REQUEST FOR PROJECT
FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project must be fully prepared (i.e. fully appraised for feasibility) when the request is submitted. The final project document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN P4-400
Washington, D.C., 20433
U.S.A.
Fax: +1 (202) 522-3240/5
Email: afbsec@adaptation-fund.org

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List of acronyms and abbreviations

Adaptation Strategy	Strategy of Adaptation to Climate Change, Prevention and Minimization of its Adverse Effects
ADB	Asian Development Bank
AF	Adaptation Fund
AFA	Administrative/Finance Assistant
ALRI	Agency for Land Reclamation and Irrigation
AWP	Annual Work Plan
BCPR	Bureau for Crisis Prevention and Recovery
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
CAC	Central Asia and the Caucasus
CACAARI	Central Asia and the Caucasus Association of Agricultural Research Institutions
CA-CRM	Central Asian Multi-Country Programme on Climate Risk Management
CAFT	Climate adaptation through sustainable forestry in important river catchment areas in Tajikistan
CAREC	Central Asian Regional Economic Cooperation
CBD Strategy	National Strategy and Action Plan on the Conservation and Sustainable Use of Biodiversity
CBOs	Community-based organisations
CCA	Climate change adaptation
CDP	Combined Delivery Report
CEP	Committee for Environmental Protection
CGIAR	Consultative Group on International Agricultural Research
CIA	Central Intelligence Agency
CSA	Climate-smart Agriculture
DDPs	District Development Plans
DoG	Department of Geology
DRMP	UNDP Disaster Risk Management Programme
DRR	Disaster risk reduction
EDB	Eurasian Development Bank
EbA	Ecosystem-based Adaptation
EIAs	Environmental Impact Assessments
EPs	Enterprise Plans
ESMF	Environmental and Social Management Framework
ESP	March 2016 Revision of the Environmental and Social Policy of the Adaptation Fund
FAO	The Food and Agriculture Organisation of the United Nations
FFSs	Farmer Field Schools
GBAR	Gorno-Badakhshan Autonomous Region
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse gas
GHG Strategy	Greenhouse Gas Abatement Strategy
GINA	Global Database on the Implementation of Nutrition Action
GIZ	*Deutsche Gesellschaft für Internationale Zusammenarbeit*
GLOFs	Glacial lake outburst floods
GoT	Government of Tajikistan
Hydromet	State Agency for Hydrometeorology
ICAS	Initiatives in Critical Agrarian Studies
ICARDA	International Center for Agricultural Research in the Dry Areas
ICR	Intelligent Character Recognition

IDA	International Development Association
IDS	Institute for Development Studies
IEF	Impact evaluation framework
ILO	International Labour Organisation
IMCC	Inter-Ministerial Coordination Council
IMS	Information Management Systems
INDC	Intended Nationally Determined Contribution
ISS	International Institute of Social Studies
IW	Inception Workshop
IWRM	Integrated Water Resources Management
KRB	Kofirnighan River Basin
KRBMP	Kafirnigan River Basin Plan and Management Plan
LITACA	Livelihood Improvement in Tajik-Afghan Cross-border Areas
LSIS	Living Standards Improvement Strategy of Tajikistan for 2013–2015
LUP	Land-use planning
M&E	Monitoring and evaluation
Masl	Metres above sea level
MEWR	Ministry of Energy and Water Resources
MFIs	Microfinance institutions
MHCRM	Multi-Hazard Climate Risk Model
MLRWR	Ministry of Land Reclamation and Water Resources
MTDP	Mid-term Development Programme 2016–2020
MTR	Mid-term Review
NAPCC	National Action Plan of Tajikistan for Climate Change
NCCAS	National Climate Change Adaptation Strategy Tajikistan: Building Capacity for Climate Resilience
NDRMS	National Strategy on Disaster Risk Management for 2010–2015
NDS	National Development Strategy
NEAP	National Environmental Action Plan
NHDR	National Human Development Report
NIM	National Implementation Modality
NPACD	National Programme of Actions to Combat Desertification
NPC	National Project Coordinator
NPD	National Project Director
OCSE	Organisation for Security and Cooperation in Europe
PES	Payment for Ecosystem Services
PGRFA	Plant Genetic Resources for Food and Agriculture
PLAAS	Institute for Poverty, Land and Agrarian Studies
PM	Programme Manager
PPCR	Pilot Programme for Climate Resilience
PPR	Project Progress Report
PRISE	Pathways to Resilience in Semi-arid Countries
PRS	Poverty Reduction Strategy
PSC	Project Steering Committee
PUUs	Pasture User Unions
Ramsar Convention	Convention on Wetlands of International Importance especially as Waterfowl Habitat
RBCs	River Basin Councils
RBOs	River Basin Organisations
DRS	Districts of Republican Subordination
SDC	Swiss Agency for Development and Cooperation
SIDA	Swedish International Development Cooperation Agency
SIWI	Stockholm International Water Institute

SLM	Sustainable Land Management
SPCR	Strategic Program for Climate Resilience
TJS	Tajikistan Somoni
ToT	Training-of-Trainers
TR	Terminal Review
UCA	University of Central Asia
UN Environment/ UNEP	United Nations Environment Programme
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
Watershed	In this document, the smallest hydrological unit for management of land and water resources
WAPs	Watershed Action Plans
Water Reform Programme	Water Sector Reforms Programme of the Republic of Tajikistan for 2016–2025
WB	World Bank
WBG	World Bank Group
WHO	World Health Organisation
WMO	World Meteorological Organization
WUAs	Water User Associations

ADAPTATION FUND

PROJECT PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT INFORMATION

Project Category:	Regular Project
Country/ies:	Tajikistan
Title of Project	An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	UNDP
Executing Entity/ies:	Committee for Environmental Protection (CEP)
Amount of Financing Requested:	US$ 9,996,441

Project Background and Context:

Introduction

The Republic of Tajikistan (hereafter Tajikistan) is the most climate-vulnerable country in Central Asia. Extreme rainfall events have become more frequent and intense, the rainfall season has shortened in many parts of the country, air temperatures have risen markedly, and glacial melting is accelerating[1]. As a result, hydrometeorological disasters such as droughts, floods, mudflows and landslides are more frequent and rates of soil erosion across the country are increasing. The socio-economic impacts of these changes are considