajikistan (including water, energy, agriculture and health), as was highlighted in the 2007/2008 "compound crisis". Future climate change impacts are likely to further impact on these sectors resulting in negative consequences for the country's socio-economic development. Tajikistan's Second National Communication (SNC, 2008) concluded that although all sectors are vulnerable to the impacts of climate variability and change, water and agriculture are particularly susceptible.

15. Due to the country's specific climate conditions and topography[26], Tajikistan's mountains are considered to be the main glacial area within CA, containing 60% of the total number of glaciers in CA[27]. Tajikistan has approximately 8000 glaciers, which occupy 6% of the total land surface area of the country[28]. Furthermore, glaciers within Tajikistan contribute 10-20% (and up to 70% during the dry season) towards the runoff of all the major rivers in CA, which constitutes between 40-60% of all the fresh water resources in CA. Glaciers also play a crucial role in supplying water to the Amu-Darya River, which constitutes one of the main sources of water replenishing the Aral Sea.

16. However, Tajikistan's small glaciers (defined as less than 1km^2) are likely to disappear completely by 2050 as a result of higher temperatures[29] (see Figure 3). Glacial melting is already evident. For example, the Fedchenko Glacier in Pamir Mountains, the largest valley glacier in CA, is currently retreating by 10-16 m per year. The anticipated future reduction in glacial volume in Tajikistan is likely to have considerable adverse consequences. In the short-term there is substantial risk of glacial overflows[30] and flash floods, which will threaten downstream populations and critical infrastructure. Vital glacier-fed rivers, including the Amu-Darya, Syr-Darya and Nurek (which are critical sources of water for irrigation and hydropower purposes) and the Cofar Nigan and the Dushanbinka (important sources of potable water for Tajikistan's capital city, Dushanbe), are immediately threatened[31]. Climate variability and change thus pose a significant risk to the water and energy security of both Tajikistan and all other countries within CA, as it is likely to have a major impact on the availability of water for hydropower, irrigation and drinking purposes[32], which is particularly problematic because of the regional conflicts that a reduction in water availability is likely to cause. Furthermore, accelerated glacial melting is likely to exacerbate the intensity and frequency of climate-related disasters such as floods, mudslides, avalanches[33] and landslides.

[26] Ninety-three percent of Tajikistan is considered mountainous.

[27] Information provided to the international consultant during the mission visit to the Ministry of Water Resources in Dushanbe on 6 August 2009.

[28] Information provided to the international consultant during the mission visit to the Ministry of Water Resources in Dushanbe on 6 August 2009.

[29] Second National Communication (2008) The Republic of Tajikistan.

[30] Or glacial melt streams.

[31] Draft notes: Strengthening Tajikistan's Climate Resilience through the PPCR.

[32] Second National Communication (2008) The Republic of Tajikistan.

[33] Every winter, avalanches cause traffic to cease along the Dushnbe-Khujand highway, the main highway in Tajikistan.

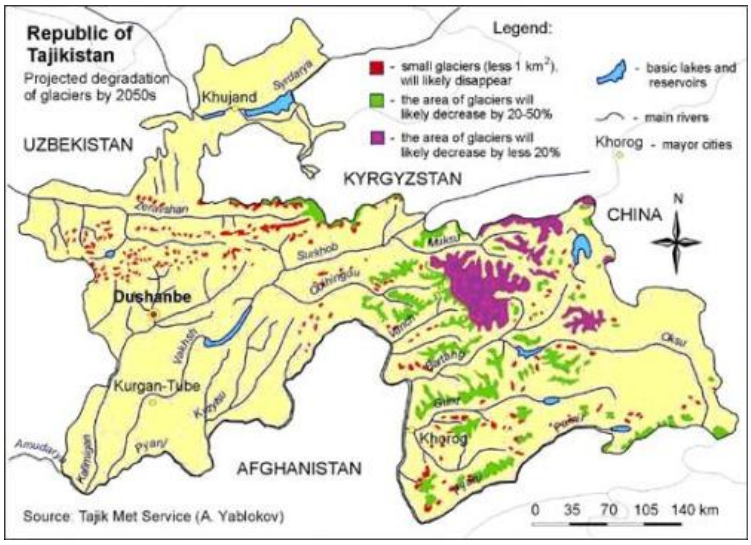


Figure 3. Map of Tajikistan indicating the extent of glaciers likely to disappear by 2050 as a result of changing climatic conditions (Source: Perelet [HDR-UNDP], 2008).

17. Hydropower plays a critical role in the economy, representing 98% of the total energy capacity of the country, and making Tajikistan the third largest producer of hydropower in the world. Recent monitoring of Tajikistan's hydropower facilities indicate that levels are below historical averages and energy production has suffered as a result. There are strong seasonal variations in power supply, the lowest supply being during winter when demand is at its highest[34]. The majority of rural areas only receive electricity for six hours a day and unplanned power outages are frequent. Schools have suffered and dropout rates are high as a result[35]. Remote areas are frequently left without any power and other areas are sometimes limited to only one hour of power a day. This can result in multiple deaths from cold exposure during winter[36]. Water levels of the Nurek hydropower station in Tajikistan during 2008, for example, were recorded to be 9% below historical levels, which triggered a reduction in the generation of hydropower and a subsequent shock[37] that adversely affected industrial productivity[38]. These issues are compounded by unreliable imports. For example, a decision was made in January 2009 by the Uzbekistan government to cease transmission of electricity from Turkmenistan into Tajikistan, which resulted in increased electricity rationing[39]. Overall, the current and predicted future energy crisis has and will continue to have drastic socio-economic consequences and will hinder development unless alternative solutions are adopted. One of the key resulting factors of lack of power availability, is that rural populations turn to biomass for heat and cooking purposes, driving unsustainable use of resources and deforestation.

[34] UNDP-UNEP PEI country programme concept note 2009.

[35] Central Asia Regional Risk Assessment: Responding to Water, Energy and Food Insecurities. UNDP Regional Bureau for Europe and CIS. New York. 2009.

[36] Information provided by Alain Lambert, from BCPR, during his review of the first draft of this document.

[37] An "electric shock" and subsequent reduction in industrial growth occurred simultaneously in Kyrgyzstan.

[38] Central Asia Regional Risk Assessment: Responding to Water, Energy and Food Insecurities. UNDP Regional Bureau for Europe and CIS. New York. 2009.

[39] Dushanbe, for example, has been restricted to 15 hours of electricity per day.

3. Problem and Root Causes

Climate related

18. Tajikistan is likely to experience considerable additional economic losses, humanitarian stress and environmental degradation as a result of current climate variability and future climate change impacts. Impacts likely to adversely affect Tajikistan include:

- An increase in mean annual air temperature by 2.3°C by 2030[40];
- Higher evapotranspiration rates;
- Cariability of rainfall patterns, with average rainfall likely to increase by 8% in the territories up to 2500m above sea level by 2030 and decrease in the mountainous areas by 3% by 2030[41];
- Increased intensity and frequency of climate-related disasters, including floods, mudslides, landslides, droughts and avalanches;
- More frequent and intense of extreme weather events, including heat waves, dust storms, haze, strong winds and episodes of heavy rainfall.

Table 1. The climate-related root causes and the impacts they are likely to have on Tajikistan, under present business-as-usual development.

Climate-related root causes	Impacts
Increase in temperatures	• Decrease in water supply: • Particularly a decrease in water volume of the Aral Sea and the Amu-Darya River basins; and • Melting of glaciers causing intense winter run-off (including flash floods) and decreased summer flow; • Decrease in water quality; • Increase in land degradation; • Decrease in agricultural productivity, particularly grain; • Decrease in livestock productivity as a result of deteriorating grassland vegetation; • Increase in pest outbreaks[42]; • Increase in diseases[43]; • Increase in degradation of flood-plain forests (tugays); • Decrease in biodiversity[44].

[40] Second National Communication (2008) The Republic of Tajikistan.

[41] Second National Communication (2008) The Republic of Tajikistan.

[42] The spread of cotton worm due to increase in temperature is likely to cause a reduction of the cotton harvest by up to 50% (SNC, 2008). Turkestan brown-tail moths outbreaks have recently started occurring in areas where previously their existence was not recorded. This moth is problematic because: i) it leads to severe allergic reactions in a large proportion of the public; and ii) its caterpillar devastates the foliage of trees and shrubs.

[43] Higher temperatures are likely to lead to malaria zones reaching up to 2000 m above sea level (World Bank, 2008).

[44] Loss of biodiversity is a cause of degradation of habitats due to deforestation, soil erosion and water pollution.

Changing precipitation patterns	• Increase in drought frequency; • Increase in flood frequency; • Decrease in agricultural productivity: • Due to both a depletion of spring stocks of soil moisture and an increase in occurrence of cereal crop diseases; • Increase in soil erosion[45] leading to degraded agricultural land and grasslands; • Increase in landslide and mudflow frequency: • Resulting in loss of life, displacement of communities and damage to infrastructure; • Increase in diseases such as enteric infections[46] and malaria[47].
Extreme events a) Heat waves b) Intense rainfall c) Prolonged droughts d). Cold weather –frost	Increase in heat waves resulting in: • Decrease in water supply and quality; • Decrease in grain, cotton and livestock productivity[48]; • Decrease in grassland vegetation productivity[49]; • Increase in heat strokes; • Increase in forest fires. Increase in intense rainfall events resulting in: • Increase in floods[50]; • Increase in mudslides[51]; • Increase in landslides; • Increase in avalanches; • River bank erosion; • Damage to infrastructure; • Soil erosion. Increase in number of prolonged droughts resulting in: • Decrease in water supply and quality; • Decrease in grain and livestock productivity; • Increase in forest fires; • Slow onset, chronic malnutrition. Increased cold weather events, resulting in • Increased mortality rates from cold • Negative impacts out agricultural crop yields

Non-climate related stress multipliers

19. Tajikistan is the poorest country in CA, with 53% of the population living below the poverty line[52,53]. At present, countries within Central Asia (CA), including Tajikistan, suffer an "adaptation

[45] 97.9% of the nation's agricultural land is subject to erosion (PRS, 2007).

[46] Changing rainfall patterns that result in floods often cause the spread of infectious diseases such as Typhoid Fever and dysentery, both of which have affected the population of Tajikistan after flooding events.

[47] Malaria is endemic in Tajikistan (World Bank, 2009. Adapting to Climate Change in Europe and Central Asia).

[48] Sheep breeding will be adversely affected by frequent heat waves and longer hot periods due to its dependence on natural grasslands.

[49] Long dry periods will likely increase desertification processes in Southern and Central Tajikistan.

[50] Mountain lakes and reservoirs vulnerable to breaches are often the cause of floods.

[51] Mudslides are often a result of outbursts of glacial lakes due to higher temperatures and intense rainfalls (Second National Communication, 2008).

[52] Tajikistan Living Standards Survey, 2007 (taken from the UNDP-UNEP PEI Country Programme Concept Note, 2009).

[53] Due to high unemployment and poverty, many Tajikistan nationals live and work in other countries sending remittances back home. The Economist Intelligence Unit estimates that remittances could provide 40 -75 % of the GDP (UNDP-GEF. "Sustaining Agro-biodiversity in the face of climate change: vulnerability and adaptation" Prodoc, 2009).

deficit"[54] primarily as a result of a combination of socio-economic factors and the Soviet legacy of environmental mismanagement[55]. A recent World Bank publication "Adapting to climate change in Europe and Central Asia" (2009) reported the relative vulnerability of Europe and Central Asian countries (28 in total) to predicted climate change using a vulnerability index. The vulnerability index was based on a combination of three sub-indices, namely: i) *exposure* (measuring the strength of future climate change compared to present natural variability); ii) *sensitivity* (based on indicators likely to exacerbate the climate change impacts, such as renewable water resources per capita, the contribution of agriculture to the economy and share of electricity derived from hydro-electric power)[56]; and iii) *adaptive capacity* (determined by combining social, economic and institutional measures). Based on this vulnerability index, Tajikistan was ranked the country most vulnerable to climate change impacts.

20. Climate risks are exacerbated by a number of anthropogenic activities that reduce Tajikistan's natural resilience to withstand current climate variability and future climate change impacts. These include ongoing high levels of deforestation, resulting in significant environmental degradation and exposure to natural disasters, over irrigation; pollution; economic migration and poor settlement planning in high risk areas. Attempts to meet the Millennium Development Goals (MDGs) are likely to be severely undermined by the impacts of climate variability and change and the associated increase in vulnerability of the population unless timely CRM measures are implemented. For example, environmental sustainability concerns are tied directly to the tasks outlined under MDG 7[57].

Deforestation

21. Deforestation is the key risk multiplier in terms of climate change impacts in Tajikistan. Precipitation and soil permitting, forest vegetation grows to the timberline (about 3,700 m) almost everywhere in Tajikistan. However, the level of forest cover has declined from over 20% to less than 3% over the last century, although some estimates put it at lower than 2%. It is estimated that there are now less than 400,000 ha remaining, but a lot of this is of degraded quality (no more than 30 cu m per ha).

22. Across Tajikistan, there is intensive deforestation in order to provide fuelwood for heating and cooking, particularly as a result of recurrent energy shortages[58]. As a result, total forest area within Tajikistan has been reduced from 1.8 million hectares to 410 000 hectares over the past 50 years[59]. Initially driven by Soviet era felling of the Tugai forests for cotton production, deforestation is now driven primarily by illegal cutting, conversion to agricultural land, fuelwood harvesting and over grazing.

23. Deforestation increases climate risks by increasing the rates of land degradation and reducing slope stability in mountainous regions. Deforestation has resulted in increased levels of wind and water erosion and land-slides, particular in mountainous areas and along river banks. A combination of steep mountain slopes, naturally unstable soils and anthropogenic activities contributes to approximately 50 000 landslides per year in Tajikistan, with 1 200 of those severely damaging populated areas and infrastructure[60]. These events can reduce the availability of land for agriculture. Intense rainfall events result in increased run off, reducing water retention capacity of agricultural soils. Soil exposure, as a result of deforestation, has promoted the

[54] This includes being ill-adapted to current climatic conditions.

[55] World Bank (2009) Adapting to Climate Change in Europe and Central Asia.

[56] A measure of the overall quality of infrastructure in a country, as well as the proportion of the population over 65 years old was also included in the *sensitivity* sub-index (World Bank, 2009. Adapting to Climate Change in Europe and Central Asia).

[57] MDG 7 refers to ensuring environmental sustainability including providing 74% of the rural population in Tajikistan with safe drinking water.

[58] This process has become more intense since the break up of the Soviet Union.

[59] Information provided to the international consultant during a mission visit to the Ministry of Water Resources in Dushanbe, August 2009.

[60] National Development Strategy (NDS) (2007) The Republic of Tajikistan - up to 2015.

occurrence of dust storms. This is problematic because dust content in the atmosphere (which is greater in eroded regions) increases snow and glacial melting rates[61] [62].

24. These environmental effects often require large financial investments in mitigation measures (walls and barriers) to protect vulnerable infrastructures. A particular example are the losses of Tugai forests, which result in dangerous mudflows, threatening settlements and requiring significant expenditures on protective measures. The main types of indigenous forest all contribute to climate risk mitigation for mountainous communities. Broad leaf forests, found in the Gissar region restrain avalanches, stop erosion and flooding, prevent landslides, and regulate water runoff and local climate. Juniper forests, found at higher attitudes, are drought resistant and prevent soil erosion, protecting the hillsides from landslides and the soil from being washed away. Small leaved mountain forests are found in flood belts near rivers from 1500m to the timberline, and support erosion control alongside riverbanks. Tugai forests in lower regions provide specific mitigation against mudflows and flooding.

25. After independence, the civil war witnessed the breakdown of national forest management structures. Weak governance systems remain, compounded by a lack of finance and capacity. Community level involvement in forest conservation and economic management is minimal. Intensive deforestation continues in the remaining protected forested areas, and there has been only limited progress in encouraging afforestation activities over recent years, despite government policy commitments. The issue of land rights remains unresolved, discouraging communities from ownership and stewardship of forested lands. Land tenure plays a role in this problem in that ownership rights are not secured for either communities or private owners, w*h*ich results in a tragedy of the commons[63]. This also forms a barrier to reforestation projects. There is virtually no land market in Tajikistan. Land certificates only indicate rights on land use but not ownership. Even though these certificates can be transferred to the next generation, the farmers cannot use their land certificates as collateral or to sell the land[64].

26. Most (previously) forested areas are state property. Forestry policy is controlled by the Committee on Environmental Protection, which has both national and local structures. It has three institutions – the State Department of Forestry and Hunting, the State Department of Protected Areas and the Scientific Institute of Forestry (part of the Academy of Sciences). About 2.6 m hectares falls under some protection (about 18% of total territory). The Institute is responsible for improving genetic selection, technologies, biodiversity considerations and pest control.

27. The primary institution for managing forestry policy is the State Department for Forestry and Hunting. It controls 40 regional Leskhoz (forest management units), 5 tree nurseries and 13 temporary protected areas (zakazniks). The Leskhoz are supervised by national, rather than local government. Most forests in Tajikistan are managed by Leskhoz, with another 50,000 ha managed by collective farms. The Leskhoz are the primary vehicle for forest protection, restoration and conservation management. They should form part of any activity that seeks to build financial and institutional capacity to deal with CRM in the forestry sector. Each Leskhoz has between 20-40 staff.

28. Tajikistan's government is aware of the importance of the forestry sector and its positive long-term impacts on all other natural resources. It has demonstrated commitment by instigating the National Forestry Program and has supported reform of the Forestry Code. GoT has attempted to reduce forest degradation and destruction over a number of years through the National Biodiversity Strategy and Action Plan (NBSAP), the National Environmental Action Plan (NEAP)

[61] Recent literature suggests that dust content on snow and glaciers increases the amount of solar radiation absorbed, consequently accelerating melt rates. (Painter *et al.* 2007. Impact of disturbed desert soils in duration of mountain snow cover. Geophysical Research Letters. Vol 34, L12502, doi:10.1029/2007GL030284).

[62] Curtain, M. 2001. Environmental profile of Tajikistan. Asian Development Bank

[63] Information provided to the international consultant during a mission visit to the Swiss Development Cooperation offices in Dushanbe on 7 August 2009.

[64] Information provided by Keti Chachibaia from UNDP Bratislava during the review of the first draft of this document.

and the National Forestry Program (NSP). The forestry code remains the legal basis although a new code is currently under consideration that would support community level engagement in forest management. The National Forestry Program (NFP) sets out the national policy approach to forest management. It does highlight the protective functions of forests, and allows timber extraction. The Forestry Code is under revision and if passed, will improve the recognition of community level involvement in sustainable forestry management and reforestation.

29. In general, Tajikistan's forest related economic capability has been decimated as a result of deforestation. Forestry (including orchard fruit trees which are classified as natural forest), and agro-forestry (combining forestry with sustainable agriculture and livestock management) have the capacity to offer opportunities for economic diversification and to build resilience to climatic stress at the community level. Tajikistan's indigenous forests themselves provide significant economic benefits. Broadleaved forests provide walnut and apple. Hard leaved light forests include pistachio formations. Small leaved mountain forests can provide significant volumes of firewood due to high coppicing rates (salix, populous). All can provide grazing fodder if managed sustainably, without destruction of juvenile growth. There are a range of native and exotic fruit and nut trees that offer high value cropping varieties, but access to state owned land for cultivation remains restricted.

30. The absence of sustainably managed indigenous forests, and a lack of community land access and management results in significant opportunity costs, economic losses and higher levels of poverty. According to data from the World Bank, in 2007 some 17 percent of the population lived below the extreme poverty line. It is estimated that 75 percent of the poor and 72 percent of the extremely poor live in rural areas. Dependent upon the agricultural sector, they are heavily exposed to climatic shocks. The communities most affected are those in mountainous regions involved in small scale subsistence agriculture. Forestry eco-system services are vital to ensuring their resilience.

31. As a result of the lack of domestic production capacity, *timber imports* represent a costly import and have a significant negative impact upon the national balance of payments. Most time products are imported from Russia.

32. For rural households, *firewood* is the most important energy source but the existing forest resources cannot meet demand. It is estimated that some 70% of the population (5 million people) depend on firewood. It is used inefficiently, usually without drying and in inefficient stoves. FAO (2008) estimate an annual supply of 168,000 cu m of fuelwood per year, although it is likely that demand is much higher, but is currently being met by dung. GIZ estimates that a small village of 150 households would require a plantation area of 270-360 ha to cover its fuelwood requirements. Firewood is sold informally, either through the Leskhoz or at roadside. Estimates of annual revenue per ha of *Salix* or *Populous* species for fuelwood production range from 63-111 Eur per ha (GIZ 2010). The establishment of fuelwood plantations would not only support economic development, it would also reduce wind and water erosion, as well as protecting existing forest biodiversity.

33. *Non timber forest products (NTFPs)* can offer a core pillar for rural economic development. They include seeds and nuts, hay fodder, fruit, berries, oils, medicinal plants, honey and the production and sale of seedlings. These products are easily tradable for cash and also mitigate food security concerns. Demand is growing for NTFPs, but there is currently little evidence of the community being able to respond. Currently, Leshoz structures survive on the cultivation and sale of NTFPs to offset their small operational budgets. Leskhoz nursery sales of fruit trees provide an important revenue stream, although the use of obsolete technologies, low seedling survival rates and poor maintenance mean that productivity and yield are low compared to the potential. At a community level, NTFPs such as fruits and nuts are usually grown at a household garden level. Opportunities to use Leskhoz land are limited by restrictions on land tenure. The lack of scale means that processing and added value activities are difficult to organise at community level.

34. The failure to support economic diversification through forest products, reduces economic opportunities for climate vulnerable communities, increases the reliance on livestock as a livelihood, which in turn has the potential to further degrade the quality and restocking capacity of existing forest resources.

35. There is a clear need for institutional and policy reforms to provide long-term tenure and access to forests, and for access to finance to develop productive forests with risk mitigation benefits. Forestry-sector reforms should also be considered a fundamental part of the overall poverty-reduction strategy, which will both improve sector performance and help reduce poverty, in particular in remote and disadvantaged areas.

Unsustainable irrigation and water management practices

36. At present, Tajikistan's agricultural productivity is also being undermined by environmental degradation such as salinisation, swamping and water logging[65], which has degraded more than 15% of land under irrigation. Poor irrigation management and deteriorating or inadequate drainage systems are the main causes behind this environmental degradation. Drainage infrastructure (such as pumps) is often poorly maintained and replacement parts are frequently unavailable, allowing systems to deteriorate[66].

37. Outdated and ineffective water management (such as over-intense irrigation, inefficient agronomic techniques and insufficient capital investment in irrigation and drainage infrastructures) has resulted in inefficient water use. For example, irrigation-intense cultivation such as cotton plantations were increased by 50% between 1964 and 1994 causing severe shortages in the regional water supply[67]. Inefficient agronomic techniques are recognised as possible drivers of mudslides and landslides. For example, the traditional ploughing method was to plough in circles across a slope. However, many farmers do not use this method today and rather plough along contour lines. This often leads to the collapse of slopes, and over-intense irrigation exacerbates the situation[68].

38. The environmental legacy of central planning has also further increased the vulnerability of Tajikistan to the impacts of climate variability and change[69]. For example, agricultural methods such as irrigation practices have resulted in unsustainable water management as a result of inappropriate regulation of river flows and wetland drainage. These activities have led to reduction in stream flow and a lowering of the groundwater table and are a main driver of water stress in the country. Since the end of collectivisation, there has been limited government extension and support for agriculture, and as a result there is a large amount of degraded infrastructure, residual debt, shortages of equipment, and limited knowledge among emerging farmers - much of which has been a root cause behind some of the poor agricultural practices mentioned above[70].

Pollution

39. During the Soviet era, there was excessive use of fertilizers and agricultural chemicals such as pesticides, which have become a major cause of pollution in fresh water, ground water and soil[71]. In addition, poorly designed irrigation networks have led to massive runoff, which has increased soil salinity and has also carried toxic agricultural chemicals downstream to the Aral Sea and to populated areas in the region[72]. Climate variability and change impacts are likely to exacerbate this situation in that a reduction in the supply of water is expected to result in greater toxicity or concentration of pollutants in water supplies.

[65] Poverty Reduction Strategy (PRS) (2007) The Republic of Tajikistan 2007-2009.

[66] Curtain, M. 2001. Environmental profile of Tajikistan. Asian Development Bank

[67] Curtis, G.E. ed. (1996) Tajikistan: A Country Study.

[68] Information received from the international consultant's meeting with Ms. Goulsara Pulatova during the visit to the International Strategy for Disaster Reduction (ISDR, Dushanbe, 5 August 2009).

[69] World Bank (2009) Adapting to Climate Change in Europe and Central Asia.

[70] GEF- FSP "Sustaining Agro-biodiversity in the face of climate change: vulnerability and adaptation" study, 2008.

[71] Curtis, G.E. ed. (1996) Tajikistan: A Country Study.

[72] Curtis, G.E. ed. (1996) Tajikistan: A Country Study.

Migration

40. In Tajikistan, a third of the population is already classified as food insecure, which has negative effects on the general health of the population[73]. Migration, often triggered by landslides, mudslides and floods, will contribute to an increase in population density in some areas resulting in severe resource stress, particularly in the mountainous areas[74]. Climate variability and change, specifically its effect on the frequency and intensity of climate-related disasters, will heighten migration rates thereby inadvertently contributing to food insecurity and health problems in Tajikistan.

4. Proposed Solution: CRM Agro-forestry

41. It is therefore proposed to structure a project that addresses institutional and policy constraints in relation to the CRM implications of deforestation within Tajikistan, demonstrates viable agro-forestry business models at the local level, and creates awareness and builds capacity among a broader set of stakeholders. In particular, it is proposed that the following aspects be addressed:

Mainstreaming the effective use of CRM into institutional frameworks and national policies, and building capacity among policy makers to act on best available data

42. The first challenge involves improving the capacity of key institutions to incorporate climate risk considerations, both for forestry and more broadly, into planning and to improve the relevant regulatory and legal frameworks. This will result in greater adaptive capacity at a national level. Greater recognition of climate risks and more targeted policy actions are required to mitigate the projected impacts of climate change. It is proposed that a review of the policy framework be undertaken and recommendations made to integrate CRM considerations where appropriate.

43. Secondly, from an institutional perspective, it is important to develop the CRM mandates of key ministries, and to improve institutional linkages. This is particularly important for the Forestry Committee and Leskhoz structures and the Ministry of Emergency Situations, and Tajikistan Hydromet. Developing the linkages between national level and regional and sub-regional institutions will also be important. It is proposed that a review of institutional CRM mandates and coordination mechanisms for key ministries be undertaken and changes proposed.

44. Finally, policy makers need to be able to understand climate risks, sectoral vulnerabilities and implications for policy development, investment planning and appraisal. It is proposed that a training needs assessment be undertaken, and CRM training provided to key stakeholders to mainstream CRM into regulatory development and operational planning

Demonstrating CRM agro-forestry best practice and financing at the local level for vulnerable mountain communities

45. Firstly, it is important that there is a robust process to identify climate impacts and vulnerabilities at the local level, so that effective interventions can be designed both by national level stakeholders and local communities. It is proposed to develop and apply an integrated CRM risk mapping methodology for local level application, to be piloted in the Gissar region. This will be done in conjunction with the UNDP Disaster Risk Management Programme.

46. Secondly, sustainable financing models for agro-forestry need to be identified to supporting the sustainable implementation of options identified following climate risk mapping. It is proposed that the project work with microfinance institutions, state financing bodies (Forestry Committee, Leskhoz), donors and NGOs to demonstrate sustainable business models for CRM agro-forestry.

[73] UNDP (2008) Millennium Development Goals – Tajikistan.

[74] The Concept of Transition to Sustainable Development (2007) The Republic of Tajikistan.

47. Thirdly, a more robust evidence base is required to understand the costs and benefits of potential types of engagements related to agro-forestry. Potential areas for review include slope reforestation and land stabilisation, riverbank strengthening with planting, drought resistant crops and sustainable pasture management. It is proposed to identify and undertaken cost-benefit and multi-criteria analysis of potential CRM interventions related to agro-forestry.

48. Finally, funding is necessary to invest in agro-forestry infrastructure and systems, and to improve the sustainability of vulnerable farming communities. It is proposed to prioritise potential CRM interventions in the Gissar mountainous regions, and to seek funds to invest in the most effective CRM responses. On the basis of finance raised, integrated CRM pilot projects at the local level will be undertaken, with models identified that could be scaled up to national level.

Improving awareness of climate change and best practices among national and local level stakeholders

49. Firstly, if resilience is to be improved from a national perspective, there needs to be a critical mass of experts able to move CRM planning, investment and institutional response forward. It is proposed that a National Climate Network be developed, with members drawn from a broad range of government, academic and private sector institutions.

50. Secondly, it is important to develop a common understanding among key stakeholders of national and regional climate risks. This will support a dialogue about sectoral vulnerabilities and potential responses. It is proposed that the national CRM project team will cooperate with the regional CRM team on providing data for a regional risk assessment, and that a national profile be developed, to be managed on an ongoing basis by Tajikistan Hydromet or another agency.

51. Thirdly, existing and emerging best practice in relation to CRM should be easily accessible to those engaged in climate adaptation activities. It is proposed that the CRM project team identify, consolidate lessons learned, both within the CRM project and from elsewhere, and that these be developed into case studies.

52. Fourthly, a pro-active approach needs to be undertaken to support the emergence of a community of practice, and to facilitate communication. It is proposed that the CRM project team prepare a quarterly newsletter to be disseminated to key stakeholders and support the CRM regional web platform.

53. Finally, means need to be found to raise awareness and disseminate information at the district and community level. It is proposed to engage with NGOs, local government structures, officials and schools to explore the most effective way of communicating climate risk and response to a wider population.

5. Geographical Focus: Mountain Communities in Gissar

54. The project will have 3 activity streams. The first (policy and institutional development), and third (knowledge management) will focus more broadly on cross cutting CRM themes at a national and regional (Central Asian) levels. The second will have a local focus on agro-forestry as a CRM solution, and aim to demonstrate project activities which may then be scaled up by GoT elsewhere.

55. Given the specific focus on CRM agro-forestry, it is proposed that Output 2 be piloted in the *mountainous* regions of the *Gissar Valley*, in particular in 4 areas - *Gissar, Shahrinav, Tursunzoda and Vahdat.* The Gissar Valley runs east-west along the southern slopes of Gissar Range and on the northern border of Khatlon Province. It is about 100 km long and up to 20 km wide in the middle, stretching from Vahdat in the east to Tursunzoda in the west on the border with Uzbekistan.

56. The choice of Gissar was agreed with the Ministry of Emergency Situations and the Disaster Risk Management Program as being particularly vulnerable to frequent climate related events. It is identified by the Ministry as having the highest concentration of climate related natural disasters

of any region[75]. Riverbank erosion, major landsides and heavy precipitation run-off are increasingly common events in the locations identified.

57. The area has been heavily deforested over recent years, which has reduced the economic carrying capacity of the land, and intensified the vulnerability to climate related natural disasters. Most of the mountainous land in the areas identified falls under the control of the Forestry Committee and managed through the Leskhoz structure, although few forested areas remain due to high levels of cutting for fuel use.

58. Poverty and subsistence agriculture characterise the mountain communities of Gissar, who are often overlooked by donor funded activities. Many households have switched to livestock management as a primary income source, placing further pressure on remaining forest and pasture resources through uncontrolled grazing and firewood harvesting. The land is potentially fertile, and suitable for a wide range of agro-forestry crops, including fruit and nut trees. These can provide multiple benefits, including land stabilisation, soil water retention, and a diversification of income streams.

59. The locations identified in the Gissar Valley benefit from established infrastructure through the Jamoat Resource Centres (JRCs) created under the UNDP GEF Biodiversity Project. This infrastructure can support project implementation, and ensures community level engagement. The region is easily accessible from Dushanbe, allowing for high levels of project engagement and oversight and involvement from the project team.

60. The chosen locations in Gissar valley have access to an established network of microfinance structures that may provide the basis for sustainable financing of agro-forestry. They are also piloting small scale development of orchards and actively engaged in land management practices, upon which a CRM approach could build.

61. Linkages will be sought with other relevant programs, in particular those UNDP programmes operating in the same region. Coordination with the Tajikistan PPCR initiative will also be maintained, although it is understood that there will be no geographic or direct thematic overlap, as forestry has not been included as a primary theme in the PPCR despite heavy lobbying by local stakeholders

6. Barrier Analysis

62. A number of challenges have been identified in relation to scaling up agro-forestry, and more broadly in relation to mainstreaming CRM in Tajikistan.

Inadequate policy frameworks, institutional structures and technical capacity

Policies

63. Although Tajikistan has a research centre for climate change[76], CRM policies and measures are still limited in scope and fragmented, focusing predominantly on mitigation and particularly on the future of the energy sector[77]. Many ministries do not have the mandate to solve CRM problems at present and therefore are not able to develop adaptation activities or access the necessary budgets.

64. There is limited understanding of which strategy, policy and legislation changes are required in order to enable cross-sectoral CRM measures to be implemented. Furthermore, those existing

1. [75] Project Consultant Discussions with Ministry of Emergency Situations
[76] The centre is situated within the country's Hydro-meteorological station (Hydromet).

[77] Kokorin, A. (2008) World Bank Adaptation Report.

strategies, policies and legislation that might have beneficial secondary effects for CRM are not consistently implemented and enforced. For example, Tajikistan uses fees to control natural resource use, taxes for permitted levels of pollutants and fines for violations of permitted levels and uses. However, the system is not based on realistic economics. For example, cost recovery is not a priority and fees and fines are too low to encourage conservation and compliance. Additionally, collection levels have never been high[78], and legislation is often interpreted in different ways by different officials or local government offices.

65. From an agro-forestry perspective, the Forestry Code (1993) is the main policy framework relating to reforestation, and is still awaiting revision after the process was begun in 2003. The new code includes a commitment to multipurpose forestry, and the participation of rural population in the protection, preservation and management of forests, with a commitment to longer land tenure rights. It remains with parliament at the time of writing. Current forest management policy frameworks are disconnected from sustainable development (energy and food security, economic diversification), and risk management considerations (land stabilisation, water retention), considerations. In particular, forestry is not addressed in the context of fuelwood and livestock management.

66. The importance of fuelwood is not adequately reflected in current national policy or planning, despite the key role of fuelwood as a source of energy and despite the fact that the primary economic value and practical use of forests is for fuel. The fuelwood/energy issue must be advanced at the national policy level so that its full economic and social importance can be integrated into national planning for energy and forestry. From the perspective of NFTPs, currently the CEP does not allow active cultivation of fruit trees, as they are classified as forest. This reduces yields.

67. There is a lack of land tenure security that would encourage long term stewardship at community level. Ownership rights are secured for neither communities nor for private owners, which results in a tragedy of the commons[79], and discourages reforestation projects. There is virtually no land market in Tajikistan. Land certificates only indicate rights on land use but not ownership. Even though these certificates can be transferred to the next generation, the farmers cannot use their land certificates as collateral or to sell the land[80]. Open access to land triggers the exploitation of forest resources, mainly for fuelwood and through overgrazing. There is no system to manage or incentivise the sustainable use of resources.

68. The project will work with key ministries to improve their mandate to engage on CRM issues. In order to overcome these barriers the CA-CRM will undertake an extensive review of existing strategies, policies and legislation in key sectors, and propose appropriate changes. Both the National Development Strategy and the Tajikistan's Poverty Reduction Strategy Paper (PRSP) contain no reference to climate change, and should be revised to do so[81]. The PRSP for example, is currently undergoing development and can serve as a key entry point for the inclusion of CRM. The country's Water Code and Land Management Code also require revision in order to take climate variability and change considerations into account, while also addressing persistent gaps and ambiguities, such as undefined ownership and right conditions over the land and water. Training workshops will be conducted to build the capacity of policy- and decision-makers to make informed changes to outdated strategies, policies and legislation.

Institutional Frameworks

69. In 1999, the Government created a working group with representatives from key ministries and institutions and designated National Focal Point to prepare a National Action Plan for climate

[78] Curtain, M. 2001. Environmental profile of Tajikistan. Asian Development Bank.

[79] Information provided to the international consultant during a mission visit to the Swiss Development Cooperation offices in Dushanbe on 7 August 2009.

[80] Information provided by Keti Chachibaia from UNDP Bratislava during the review of the first draft of this document.

[81] Information provided to international consultant during a meeting with the Environment and Emergencies Department, Dushanbe, 6 August 2009.

change risk mitigation to fulfil national commitments on UNFCCC, which was submitted to and approved by Government of Tajikistan in September 2002. This National Action Plan document indicates the priorities and measures to be undertaken by the Republic of Tajikistan to address the problem of climate change, to develop a capacity for further research and analysis of the climate system, its variability and change, to strengthen the international cooperation and join efforts to mitigate climate change. The measures indicated in the National Action Plan serve as a basis for planning and decision making at all state levels and in all relevant sectors.

70. In practice, however, the 2002 Action Plan has been poorly observed. Currently, Tajikistan does not have an institutional framework that manages CRM in a holistic, integrated and comprehensive manner. Coordination between ministries and associated institutions is limited. This is particularly true in relation to CRM risks in relation to agro-forestry in mountainous regions. There is poor communication between authorities, and between central and local government. This has resulted in the adoption of a sectoral approach, rather than a cross-sectoral approach to CRM in areas such as land use decisions. For example, a land conflict between the Ministry of Agriculture and the Ministry of Water Resources has recently emerged because irrigated land in certain regions (controlled by the Ministry of Water Resources) has been abandoned and is now being cropped using rain-fed agriculture (which is the domain of the Ministry of Agriculture)[82]. There are areas of overlap between Ministries. For example, in the field of climate-related disaster risk reduction the Committee of Emergency is the body that prepares for emergencies, however, when an emergency is declared, the Ministry of Economy takes charge, and consequently there are two agencies competing in this arena[83].

71. With regards to Agro-forestry, while there are a number of structures overseeing stewardship of forested lands, there are generally weak administrative and managerial capabilities, particularly at the local and regional level through the Leskhoz system. Law enforcement capabilities are weak to protect forested areas. In legal terms, there is some confusion regarding institutional responsibilities and jurisdiction. The Committee for Environmental Protection (CEP) shares its authority on environmental and natural resource sector policy with the executive offices of the President, making changes to policy complex. At the local level, the Leskhoz are often caught between multiple stakeholders. Although formally managed from the centre by the State Department, in practice, they receive multiple requests from regional government and other stakeholders. Given the centralisation of authority, there is no formal process to manage local interaction in a rational and streamlined way. As a result, the Leskhoz often fail to meet demands of both the State Department and regional government. The quota system discourages innovation and efficiency, and management operates on the basis of centrally developed orders.

72. The CRM project will work to address these issues by improving institutional mandates and coordination mechanisms to improve CRM implementation at a national level. Specifically, a 'national climate network' (NCN) will be assembled which will strengthen communication networks and ministry coordination through improved information exchange

Technical Capacity

73. While general knowledge and awareness on climate change issues among professional groups in Tajikistan is reasonably high (Climate Change Office, environmental NGOs), technical capacity, data, information and knowledge of tools for CRM planning are relatively limited. The key line ministries (Energy, Water, and Agriculture) and local administrations need more support and training to elaborate the national challenges and actions to be taken. Without adequate capacity, the success of the National Climate Change Impacts Mitigation Action Plan and implementation of the UNFCCC Convention will remain low. Climate-related disaster risk reduction capacity is particularly under-developed in relation to the forestry sector.

[82] Information provided to international consultant during a visit to the Ministry of Agriculture in Dushanbe, 8 August 2009.

[83] Information provided to international consultant during a visit to DFID offices in Dushanbe, 6 August 2009.

74. Certain ministries are unable to perform their mandated functions due to insufficient technical capacity. This is particularly problematic in Tajikistan where staff vacancies are high[84]. The Ministry of Finance, for example, has 30% of its posts unfilled. The Committee for Environment, which has the mandate to deal with climate change impacts[85], has limited technical capacity. with high levels of turnover, and only a small number of staff with a technical background in sustainable forestry management and little focus on CRM issues. Policy formulation (for example, the development of major sector policy frameworks - NBSAP and NEAP) has often been undertaken by other institutions. Resources to allow inspection and enforcement are limited, including a lack of transport vehicles. However, the CEP has participated in 2 GEF funded projects (WB and UNDP). In 2010, it was nominated as the focal point for all UN conventions on the environment. In 2011, the National Secretariat of CACILM is due to be hosted by the CEP which will provide some level of capacity going forward, and additional staff and support will be available. Capacity in relation to climate related disaster response and prevention is also limited, as demonstrated by the 2007/2008 crisis.

75. The regional Leskhoz structure is currently not staffed or equipped to manage the forests and lands outside of its control. At a local level, only a few members of staff have technical qualifications, and there is no technical forestry education in Tajikistan. They lack clear technical guidelines for sound forest management. Salaries are low, forcing staff to seek parallel sources of income. Equipment and transportation is limited and often of poor quality. There is little history of participatory approaches, involving the local community.

76. Building this capacity is critical in order to manage CRM, as the two are closely linked. The project will overcome this barrier by undertaking a training needs assessment, and providing training to key policy makers and institutions on key topics.

Lack of finance and capacity to deliver local level demonstration

77. There is limited awareness of CRM approaches and few interventions to showcase the benefits of adaptation in order to attract financing and government buy-in. In particular, there are low levels of awareness about CRM issues in relation to forestry and agro-forestry, and their role in disaster risk reduction (landslides, erosion, desertification, water management), whether at the national and local levels. There is no clear understanding of the economic benefits and poverty alleviation potential of agro-forestry for those mountainous communities that exist outside the state irrigated agriculture system. Likewise, there is little awareness of the climate change mitigation benefits that might be derived from reforestation and sustainable land use sequestration and associated financial flows from these type of activities. It is vital that these benefits are demonstrated through effective local level demonstration projects before CRM issues can be further mainstreamed into national level policy.

78. Even though climate change is becoming a priority within Tajikistan, there is limited funding for CRM, and there is limited knowledge of innovative financial instruments and legal incentives that can sustain adaptation measures in the long-term. For example, there has been a National Action Plan on Climate Change developed, there are teams of experts in place, but there is limited funding to implement the plan[86]. The situation is similar for climate-related disaster risk reduction. The Tajikistan government usually allocates between US$ 10 – 20 million a year through the State Commission on Emergency Situations as funding for climate-related disaster preparedness and mitigation. However, as a result of the global financial crisis, the amount was lower than average during 2009. The budget of the State Commission on Emergency Situations ranges between US$ 2-3 million a year. These funds are unable to cover the amounts required for

[84] Information provided to international consultant during a visit to DFID offices in Dushanbe, 6 August 2009.

[85] These findings were included in a World Bank Mission Report.

[86] Information provided to international consultant during a visit to the Hydromet in Dushanbe, 4 August 2009.

climate-related disaster risk reduction[87], however, and will need to be significantly up-scaled to cover climate-related disaster risk reduction under increasing climate variability and change.

79. The limited knowledge of innovative financial instruments and legal incentives is largely related to limited capacity in the field of CRM, which is partly a result of a lack of economic data to substantiate adaptation arguments and provide decision-makers with the economic evidence for motivating budget changes and allocations towards adaptation. The field of adaptation and the use of financing tools to fund adaptation is in its infancy and there are many aspects that need to be investigated within Tajikistan. The CA-CRM will analyse and investigate innovative financial instruments and test their efficacy in improving adaptation funding. In the context of Tajikistan such instruments that promote water efficiency in the sectors of energy and agriculture will be prioritised. Community-based climate risk transfer options will also be introduced.

80. From an agro-forestry perspective, at a national level, there are limited funding opportunities for activities related to land stabilisation and reforestation within the disaster risk reduction budget, and more generally to broad forestation activities within the Forestry Budget. Likewise, there are very limited funds to support economic diversification and rural extension services for communities in mountainous regions. The National Forestry Program has an ambitious agenda, including the establishment of 150,000 ha of industrial timber plantations, but has not established credible financing mechanisms for achieving those measures that are to be financed from the national budget.

81. The Leskhoz receive annual quotas for harvesting of fuelwood and planting and rehabilitation of forests, but CEP allocates only limited resources for achieving this. As a result, the Leskhoz structure engages in parallel financing activities, including agro-forestry, agriculture, livestock and hunting. Non timber forest products form a regular revenue stream. At a local level, there is a lack of financing from banks and microfinance institutions for development of sustainable forestry at the community level due to the longer payback periods compared to agriculture or livestock, and the unwillingness of microfinance institutions to lend. Where loans are made, they are secured on other forms of income, in effect a form of corporate, rather than project finance. Livestock and agriculture lending have a shorter cash conversion cycle, which is considered by lenders to be lower risk. This creates a vicious circle as high levels of poorly controlled livestock ownership are degrading forest productivity and replenishment rates.

82. While the Forestry Code explicitly allows for the leasing of forested land to individuals, it has been poorly exploited. The GIZ project 'Sustainable Rehabilitation and Development of Flood Plain Forests in Gorno Badakhshan' is an exception. The project has to date pioneered Joint Forest Management with the Forestry Committee. Interested smallholders can enter into lease arrangements with the Leskhoz. Specific benefit-sharing arrangements ensure that leaseholders receive full land tenure security, thus protecting and managing these forests.

83. The project will support the demonstration and financing of agro-forestry CRM measures at a local level in the Gissar valley, with the aim of scaling up and mainstreaming best practices into key national strategies.

Information deficit and lack of knowledge sharing

84. Technical capacity, data, information and knowledge of tools for CRM planning are limited within Tajikistan. Climate-related disaster risk reduction capacity is particularly under-developed. There is limited understanding of CRM among key-decision makers, particularly of: i) the cross-sectoral nature of climate change impacts and climate-related disaster impacts, and thus of CRM; and ii) the difference between mitigation and climate change adaptation, and the necessity of both. Another significant barrier to CRM in Tajikistan is the poor climate-related disaster risk reduction capabilities that exist in the country. Despite the fact that Tajikistan is one of the most disaster-prone countries in the CIS region, climate-related disaster risk management is still at the nascent

[87] There is at least one appeal each year (maximum two) that over-stretches the government's capacity and resources to adequately respond to climate-related disasters.

stage. Climate-related disaster risk reduction is not prioritised by the government because food and energy production are considered more pressing activities[88]. It is consequently imperative that authorities are made to realise the importance of effective climate-related disaster management and how this is critical to favourable development, including food and energy security (as to their development priorities).

85. There is also a considerable lack of data in certain key sectors (such as data on glacial melting rates[89]). In general, data that does exist are difficult to source and not easily obtained from central databases. The lack of data in some cases is attributable to technology gaps. Hydromet, for example, has identified that new software and computers are required to undertake the required calculations for seasonal forecasting[90]. Hazard warning and monitoring systems, hydro-meteorological systems and glacier monitoring stations, for example, are also inadequate. However, an Information Management and Analytical Centre (IMAC) has been established under the Ministry of Emergency that employs a unified methodology of disaster risk assessment. The IMAC has the capacity to accumulate and process all available disaster risk-related data and send analyses back to the various ministries and organisations for relevant response planning and action. However, there is no such capacity at the Tajikistan Hydromet and climate variability and change scenarios, crop or hydrological models are not constructed to inform development planning. Furthermore, insufficient funding and capacity are frequently the cause behind data gaps.

86. From CRM agro-forestry perspective, policy makers lack reliable and accurate information. Tajikistan has no central database for forests and forestry- related activities. Monitoring resources are inadequate and Leskhoz lack the facilities and infrastructure to compile such information. There is no central capacity to process and map this information. It is difficult to obtain reliable and scientific data on the size of forest areas, stocking volumes, species composition, annual forest-destruction rates. All the official statistics are rough estimates, based on inventories dating back to the Soviet era. Official statistics overestimate the total forest area in Tajikistan.

87. In terms of the linkages between forestry and disaster risk reduction, these are poorly mapped at present, although State Commission on Emergency Situations (CoES) has indicated that it would be interested in developing such a capacity. There is substantial information available on CRM risks to agro-forestry, but there is little incentive to share this information in a cross sectoral way.

88. In particular, there is a lack of awareness and knowledge of “soft” and “no-regrets” climate change adaptation and climate-related disaster risk reduction approaches and options in Tajikistan. This is particularly the case in sectors where technology and engineering solutions (e.g. hydropower plants and dams) are being proposed without the assessment of other options. The introduction of water demand management as well as the improved awareness among water-users are examples of no-regret, soft climate change adaptation measures.

89. To address these issues, the project will seek to build the evidence base, and raise awareness of CRM issues, with a particular focus on agro-forestry and mountainous communities. Through a review of the existing evidence base, development of best practice from demonstration projects and assessment of national and local level climate risks, the project will identify those interventions with the potential for national up-scaling. The regional web-based knowledge management platform and national newsletters will be used, and public awareness activities undertaken. This work will be supported by the development of a National Climate Network which will bring together experts who can contribute to these awareness raising efforts. The UNDP is in parallel implementing “Technical Assistance on Institutional Capacity Assessment and Awareness Raising on Climate Change in Tajikistan” under the PPCR. The project is a short term activity

[88] This barrier was identified by Alain Lambert from BCPR.

[89] Glacial modelling data in CA is largely based on data from the 1980s, which currently underpins water resource management in the region. There is thus a considerable need for more up-to-date data.

[90] Information provided to international consultant during a visit to the Hydromet in Dushanbe, 4 August 2009.

(until March 2012), and close contact will be maintained to ensure that activities are complementary.

7. Existing relevant initiatives & Key implementation partners

Relevant initiatives

90. Tajikistan has made considerable progress towards introducing CRM actions. The government has initiated a number of programmes, action plans and partnerships related to climate variability and change. These include:

- Programme on Environmental Awareness-Raising and Education
- National Action Plan for Hygiene of the Environment
- National Action Programme to Combat Desertification
- National Action Plan for Environmental Protection
- Disaster Risk Management Partnership
- National Action Plan for Climate variability and change Mitigation (2003)[91]
- National Disaster Risk Management Strategy and Action Plan (March 2010)
- National Program of research and preservation of glaciers in Tajikistan (2010)

91. Various projects that are knowingly or inadvertently contributing to CRM also exist in Tajikistan (such as reforestation projects). However, there is little synergy between such projects and they are implemented on an *ad hoc* basis with minimal sharing of lessons among them. Tajikistan's environmental legislation limited in its scope and effectiveness. The majority of environmental laws lack implementation mechanisms and, because of limited inter-agency coordination; these laws are not harmonized with the legislation of other ministries and departments[92].

92. Tajikistan has already focused considerable attention on producing lists of adaptation needs through work done for the Nairobi Work Programme as well as part of the National Action Plan for Climate Change (Impact) Mitigation. However, like other CA countries, Tajikistan does not have an overarching strategy to guide such measures or interventions and it has not conducted any multi-sectoral socio-economic assessments that can be used to identify and guide the most optimal CRM options to suit the needs of the country.

93. Tajikistan has established an environmental, legal and regulatory framework for meeting its commitments under the UNFCCC[93], which demonstrates its awareness of climate change and of the future threats it will pose to the country. Indeed, it is the only country within CA to have a research centre for climate change at present[94]. However, CRM-related measures are still limited in scope and fragmented, focusing primarily on the future of the energy sector[95].

Key Implementation Partners

94. The following key implementation partners will be engaged on the project

    a. Committee of Environmental Protection (to include the Forestry Committee and Leskhoz structures

    b. Ministry of Agriculture

[91] Although this action plan focused mainly on mitigation, it does have an adaptation section.

[92] Poverty Reduction Strategy (PRS) (2007) The Republic of Tajikistan 2007-2009.

[93] Tajikistan ratified the Convention in January 1998 and the Kyoto Protocol in January 2009.

[94] The centre is situated within the country's Hydromet.

[95] Kokorin, A. (2008) World Bank Adaptation Report.

c. Committee of Emergency Situations.

95. In addition, the project will cooperate with other key partners and programmes relevant to the sector, including the UNDP Disaster Risk Management Program and CACILIM initiative, GIZ activities in forestry and sustainable land management, GEF SGP, multilateral lenders (World Bank, Asian Development Bank), the European Commission, and bilateral donors. In particular, close cooperation will be maintained with activities under the PPCR initiative. Further details of relevant initiatives are provided in Annex 2.

8. Project Activities

Goal: To increase Tajikistan's resilience to climate-related disaster and climate change impacts and in so doing secure development gains.

Objective: Increasing resilience of rural mountain communities through agro–forestry and climate related disaster management

Output: Increased resilience of rural mountain communities through agro–forestry and climate related disaster management

Baseline: There is a limited CRM institutional framework, CRM technical capacity and baseline data. Strategies, policies and legislation do not fully take climate variability and change risks into account and institutions and their key stakeholders (including policy-makers, decision-makers and legislators) lack a CRM focus. CRM financing options are limited. Environmental and climate change projects do not incorporate CRM as a specific objective, and any CRM activities are localised and ad-hoc. General public awareness of climate variability and change impacts and CRM measures is limited.

Indicators

- # of hectares under CRM
- Score as per Vulnerability Risk Assessment
- Score as per UNDP Capacity Scorecard

Activity Result 1: Improved enabling environment for CRM at systemic, institutional and individual levels

96. Activity 1 seeks to improve the capacity of key institutions to incorporate climate risk considerations into planning and to improve the relevant regulatory and legal frameworks. While the project will maintain a broad thematic focus with regards to developing legislative and institutional capacity, it will initially focus upon managing climate risks associated with vulnerable communities in mountain regions. Risk mitigation will be explored through a focus on the benefits of agro-forestry in relation to reducing the impacts of drought, landslides, soil degradation, flooding, deforestation for fuel, river bank erosion, bio-diversity losses, and in supporting community level economic diversification and resilience to climatic shocks. The component focuses primarily on national level institutions, but will involve local institutions where appropriate. It will focus on supporting cross-sectoral linkages, integrating approaches to livestock management, land tenure and disaster planning. Activity 1 consists of the following actions:

Action 1.1: Support mainstreaming of CRM objectives into existing and planned forestry and land management policy & by-laws and wider policy frameworks

97. Action 1.1 will undertake a review of the policy environment from the perspective of promoting an effective national level CRM response. Drawing upon the expertise of the National Climate Network (NCN) developed under Activity 3, the review will identify what level of consideration is already being given to CRM issues in various policy areas. The review will focus in particular on policies related to agriculture, forestry, sustainable land management, watershed management, disaster risk reduction and economic development. It will identify policy processes that offer key entry points for CRM policy development. Examples include:

- National Action Plan for Climate Change Impacts Mitigation (2003, 2011 update)
- Tajikistan's Poverty Reduction Strategy Paper (PRSP)
- The Water Code and Land Management Code
- Tajikistan Forestry Code
- The National Development Strategy (2007-2015)
- Law on Ecology Expertise
- Law on Pastures

98. Focal point(s) within the relevant ministries/committees will be identified in order to support the review process. Participating institutions are likely to include Hydromet, CEP, Forestry institutions, MoA, CoES and relevant line Ministries (MEDT, MoF).

99. A prioritised list of key policies, strategies and legislation requiring revision will be produced, together with suggestions for potential development. Round tables will be held to agree on revisions. These will be presented to key stakeholders and decision makers for consideration in national frameworks. The project will continue to provide support for proposed amendments to be adopted by GoT.

Action 1.2: Review and propose changes to current institutional mandates for key line ministries to improve CRM focus

100. In parallel with Action 1.1, Action 1.2 will review and recommend improvements to the mandates of key central ministries (such as Planning, Economic Development and Finance) and critical sectoral agencies (such as Energy, Agriculture, Water or Emergency Situations) in order to address CRM. This will begin with an initial scoping exercise to assess both existing mandates and current operational activities related to CRM. The process will be integrated with and build upon activities under the project "Technical Assistance on Institutional Capacity Assessment and Awareness Raising on Climate Change in Tajikistan", being implemented under the PPCR by UNDP until March 2012. The project will make recommendations as to potential changes in the institutional framework that would support this aim. In particular, the capacity and mandates of national level institutions to operate at the regional and local level in relation to CRM issues will be explored. This activity will draw upon the experience and expertise of the NCN developed under Activity 3.

Action 1.3: Provide training on CRM to policy makers on integrating CRM into regulatory development and operational planning

101. The project will provide training to key policy makers to support the integration of CRM mechanisms into policy design. To support changes in the regulatory and institutional environment, a training needs assessment will be undertaken with key ministries, with a focus on priority areas, such as economic resilience and climate risk in mountainous communities, or linkages between CRM and sustainable land management. A list of key policy makers within the National Climate Network (see Action 3) will be identified to participate.

102. Materials produced by the regional CRM CA program will be utilised. This is to include scenario planning (at local, sub-national and national scales) to enable decision-makers to assess a range of possible climates, and the implications for key policies and strategies. Dynamic systems modelling is suggested as an appropriate long-term planning tool to drive policy and strategy changes.

103. Approaches will be used to allow policy makers to assess the implications of climate stress on delivering their key strategy objectives (poverty, reduction, combating desertification, gender equality, and water and energy management).

104. A funding strategy will be explored to enable further training in the long term.

Activity Result 2: Sustainable productive agro-forestry CRM tools, financing and implementation models demonstrated in the Gissar river basin

105. An integrated CRM pilot project at the local level will be undertaken, with models identified that could be scaled up to national level. Key ministries and institutions identified in Activity 1 will be involved in the design and implementation of demonstration activities, and lessons will be fed back into the national policy and institutional development dialogue. Lessons learned and best practices will be disseminated through the knowledge network under Activity 3. Activity 2 will consist of the following actions:

Action 2.1: Undertake climate risk mapping in the Gissar Valley.

106. In collaboration with DRMP, CoES and regional DRR experts, the project will undertake a detailed climate risk mapping exercise in selected areas of the Gissar Valley. This will be done in part to identify those locations that would benefit from the interventions and financing mechanisms to be developed under Actions 2.2 and 2.3. Discussions have been held with DRMP and CoES about undertaking risk mapping at the river basin level to identify those areas that are most prone to climate related disaster. In addition, it has been agreed with UNDP DRMP that they will be involved in any local risk identification and mitigation strategy to assess where the development of agro-forestry would have a risk mitigation benefit. We will use methodologies on DRR developed by DRMP, BCPR, and integrate with other climate risk management approaches where appropriate to ensure that CRM issues are fully covered. Partnerships with NGOs will be explored to support implementation of the risk assessment where appropriate.

Action 2.2: Assess potential financing mechanisms and incentives to support community level CRM activities

107. With a view to supporting the sustainable implementation of CRM interventions identified, the project will identify and review appropriate community level financing instruments. Based on stakeholder consultation, and a comprehensive literature review, examples will be drawn from within the Central Asia region and elsewhere. These will likely include the following:

- Longer term financing for community level forestry through microfinance institutions
- Public private partnerships between the Forestry Committee, Leskhoz and Communities
- Public Investment plans in productive agro-forestry in mountainous/disaster prone regions
- Payments for eco-system services for managing (re)forested areas
- Rural extension services and sustainable production of fuel, fruit crops and timber
- Community employment schemes to accumulate community level forestry resource
- Provision of subsidies or other fiscal measures to support acquisition of saplings
- Corporate Social Responsibility Payments/ecosystem services payments (e.g. Aluminium Factory)

108. From a micro-finance perspective, the project will examine ways of increasing the tenor of loans provided to small holders to match the longer periods of return associated with tree crops. Action 2.2 will include an analysis of the economics of private sector revenue streams from timber, wood-fuel, and Non-Timber Forest Products (NTFPs).

109. The project will work with MOF, MOEDT and the CEP and its institutions (Forestry Committee, Leskhoz) to identify sustainable financing mechanisms for agro-forestry based CRM measures at the national, sub-national and local levels, and to create sustainable financing streams for forestry related CRM interventions. This will include a review of the options to realign existing budgetary funds.

110. In addition, the review will examine options for national level CRM financing. The review will include an assessment of the potential for Tajikistan to access finance through the emerging climate adaptation funds architecture under the UNFCCC process, as well as review opportunities for mitigation based revenue streams related to sustainable land management and reforestation. Support will be extended where relevant to build the capacity of local stakeholders to mobilise CRM funds through application to international bodies.

Action 2.3: Identify and undertake cost-benefit /multi-criteria analysis of potential CRM interventions related to agro-forestry

111. The project will prioritise a list of suitable community based CRM interventions with a productive agro-forestry related focus. Detailed scoping work will be undertaken to identify potential measures, but initial research indicates that the following type of measures will be assessed:

- Slope reforestation and land stabilisation
- Riverbank strengthening through planting
- Livestock management strategies in forested areas and limiting land access for grazing
- Promoting drought resistant local cropping varieties
- Integrating water efficiency management techniques
- Land tenure arrangements and enforcement of rights
- Diversification strategies and economic value chain for timber and NTFPs, to include vine-making, beekeeping, ecotourism
- Perennial grasses for land stabilisation and heating
- Sustainable pasture management techniques

112. Practices will be identified by undertaking desk research and through stakeholder consultations. The PPCR project is gathering a range of sustainable land management technologies and approaches by WOCAT (World Overview of Conservation Approaches and Technologies) across Tajikistan to be published as a guidebook in the second half of 2011. The project will build upon experience in other regions, and on that of villages within the same region, as often best practices are not disseminated. At the National Workshop, a number of potential practices were identified by participants, such as steep slope (25-30 degrees) cultivation, and rainwater harvesting techniques. A number of information and data sources were proposed that will be taken up by the project.

113. Multi-criteria analysis will be used to identify those measures that meet a range of criteria, including: i) suitability to meet future climate variability and change hotspots; ii) cost-effectiveness; iii) contribution to the livelihoods of vulnerable communities; iv) ability of the measure to reflect progress/success over a relatively short time period (i.e. within the duration of the CA-CRM); v) probability of adoption of the measure by vulnerable communities; vi) potential for national up-scaling; vii) involvement of women in the implementation of the measure ix) the ability to reduce the risk of climate-related disasters; and x) cross-sectoral nature of the intervention. These measures should be supported by UNDP's Community Based Adaptation Facility and will use information provided by CACILM as part of the assessment[96].

114. A study of the economic costs and benefits of applying prioritised CRM measures at a community level will be undertaken in parallel with a view to informing national level policy debates.

[96] The results of the research and data collection being produced by CACILM will culminate in recommendations for certain land use activities to reduce climate change risks. Innovative approaches will be encouraged and a proposal for implementing the activities will be developed. Information provided to the international consultant during the mission visit, at the CACILM meeting in Astana (Kazakhstan), week of 20-24 July 2009.

115. In addition, participants at the National Inception Workshop indicated that the issue of deforestation is linked directly to also inefficient use of fuel. The project will look, where possible to build linkages to other efforts aimed at the promotion of efficient fuel stoves and improving insulation to reduce local wood demand. These types of activities, however, will not be the main focus of the project.

Action 2.4: Implement priority CRM measures in the Gissar Valley

116. Based on the analysis of CRM measures and financing structures identified under Activities 2.2 and 2.3, demonstration (re)forestation projects will be undertaken in those locations of the foothills of Gissar Valley identified by the risk mapping exercise undertaken in Action 2.1. Implementation will be undertaken in association with local NGOs, community groups organised through the Jamoat and JRC structure, Leskhoz and the Forestry Department, research institutes, local micro-finance institutions and UNDP's Community Based Adaptation Facility. Opportunities will be explored for other community structures, such as youth and women's centres and farmers associations.

117. Particular focus will be given to ensuring that interventions are not mal-adaptive, and do not inadvertently increase risks. For example, uncontrolled planting on slopes may lead to higher moisture retention resulting in increased landslide risk. Activities such as the promotion of medicinal plant collection may also lead to overharvesting of natural resources and land degradation if poorly controlled.

Activity Result 3: Knowledge on how to incorporate climate variability and change knowledge and risks into development processes at local, sub-national and national level disseminated

118. The lessons arising from an integrated approach to CRM will be fed into national and local level planning and awareness raising systems. In addition, best practices will be incorporated into the regional level program for dissemination to other countries. At a national level, the CRM project will engage with all relevant stakeholders, including government ministries, UNDP programs, donors and the PPCR initiative. The following activities are envisaged:

Action 3.1: Establish national network of CRM professionals and database of ongoing/planned projects

119. The project team will lead an institutional mapping exercise to support the development of a national climate network (NCN). The mapping exercise will seek to identify existing networks and centres of expertise, and to create a proposition that adds value to existing structures.

120. The NCN will include national, regional and local level experts and policy makers. Technical experts will include climate change modellers, climatologists, agronomists, hydrologists, agro-meteorologists, economists (with resource economics experience), sociologists, ecologists (e.g. rangeland and freshwater), glaciologists, adaptation and climate-related disaster reduction experts. Members of the network will be drawn from a range of line ministries (MoA, MEDT, MoF, MoWM), CoES, Hydromet, CEP, relevant research institutes, NGOs, civil society organisations, and representatives of key donor programs (UNDP, GIZ, DfID, USAID, WB).

121. The needs and expectations of all of these groups will be identified under the mapping exercise. Involvement in design and development of the network from an early stage will help support buy-in by the wider group. The network will encourage an open culture of data sharing, and providing value added services.

122. The establishment of the network will be developed in the context of the wider climate change coordination mechanisms being established under the PPCR and within the donor community. Where it becomes apparent that other networks are likely to provide a more suitable communication, channel, the program will seek to support, and act as a coordination unit between them, rather than replicate them. Given that CRM is a cross-cutting theme, this will be particularly true for single theme networks currently focused on an individual topic. The network may also

provide support into harmonising CRM risk assessment methodologies in country, and across the wider region, and can feed in existing experiences accordingly.

123. The NCN will support the project to map existing and planned CRM related projects in Tajikistan, with a view to identifying existing best practices, financing structures, and impact data. Given the large number of climate related activities in the country, the ability of the network to avoid duplication and improve coordination between institutions is considered of high importance. Lessons from existing projects will be compiled and incorporated into the CA CRM, including those that are potentially mal-adaptive. These findings will be distributed through the NCN at the national level, and regionally through the MCN.

124. A communication strategy will be developed to allow feedback from the network through the NCN to the regional program.

Action 3.2: Support development of regional/national CRM profile and identify GoT institutional ownership

125. Working with DRMP and the regional UNDP DRR team, the project will support the regional CRM team in undertaking a national level CRM assessment, to result in a national level CRM profile. This will be done in conjunction with a chosen ministry that will act as the institutional home for the profile. The exercise will draw upon the UNFCCC National Communications (2008, 2002) and other relevant mapping studies, including data collected by UNDP CACILM and the Communities Programme. The assessment will draw upon socio-economic and biophysical data pertaining to CRM. CLIMSAT's satellite images and geo-referenced data and maps (to improve existing assessments); DRR studies. The data collection process will help identify gaps in national level impact and vulnerability knowledge.

Action 3.3: Create case studies of demonstration projects and training programmes from CRM project/3rd parties

126. All demonstration projects (finance, CRM measures etc.) will be documented, along with materials and outcomes of training programs delivered. In addition, a database and document library will be developed of best practices and lessons learned, to include key findings from past and current third party CRM interventions.

Action 3.4: Disseminate results and best practices through regional platform and other channels

127. The program will maintain a mailing and distribution list of all stakeholders involved in project development or identified as having an interest in CRM issues. All findings will be forwarded to the regional MCN for wider dissemination. The project will identify an organisation that can disseminate wider CA-CRM best practice nationally within Tajikistan on a sustainable basis post-project. The CRM project will prepare a quarterly newsletter with the support of the NCN, detailing project activities and progress. It will focus on key themes emerging from the project, such as the links between forestry and disaster risk, or financing strategies for community level productive agro-forestry. The newsletter will ensure that project visibility is maintained. The newsletter will be disseminated in hard copy and electronically to the stakeholder list developed under Action 3.1. The outputs will be integrated at the regional level into the knowledge publication "Central Asia: Climate Change Impacts and Climate Change Adaptation Solutions" that will form part of the regional program outputs.

128. Opportunities for wider dissemination through mass media will be explored where appropriate, with care given to messaging to a wider audience. Consideration will be given to communication channels where dissemination may be broader (e.g. mobile phones, SMS).

129. On the basis of the demonstration projects undertaken, key lessons will be identified and shared with national level planning ministries as potential models for wider implementation through Activity 1.

Action 3.5: Undertake a targeted awareness raising campaign on CRM at the district and community level in target regions

130. The project will use local Jamoat structures and NGOs as information portals. Communication and awareness raising activities will take the form of newspaper segments on CRM issues, information boards, public broadcasts, leaflets, seminars, trainings and rural advisory services. The project will work with NGOs active in rural communities to ensure CRM information continues to be disseminated after project closure. Awareness-raising topics can, for example, include linkages between trees and mudslide protection. The project will lobby government to continue to disseminate public broadcast information post project. Examples of communication channels might include: i) a "climate variability and change in Tajikistan" newspaper segment; ii) information boards on CRM measures; iii) public broadcasts and announcements on local radio/television; iv) pamphlets; v) seminars and trainings; and vi) rural advisory services. The development of educational materials for use in schools and higher education establishments will be explored.

Activity Result 4: Scaling up of effective management planning in protected areas of Tajikistan implemented

131. The current planning is reactive i.e. it is based on reaction to events or budgets. Such management cannot over time achieve development objectives and are unlikely to achieve sustainable resource use or protection of wildlife. The newly introduced management approaches for protected areas on the other hand seek to change management from reactive to "directional" i.e. to have defined future targets and to work towards achieving planned sustainable development objectives over time. Furthermore, management planning is accompanied by Financial Planning which ensure that planned activities to achieve objectives are married with the realistic financial resources available, and that gaps are identified from the beginning so that planning is either adapted or efforts are made to close the financial gaps. The introduction of directional (over time) management plans of 5 years duration, and related financial planning, should greatly increase the sustainability of PA system management and be a valuable example to other sectors of environmental management / natural resource use.

132. The new standard management plan format, and related financial planning tools, combines both international best practice with an appreciation of the realistic development situation of Tajikistan and the practical technical/financial capacities for management. These are therefore appropriate for Tajikistan at this point in its development and have been designed in a way that should allow effective replication throughout the PA system of the country. Although all protected area categories are covered by one standard format it is adaptable to fit the needs of different categories. Additionally, it can be expanded and made more sophisticated depending on the existing capacities or a particular PA or on the development over time of greater capacity within the system. Furthermore, the same principles and planning logic can be easily adapted to apply to other areas or aspects of natural resources and environmental management (for example the management of forestry reserves, financial planning of departments within the state Committee for Environmental Protection, etc).

133. The objective of the project is to scale up interventions on enhancement of management effectiveness within protected areas system of Tajikistan, building upon initiatives demonstrated within UNDP/GEF Project "Demonstrating new approaches to Protected Areas and Biodiversity Management in the Gissar Mountains as a model for strengthening the national Tajikistan Protected Areas System".

134. Therefore, scaling up strategy proposed is two-fold:

a) To develop the secondary legislation pertaining to the new Protected Areas Law (regulatory normative acts, guidelines, etc.);

b) To scale up the application of the new simplified standard management plan format and financial planning throughout all the PA system in Tajikistan (19 PAs of different IUCN categories in total).

This should significantly impact the effectiveness of management within all PAs in the national system and strengthen the systematic planning, as well as ensure the sustainability mechanisms in other protected areas of Tajikistan.

135. The partnership framework for implementation of the new management plans for the national protected areas is already formed in cooperation with Agency for Protected Areas, local governmental authorities and civil society and community-based organizations which should significantly contribute their effectiveness and ownership. This should result in a more concerted and unified approach towards the conservation and sustainable utilization of Tajikistan's natural heritage and wildlife which is necessary for supporting national sustainable development and human wellbeing.

Action 4.1: The implementation instruments for Protected Areas Law developed and/or clarified

136. The project will work on the national level to facilitate the harmonization of the legislation related to Effective Management Planning of the Protected Areas. Specifically, it includes the following activities:

- To establish a Working Group comprised from the relevant governmental and public institutions dealing with sustainable natural resources in Tajikistan to discuss and refine the normative – regulatory acts and their mainstreaming into the PA system;
- To support Working Group meetings to enable implementation of Policy Dialogue/Forum where main issues of management effectiveness of Protected Areas will be discussed and appropriate actions will be planned for further implementation;
- To undertake a study tour of the Working Group to one of the Protected Areas in Gissar Mountains to get familiar with implementation process of the Management Plan including financial planning tools;
- To facilitate the Working Group to develop normative – regulatory acts (rules for hay making, rules for pasture land use, rules for hunting, rules for timber production and etc).
- To organize a National Round Table with participation of the Parliament, Ministry of Finance, Ministry of Economic Development and Trade and other relevant government institutions to discuss the Financial Planning Tools in order to better understanding of sustainability of PAs and their role in biodiversity conservation throughout the country.

Action 4.2: New management practices are introduced and national capacities strengthened to ensure management effectiveness and financial sustainability of the Protected Areas system in Tajikistan.

137. Under this action, the project will work directly with the Protected Areas Agency to enhance their knowledge on management planning. In particular, it includes the following:

- To improve technical knowledge of the PA Agency staff through undertaking trainings on Management Effectiveness Tracking Tools (METT) and development of action plan for METT scoring;
- To improve technical knowledge and management capacities of the PA Agency staff through undertaking round tables and capacity building trainings on management planning and financial planning tools for all Protected Areas staff and the Committee on Environmental Protection, communities located in and around of Protected Areas;
- To carry out workshop / trainings for all PA directors in Tajikistan on PA Concept and management planning process;
- To assist the State Directorate of Protected Areas to introduce standard format of Management Plan including financial planning tools into other protected areas of Tajikistan;
- To conduct on-job trainings on development of the Financial Plans for all PAs and installing financial planning software in other PAs.

Gender

138. The recent World Bank report on “Improving Women’s Access to Land and Financial Resources in Tajikistan” shows that women’s access to agricultural and financial resources is closely interlinked with many other social spheres in Tajikistan. The findings of the report suggest that women are disadvantaged in both spheres (agriculture and finance) as compared to men. Below 15% of land plots were allocated to female-headed households during the governmental land distribution, but customary habits also prevent women from farming land independently. The financial sector in Tajikistan is generally underdeveloped, but women lack collateral and face much higher long-term interest rates on loans, thus reducing the potential profitability of their small-scale investment projects. Despite a growing non-banking financial sector, most women are still not served with affordable or suitable credits.

139. In order to better incorporate gender issues into the CA-CRM, indicators should be disaggregated where possible. Those indicators that can be disaggregated have been labelled as such in the strategy section. This will enable the project coordinator to track how many women are being capacitated and involved at both decision making and community levels. Furthermore, men and women are likely to be affected differently by climate change and climate-related disaster impacts. For this reason, improved climate-related outcomes for women are a priority of this project in order to address the social dimensions of climatic hazards.

9. Results and Resources Framework

INTENDED OUTPUTS	OUTPUT TARGETS	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	INPUTS
Output: Increased resilience of rural mountain communities through agro–forestry and climate related disaster management. **Baseline:** Strategies, policies and legislation do not fully take climate variability and change risks into account. Institutions and their key stakeholders (including policy-makers, decision-makers and legislators) lack a CRM focus. Awareness and skills related to CRM are limited. Local CRM assessment methodologies are poorly developed and not widely used. CRM interventions are ad hoc, localised and lacking finance for up-scaling. CRM financing options are limited in Tajikistan. There are low levels of coordination between professionals engaged in CRM activities. Communication between different groups is relatively poor due to the cross cutting nature of CRM. There is no institution that acts as an institutional home for CRM analysis and information.	**Output Targets:** 1. At least 100% of demo sites ha area under improved CRM 2. At least 10% decrease in vulnerability as measured by UNDP VRA 3. Minimum 15% of budget spent on gender sensitive activities **Activity Targets** **Activity Result 1.** Target 1.1: At least 10% increase of Capacity Assessment ScorecardTarget 1.2: 20% of recommendations accepted by the government and submitted for official adoption by the end of the Project Target 1.3: At least 2 Ministries have CRM explicitly considered in their mandate Target 1.4: At least 100 policy makers are engaged	**Activity Result 1: Improved enabling environment for CRM at systemic, institutional and individual levels** **Action 1.1:** Support mainstreaming of CRM objectives into existing and planned forestry and land management policy & by-laws and wider policy frameworks 1.1.1: Produce and prioritise a list of key policies, strategies and legislation that can play an important role in mainstreaming climate risk management into GoT policy and assess current level of CRM readiness 1.1.2: Develop recommendations for revision of legislation, drawing upon the knowledge of the NCN and expert round tables 1.1.3: Identify focal point(s) within relevant ministries and committees to liaise with the project. 1.1.4: Engage with relevant ministries and table proposals to revise legislation to account for climate risk 1.1.5: Support current and ongoing strategy, policy and legislative amendments on an ad-hoc basis 1.1.6: Develop a long-term strategy detailing the timelines for the rest of the revisions. **Action 1.2:** Review and propose changes to current institutional mandates for key line ministries to improve CRM focus 1.2.1: Analyse the existing mandates and activity profiles of key planning and line ministries (finance, economy, water,	- NPCU, NCN and NSC. - UNDP regional office.	-International and national consultants. -Workshops, surveys, training programmes, knowledge exchange sessions. -training materials. -UNDP staff time. - Equipment and office space for NPCU. Cost: US$ 180,000

INTENDED OUTPUTS	OUTPUT TARGETS	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	INPUTS
General public awareness of climate variability and change impacts and CRM measures is limited. Inadequate normative – regulatory legislations on sustainable management of Protected Areas; Incompatible approaches to management planning within PA System; Low management effectiveness within PA system due to skilled staff loss and lack of relevant training **Output Indicators:** 1. # of hectares under improved CRM 2. Score as per Vulnerability Risk Assessment 3. % of budget spent on gender issues 4. Systematic approaches for scaling up effective management planning within 17 protected areas developed and implemented **Activity Indicators** **Activity Result 1.** Indicator 1.1: Score as per UNDP Capacity Assessment Scorecard	in capacity building and are better able to address CRM at strategic and operational level	agriculture, 1.2.2: Provide recommendations for improvements to institutional mandates of key line ministries **Action 1.3:** Provide training on CRM to policy makers on integrating CRM into regulatory development and operational planning 1.3.1: Undertake training needs assessment for key ministries and other relevant institutions and prioritise training needs and relevant stakeholders 1.3.2: Design training courses for delivery to local experts and policy makers, using learning-in-action activities and programmes to support CRM adoption into government strategy and policy formulation 1.3.3: Deliver training courses to identified stakeholders 1.3.4: Produce a funding strategy to enable further training in the long-term.		
	Activity Result 2. Target 2.1.1.: At least 10 most promising projects in demo sites area, scale of which could potentially be expanded nationally Target 2.1.2.: At least 4 practices based on the results of survey are implemented Target 2.2: At least 200	**Activity Result 2: Sustainable productive agro-forestry CRM tools, financing and implementation models demonstrated in the Gissar river basin** **Action 2.1:** Undertake climate risk mapping in the Gissar Valley. 2.1.1: Develop/adopt an integrated climate risk assessment methodology with BCPR to integrate DRR and climate risk and adaptation components 2.1.2: Undertake a CRM risk assessment in conjunction with DRMP, CoES and other local stakeholders in the Gissar Valley to identify areas with potential to benefit from agro-forestry **Action 2.2:** Assess potential financing mechanisms and	- NPCU, NCN and NSC. - UNDP regional office. DRMP BCPR	-Training. -intervention inputs. - UNDP staff time. Cost: US$ 270,000

INTENDED OUTPUTS	OUTPUT TARGETS	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	INPUTS
Indicator 1.2: Number of CRM policy measures or legislative changes adopted/implemented by GoT Indicator 1.3: Number of institutional mandates revised to include CRM Indicator 1.4: No. of officials participating in CRM policy training and workshops (disaggregated) **Activity Result 2.** Indicator 2.1: Number of approaches/practices on agro-forestry CRM demonstrated/replicated Indicator 2.2: Number of rural inhabitants have access to micro-loans or other financial CRM products Indicator 2.3: Funding mobilized for agro-forestry and CRM measures **Activity Result 3.** Indicator 3:1 Awareness of stakeholders on agro-forestry and CRM Indicator 3.2: Level of participation of media in promotion of agro-forestry and CRM issues	rural inhabitants (40 of them are female) have an access to micro-loans Target 2.3: Project budget allocated for demo measures + 100%	incentives to support community level CRM activity 2.2.1: Produce and prioritise a list of appropriate financial instruments and mechanisms to finance Community level CRM in Tajikistan using desk research, stakeholder consultation and international best practice, with a particular focus on agro-forestry 2.2.2: Develop and integrate at least 2 potential financing instruments into community level projects under 2.4 2.2.3: Engage with national level budgetary and planning ministries to improve the flow of finance to support CRM activities the local level 2.2.4: Support proposal development and applications for climate related risk funding from donors and other sources of climate change adaptation finance. **Action 2.3:** Identify and conduct cost-benefit /multi-criteria analysis of potential CRM interventions related to agro-forestry 2.3.1: Identification of priority interventions, building upon WOCAT findings 2.3.2: Prioritise interventions using cost-benefit and multi-criteria analysis **Action 2.4:** Implement priority CRM measures in the Gissar Valley 2.4.1: Design and implement agro-forestry related CRM measures on the basis of 2.1-2.3, partnering with relevant community level organisations.		
	Activity Result 3. Target 3.1: 80% of respondents correctly identify key challenges and risks	**Activity Result 3: Knowledge on how to incorporate climate variability and change knowledge and risks into development processes at local, sub-national and national level disseminated.** **Action 3.1:** Establish national climate network (NCN) of CRM	- NPCU, NCN and NSC. - UNDP regional office.	- Newsletter materials. -public awareness campaign

INTENDED OUTPUTS	OUTPUT TARGETS	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	INPUTS
	Target 3.2: At least 20 Mass Media products on agro-forestry and CRM produced and broadcasted throughout the country (print and broadcast media)	professionals and database of ongoing/ planned projects 3.1.1: Compile stakeholder list of CRM related professionals and organisations 3.1.2: Develop a value proposition for, and establish a National Climate Network to undertake CRM assessments, support project implementation and provide expert consultation. 3.1.3: Review and develop a database of past, current and planned CRM related projects **Action 3.2:** Support development of regional/ national CRM profile and identify GoT institutional ownership 3.3.1: Collect and provide CRM relevant socio-economic and bio-physical data inputs to the MCN to support the development of regional and national climate change risk profiles. 3.3.2: Identify an institutional home in GoT for the national climate change profile developed by the MCN and develop a mechanism for maintaining/updating **Action 3.3**: Create case studies of demonstration projects and training programmes from CRM project/3rd parties 3.3.1: Conduct an in-depth review of previous and current 3rd party CRM-related projects[97] in Tajikistan and identify potential best practices 3.3.2: Review and document case studies of demonstration projects and training programmes undertaken during the course of the CA-CRM project.		materials (pamphlets, public broadcasts, newspaper). -Training. - UNDP staff time. Cost: US$ 70 000

2. [97] Numerous projects are underway in Tajikistan that are not necessarily defined as CRM projects, yet are still contributing to the larger goal of CRM (e.g. reforestation projects and renewable energy projects that enable adaptation to occur, such as using solar power instead of fire wood). It is important that these types of projects are considered in the review undertaken by the CA-CRM.

INTENDED OUTPUTS	OUTPUT TARGETS	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	INPUTS
		Action 3.4: Disseminate results and best practices through regional web platform and other local channels 3.4.1: Produce a quarterly newsletter describing CA-CRM project activities and progress in Tajikistan. 3.4.2: Disseminate findings of the national and regional program on an ad-hoc basis **Action 3.5:** Undertake a targeted awareness raising campaign on CRM at the district and community level in target regions 3.5.1: Undertake a public awareness campaign on CRM. **Action 3.5.2**: Lobby government to continue with public broadcast announcements on CRM after the CA-CRM has ended		
Activity Result 4. Indicator 4.1: Relevant normative – regulatory acts refined; Indicator 4.2: All 17 PAs throughout the country developed own Management Plans including financial planning instruments Indicator 4.3: # of PA staff trained on Management and Financial Planning tools;	**Activity Result 4.** Target 4.1: Working Group on review of regulatory – normative legislation established and relevant legislative documents refined; Target 4.2: At least 17 PAs possess own Management Plans including financial planning instruments; Target 4.3: At least 100 PA staff trained on Management Effectiveness Tracking Tools (METT) and the scaling up framework with goals and time-bound intermediate targets for strengthening PA	Action 4.1: The implementation instruments for Protected Areas Law developed and/or clarified 4.1.1: Establish a Working Group comprised from the relevant governmental and public institutions dealing with sustainable natural resources in Tajikistan to discuss and refine the normative – regulatory acts and their mainstreaming into the PA system; 4.1.1.1: Undertake a Working Group Meeting in order to discuss the development of the legislative documents on PAs Action 4.2: New management practices are introduced and national capacities strengthened to ensure management effectiveness and financial sustainability of the Protected Areas system in Tajikistan 4.2.1:Improve technical knowledge of the PA Agency staff through undertaking trainings on Management Effectiveness Tracking Tools (METT) and development of action plan for	- CRM project staff, CEP, PA agency	Local consultants, Field visits, Management Plans, Contractual Services (Workshops, Trainings, Conferences) Publications Cost: US$ 30 000

INTENDED OUTPUTS	OUTPUT TARGETS	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	INPUTS
	management system country-wide developed.	METT scoring; Action 4.2.1.1: Undertake a practical training on METT for the representatives of all PAs		

10. Total and Annual Work Plan 2011-14

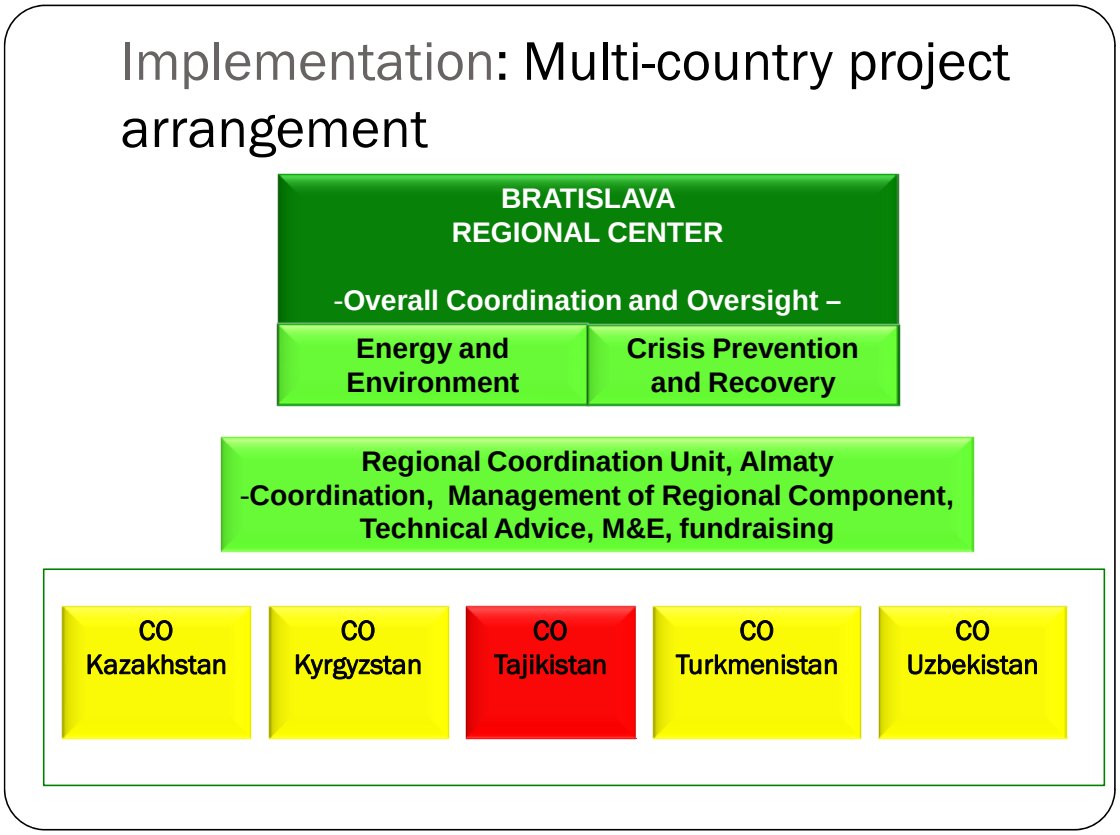
EXPECTED OUTPUTS	PLANNED ACTIVITIES	RESPONSIBLE PARTY	FUNDING SOURCE	PLANNED BUDGET (USD)						
				Budget Description	**2010**	**2011**	**2012**	**2013**	**2014**	**Total for 5 years**
Output: Agro-forestry and related CRM approaches mainstreamed in Tajikistan	1. Improved enabling environment for CRM at systemic, institutional and individual levels	UNDP Tajikistan	BCPR	71200 – International Consultants		$0.00	$9,000.00	$0.00	$0.00	$9,000.00
				71400 - Contractual Services Indiv.		$26,436.00	$9,000.00	$9,000.00	$9,000.00	$53,436.00
				72100 - Contractual Services/Companies		$26,000.00	$8,600.00	$13,500.00	$0.00	$48,100.00
				75700 - Contractual Services (Workshops, Trainings, Conferences)		$3,000.00	$2,500.00	$1,500.00	$0.00	$7,000.00
				71300 – Local Consultants		$1,000.00	$4,500.00	$2,000.00	$2,000.00	$9,500.00
				71600 – Travel		$4,264.00	$1,000.00	$4,000.00	$2,000.00	$11,264.00
				72800 – IT equipment		$0.00	$500.00	$500.00	$500.00	$1,500.00
				74200 – Audio, Visual, Print Prod Costs		$500.00	$500.00	$500.00	$500.00	$2,000.00
				74500 – Miscellaneous		$1,200.00	$500.00	$1,400.00	$1,400.00	$4,500.00
				Sub-Total	**$0.00**	**$62,400.00**	**$36,100.00**	**$32,400.00**	**$15,400.00**	**$146,300.00**
	2. Sustainable productive agro-forestry CRM tools, financing and implementation models demonstrated in the Gissar river basin.	UNDP Tajikistan	BCPR	71200 – International Consultants		$17,000.00	$6,000.00	$10,000.00	$0.00	$33,000.00
				71400 - Contractual Services Indiv.		$0.00	$9,000.00	$9,000.00	$9,000.00	$27,000.00
				71300 – Local Consultants		$0.00	$2,000.00	$2,000.00	$0.00	$4,000.00
				71600 – Travel		$1,000.00	$1,000.00	$1,000.00	$1,000.00	$4,000.00
				72600 - Contractual Services/Companies (micro-credits)		$0.00	$80,000.00	$45,000.00	$45,000.00	$170,000.00

				72600 - Contractual Services/Companies (demo projects by JRCs)		$16,000.00	$10,000.00	$10,000.00	$8,000.00	$44,000.00
				72800 – IT equipment		$500.00	$500.00	$500.00	$500.00	$2,000.00
				74200 – Audio, Visual, Print Prod Costs		$500.00	$2,000.00	$2,000.00	$1,500.00	$6,000.00
				75700 - Contractual Services (Workshops, Trainings, Conferences)		$0.00	$2,500.00	$0.00	$0.00	$2,500.00
				74500 – Miscellaneous		$900.00	$500.00	$2,500.00	$1,500.00	$5,400.00
				Sub-Total	**$0.00**	**$35,900.00**	**$113,500.00**	**$82,000.00**	**$66,500.00**	**$297,900.00**
	3. Knowledge on how to incorporate climate variability and change knowledge and risks into development processes at local, sub-national and national level disseminated.	UNDP Tajikistan	BCPR	71200 – International Consultants		$0.00	$30,000.00	$0.00	$25,000.00	$55,000.00
				71400 - Contractual Services Indiv.		$0.00	$9,000.00	$9,000.00	$9,000.00	$27,000.00
				72100 - Contractual Services/Companies		$0.00	$16,488.00	$6,000.00	$3,000.00	$25,488.00
				72600 - Contractual Services/Companies (JRCs)		$0.00	$4,400.00	$3,000.00	$3,000.00	$10,400.00
				75700 - Contractual Services (Workshops, Trainings, Conferences)		$8,911.98	$1,000.00	$2,000.00	$2,200.00	$14,111.98
				71600 – Travel		$3,500.00	$2,000.00	$3,500.00	$3,500.00	$12,500.00
				72800 – IT equipment		$500.00	$500.00	$500.00	$500.00	$2,000.00
				74200 – Audio, Visual, Print Prod Costs		$500.00	$1,000.00	$2,000.00	$2,000.00	$5,500.00
				74500 – Miscellaneous		$700.00	$500.02	$1,300.00	$1,300.00	$3,800.02
				Sub-Total	**$0.00**	**$14,111.98**	**$64,888.02**	**$27,300.00**	**$49,500.00**	**$155,800.00**
	4. Scaling up of effective management planning in	UNDP Tajikistan	TRAC Funds	71300 Local consultants	$0.00	$0.00	$10,000.00	$0.00	$0.00	$10,000.00
				71600 Travel	$0.00	$0.00	$2,000.00	$0.00	$0.00	$2,000.00

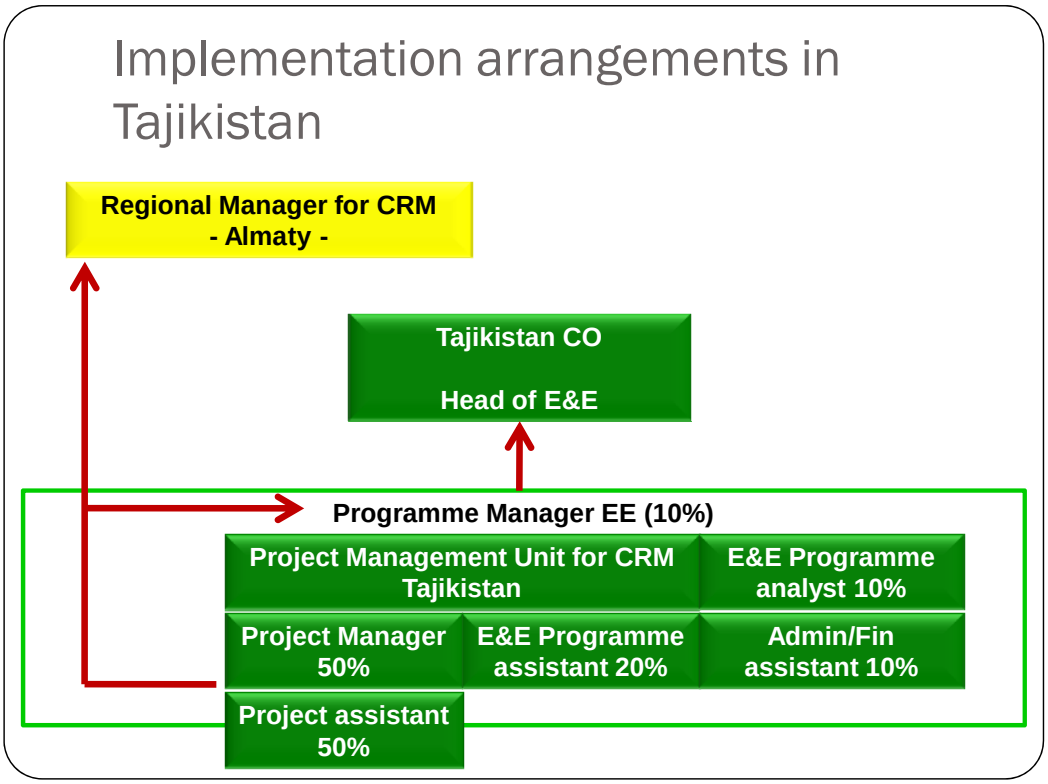
	protected areas of Tajikistan implemented			75700 - Contractual Services (Workshops, Trainings, Conferences)	$0.00	$0.00	$12,000.00	$0.00	$0.00	$12,000.00
				72510 Publications	$0.00	$0.00	$5,000.00	$0.00	$0.00	$5,000.00
				74500 Misc.	$0.00	$0.00	$1,000.00	$0.00	$0.00	$1,000.00
				Sub-Total	**$0.00**	**$0.00**	**$30,000.00**	**$0.00**	**$0.00**	**$30,000.00**
				Total Output	**$0.00**	**$112,411.98**	**$244,488.02**	**$141,700.00**	**$131,400.00**	**$630,000.00**

11. Management Arrangements

140. The CRM in Tajikistan project is a part of the Central Asian Climate Risk Management Programme, which is implemented jointly by the UNDP Energy and Environment Team (Climate Change Adaptation Team)and the UNDP Bureau for Crisis Prevention and Recovery (BCPR). The CRM in Tajikistan project will be implemented by the Tajikistan Country Office (CO) through the Direct Implementation Modality (DIM).



141. Tajikistan National Project Management Unit (NPMU) will be housed within the CO and the Energy and Environment Programme. The NPMU will include a Project Manager (Energy & Environment Ecological/Transport Advisor) and a Project Assistant. The Project Manager and the Project Assistant each devote 50% of their time to the project management and administration respectively. Finance matters are covered by the Energy and Environment (E&E) Admin/Finance associate (10% or time); whereas logistical support is provided by the E&E Programme Assistant (20% of time). The E&E Programme Manager shares maximum 10% of his time and is involved in representation, strategic overview, and fundraising. Monitoring, evaluation and implementation is the responsibility of the Programme Analyst (10% of his time), while the Country Office approves annual work plan and makes budget revisions. The Project Manager represents the project before the national partners.



142. The Project Manager will be involved in collaborating with and coordinating national activities and ensuring that the National climate network (NCN) is functioning and drawing in the necessary expertise for project implementation.

143. The Tajikistan National Steering Committee (NSC) will be a platform for intersectoral dialogue. This will be chaired and hosted by UNDP Country Office (CO). It is suggested that representatives from large-scale adaptation and climate risk management projects are included on this NSC in order to ensure strong linkages between the projects. Furthermore, high level officials from key line ministries such as the Ministry of Finance must be included on the NSC and encouraged to attend all NSC meeting in order to ensure ownership and cross-sectoral guidance for the programme.

12. ANNEXES

Annex 1: Risk log

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Mngt response
1	The objective of the project might be too ambitious and the support from the project resources and the government resources may not be adequate to initiate the changes required by the project strategy	22/12/2009	Strategic	The occurrence of the risk will reduce the project impact P=3, I=3	Annual reviews will be conducted to assess the progress of the project and the adequacy of resources that are mobilized.
2	Lack of relevant expertise and capacities in local market may result in delay of required outputs and distortion of targeted deadlines	14/04/2011	Operational	The occurrence of the risk will delay implementation of the project P=3, I=3	Implementation of project activities and recruitment of relevant national expertise is monitored and actions will be identified if the lack of expertise is affecting the timely implementation of the project. The project will engage with higher education establishments and technical institutes to identify suitable local experts. The project will explore a mobile CRM information service to ensure high quality provision at Velayat level
3	The government is not committed to implement institutional and policy changes proposed during the implementation of the project	22/12/2009	Regulatory	The occurrence of the risk will undermine the impact of the project P=3, I=3	The project team will closely monitor the developments. The related institution(s) will be contacted early on to establish a partnership with the project and involved into designing of policies
4	Project successes are not maintained after the project,	22/12/2009	Organizational	The occurrence of the risk will	The project strategy focuses on (i) developing realistic polices based on grass-roots experience; (ii) working with the existing

	and are not replicated to other sites.		Strategic	force the downscaling of the activities P=3, I=3	UNDP Communities Programme; and (iii) ensuring there are economic benefits. Together, these elements should ensure the sustainability and replicability of the project successes.
6.	Local experts do not see the National Climate Network as an attractive proposition	14/04/2011	Operational	The risk will reduce the ability to integrate local expertise into the project P=2, I=3	The NCN will be designed to meet local expectations and expert requirements following a stakeholder consultation. Experts will be engaged where appropriate as local consultations in implementation of project activities.
7.	National government does not give permission for data sharing and cooperation between institutions and at the local level	14/04/2011	Operational	The risk will prevent the use of CRM information to address agricultural vulnerabilities and slow progress on effective CRM management P=3, I=4	The project will be agreed at a high level through UNDP, with permissions sought for cooperation with the necessary ministries and state bodies. Permission to engage with local communities will be sought where appropriate from relevant ministries and bodies.
8.	Lack of knowledge of community level CRM needs	14/04/2011	Operational	The risk may result in products and pilot projects being poorly designed. P=3, I=3	The project will undertake local level climate risk mapping using an agreed methodology. The project will engage directly with local communities using local research and questionnaires to understand climate risk information needs and to identify potential projects.
9	Lack of finance to undertake agro-forestry CRM projects and to implement CRM	14/04/2011	Operational	The risk may limit the potential for implementing	The project will lobby GoT to direct budgetary funds towards CRM type activities related to agro-forestry. The project will separately make application to international adaptation and

	measures at a local level			projects at the local level P=3, I=3	climate risk funding sources to support implementation of pilot projects.
10	Work in remote local communities presents logistical organisation challenges and makes project oversight difficult	14/04/2011	Organisational	The risk may present challenges for undertaking local consultations and implementing projects P=3, I=3	Sites will be selected on the basis of not only risk, but also on capacity to engage with project, and experience of participation in previous donor activities. The Gissar foothills provide an accessible location for coordination from Dushanbe. Local project representatives and consultants will be engaged.

Annex 2: Coordination with other Programmes

Annex 2 sets out key programs that may provide best practice or offer the basis for cooperation on CRM issues:

Disaster Risk Management Program (UNDP)

Given the broad focus of the DRMP on disaster risk management issues, and its expanding portfolio of climate related disaster capacity, a level of coordination will be found to ensure that synergies are maximized, while potential duplication is avoided. The specific focus on the Climate Risk Management aspects of agro-forestry (including economic development and poverty reduction alongside DRR), and the development of pilot initiatives in the Gissar River Basin (where DRMP is not currently active), will ensure that there thematic and geographical overlap are avoided. The proposal takes into account the scope of existing DRMP initiatives with a climate component: These are in the area of risk assessment and early warning ("Support to Risk Monitoring and Warning System", "CoES Capacity Building"), Policy and legislative revision and advocacy ("DIPECHO 6") and climate related disaster management ("Climate Induced Risk Management").

As a result, the focus on pure disaster risk reduction set out in the regional pro-doc will be less pronounced in Tajikistan. Activities related to developing community based disaster risk management approaches, undertaking disaster risk assessments or set up EWS will be not be a core focus. Where linkages are found between forestry management and DRR (for example identifying potential planting sites for risk mitigation, or mapping historic climate disasters for a given region), the program will draw upon DRMP (CoES/REACT) capacity. Likewise, the program will use existing good practice developed under DMRP on EWS and national DRM strategies into the climate risk management process at a national level as a core component.

The Central Asian Countries Initiative for Land Management CACILM (UNDP)

CACILM ten-year investment programme in its second phase (2009-13). During the first phase, it implemented a program "Rural Development and Demonstrating Local Responses to Combating Land Degradation and Improving Sustainable Land Management in Southwest Tajikistan". The scope of CACILM has been expanded to include sustainable land management, climate change, water resources management and biodiversity and National Programming Frameworks are now being reformulated with a climate change lens. The regional structure and cross sectoral focus of CACILM creates opportunities for the CRM program to leverage data management, information exchange and capacity building synergies at a national and regional level.

CACILM has already established a National Secretariat (NSEC) in cooperation with GIZ and ADB which will be housed at the Committee for Environmental Protection (CEP). The secretariat will coordinate decision making on national adaptation and mitigation strategy. The CRM project can assist the NSEC in the identification of national priorities and in their implementation of CACILM focal areas (land management, climate change adaptation, food security, water management and biodiversity) as well as participate in updating the national programming framework. CRM can also integrate its In relation to knowledge management and public relation support. CACILM will also establish an advisory consultative group including ministers and deputy ministers, to be headed by the Deputy Prime minister. This will provide an additional level of access to policy development and integration of CRM into national action plans, local authorities and other state agencies.

Sustaining Agricultural Biodiversity in the face of climate change in Tajikistan (UNDP)

We will cooperate with this program to identify climate risks to biodiversity and climate resilience in relation to agro-forestry species. We will also draw upon the work being undertaken to identify economic value chains.

The Sustaining Agricultural Biodiversity in the face of climate change in Tajikistan will test and demonstrate replicable ways in which rural farmers and communities can benefit from agro-biodiversity conservation in ways that also build their capacities to adapt to climate change The program is reviewing the potential for climate resilient and indigenous species . They are seeking to pilot resilient orchards in other regions of Tajikistan. We will liaise closely with the project. The project operates in partnership with the National Biodiversity and Biosafety Centre, the UNDP Communities Programme, and the GEF Small Grants Programme. The program has three strands. The first focuses on strengthening existing policy and regulatory frameworks in support of agro-biodiversity conservation and adaptation to climate change, with emphasis on local level implementation. The second focuses on developing community, institutional, and system capacity to enable farmers and agencies to better adapt to climate risks through conservation and agro-biodiversity. The third focuses on the development of agro-enterprises that support the conservation and production of agro-biodiversity friendly products, with a view to providing farmers and communities with alternative sources of income to offset the negative impacts and shocks related to climate change.

Pilot Program for Climate Resilience (PPCR)

Activities will be coordinated with capacity building being undertaken under the Pilot Program for Climate Resilience (PPCR). It is possible that UNDP will play an implementing role in one of the activities under the PPCR (A3) process, and synergies with the CRM program will need to be sought. In particular, a number of climate institutional assessments, training programs and investments in modelling, hazard management and forecasting infrastructure are underway. The PPCR has organised a secretariat that is currently hosted by the Hydromet. In particular, the PPCR is undertaking activities to strengthen weather forecasting and early warning systems in Hydromet, and undertaking a national capacity inventory.

Sustainable management of natural resources in Gorno-Badakhshan (GIZ)

The second approach is the restoration of the flood plains in Gorno-Badakhshan. Reforestation is being achieved with the support of the forestry authorities, by introducing a forest management system that also involves the local forest users. The local, formerly illegal users receive long-term property and usage rights based on lease contracts and management plans that have been developed with their own participation. This in turn motivates them to invest in the restoration of the forest resources. This component is being carried out in close collaboration with a similar project financed by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), in order to achieve better results.

Sustainable regeneration and development of riverside forests in the Gorno-Badakhshan Autonomous Province (GIZ)

The project is run with funding from the International Climate Initiative (ICI) and was commissioned by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. The Joint Forestry Management approach is an innovative and decentralised management instrument for extensive rehabilitation and development of state forests in Tajikistan, which has been adapted to suit current socioeconomic conditions. Long-term leases afford local forest users legal rights of use for forest areas. In return they take on protection and development obligations. Any profit gained from forest use is split between state forestry authorities and local leaseholders so that both parties have an interest in sustainable

management of the forest. With this approach, 4,000 hectares of severely degraded riverside forest is to be regenerated in GBAO. The project helps arrange leases between state forestry authorities and local forest users and supports forestry management through contractual investment measures for the rehabilitation of irrigation systems and protective fences, and by making seed stock available. The potential of the approach has already been effectively demonstrated through a four-year pilot phase on a 100-hectare area; partly illegal forest users became legal forest leaseholders with clearly defined long-term rights of use.

The reform of the national forestry code and the corresponding provisions for implementation will take place alongside the project and will in part be shaped by it. Building upon the experience gained from project work to date in GBAO, this will mainly involve round table discussions on a national level as well as information and discussion workshops for forest authority representatives from all provinces. The project will support the forestry authorities in GBAO as they complete the necessary reorganisation to become an economically self-sufficient advisory and monitoring institution for the development and use of forests. It will promote the development of the institution's performance and the skills and know-how of all employees at province and district level (capacity development). The reform of the forestry commission in GBAO will serve as an example for other provincial forestry commissions in Tajikistan to follow.

Create conditions for rehabilitation of wood areas and protection of lands from wind and sand erosions through plantation of Halaxyon in 60 ha land in Shaartuz area, Tajikistan. (UNDP)

The main goal of the project is to create conditions to rehabilitate deserted wood areas and ensure land protection of 1,795 ha of arable lands, 1,050 ha of kitchen-garden plots, and 250 ha presidential lands. The objectives of the project included but are not necessary limited to: 1) land protection from sand wind erosions and increase lands production through rehabilitation of deserted wood areas; 2) introduce sustainable land management best practices within rural areas, 3) provide civic awareness raising campaigns on project goals, objectives, expected results and impacts on environment rehabilitation and land protection, exchange SLM experiences and best-practices.

Other potential projects and institutional partners include:

- WFP Seedlings Project
- The Tajikistan Information Management Analysis Centre (IMAC) is situated within the Commission of Emergency Situations. It has an MOU with each ministry for information exchange, and receives data on a continual basis from the ministries (e.g. climate data, road construction data, health data and so on). Before these agreements, data extraction from ministries was *ad hoc* and often difficult. In addition, the IMAC is analysing socio-economic and biophysical data to assess the costs of all climate-related disasters. For this reason, the IMAC has numerous databases that are relevant to the CA-CRM. Furthermore, the IMAC employs staff with analytical experience which would be a great asset to CA-CRM. It is thus proposed that the CA-CRM bolts onto the IMAC and builds on the foundation that they have taken years to establish.
- Rapid Emergency Assessment and Coordination Reaction (REACT) is a potential mechanism for managing adaptation in Tajikistan.
- CRM interventions involving carbon finance could potentially be guided by the DNA for CDM because it has been assigned funding and has expertise in the climate variability and change field.
- The SDC is supporting a number of programmes in Tajikistan, including: i) irrigation; ii) water supply/sanitation; iii) development of Hydromet capacity; iv) the regional CAREWIB programme which focuses on calculating water availability in key water basins; v) IMAC establishment; vi) GLOF monitoring; vii) reforestation using fruit trees; viii) natural

disaster management and integrated watershed management; and ix) energy subsidization projects for the rural poor. The CA-CRM should seek suitable partnerships with the SDC in order to learn from their experiences and to create synergy between adaptation initiatives.

- UNDP is involved in water management, agriculture, and disaster management Tajikistan.
- UNDP-UNEP Poverty and Environment initiative (PEI) – this is an initiative supporting country-level efforts to mainstream environmental management into national and sub-national planning processes through financial and technical assistance and capacity development98. It will include climate variability and change concerns into its project planning[99].
- UNDP Communities Programme (CP) is a flagship multi-year and multi-focus programme of UNDP that brings together critical partnerships with the government and the donors (such as DFID, EU and SDC). It supports implementation of Tajikistan's Poverty Reduction Strategy (PRS, 2007-2009) and National Development Strategy to 2015. Starting in 1997 with a community-based approach to promoting rural development100. It has also undergone a climate-proofing exercise.
- WB is involved in irrigation, agricultural diversification and disaster risk management.
- National Action Plan on Climate variability and change. However, there is limited funding to implement the action plan. Hydromet is the lead agent.
- 'One UN' is undertaking a joint programming initiative called Green Initiative for Tajikistan (GIFT). The proposed programme framework of GIFT includes four objectives. The first objective focuses on large-scale tree planting to reverse land degradation. In Afghanistan, where this initiative was first conceived, school children were provided with fruit trees to plant in public places and at home. Tree planting from this initiative creates employment, stimulates business, controls erosion, improves food security and reduces climate-related disaster risks (e.g. mudslides). This initiative is attempting to reverse the levels of deforestation in the country. GIFT has reviewed all reforestation projects. The second objective consists of an awareness raising campaign about "going green" in Tajikistan. The third objective is centred on improving fuel-use efficiency and introducing renewable sources of energy to communities within Tajikistan. The fourth objective of GIFT will tackle capacity building.
- WFP is also involved in a Food Security Monitoring System, which assesses foods security at the village level. The system uses a detailed questionnaire that is based on socio-economic indicators. These data could potentially be used to monitor climate variability and change impacts.
- International Centre for Research in Dry Areas (ICARDA) has a large programme implemented through CACILM on sustainable land management. The focus is on improving the efficacy of rain-fed agriculture.
- FOCUS works with DFID, GTZ, and SDC to assess risk of glacial lake outburst floods (GLOF). The project includes detailed hazard mapping, village planning, training and implementation of EWS's. FOCUS also works with government to train them in GLOF

[98] UNDP-UNEP PEI country programme concept note 2009.

[99] Email correspondence from Anna Kaplina to the international consultant, 31-08-2009.

[100] UNDP-UNEP PEI country programme concept note 2009.

assessments and GIS/remote sensing. List of adaptation related projects includes *inter alia*:

- Fostering disaster resilient communities in isolated mountain environments (includes for example installation of two-way wireless radios, capacity building, awareness-raising, and education of school students).
- GBAO School Safety initiative (includes risk assessment, mapping and training; disaster awareness and preparedness in schools).
- Rehabilitation of the water channel and debris flow channel in the Tavdem and Ishkashim Jamoats of the Roshtqala and Ishkashim Districts (rehabilitation of the water channels to reduce risks of landslides).
- Department for International Development (DFID) is supporting a remote geohazards assessment and capacity building project in Tajikistan. The focus is on GLOF and determining the extent of risk across Tajikistan and the budget is $1.6 million. Appropriate EWS's will also be determined.
- WB and ADB are working with the Ministry of Agriculture to develop new water saving agricultural techniques, such as drip irrigation.
- Rapid Emergency Assessment and Coordination Reaction (REACT) is a project that was started by the Office for Coordination of Humanitarian Affairs (OCHA) and has been extended by UNDP. It is a potential mechanism for managing adaptation in Tajikistan.
- The Humanitarian Futures Programme: this programme aims to assist organisations engaged in humanitarian response to be more effective in dealing with more complex future crises.
- UNDP-GEF "Sustaining agro-biodiversity in the face of climate variability and change" 2009-2014: This aims to address the following three components: i) agro-biodiversity conservation and adaptation to climate variability and change through supportive policy, regulatory and institutional frameworks; ii) improved capacity for sustaining agro-biodiversity in the face of climate variability and change; and iii) enabling environment for market development for agro-biodiversity products developed.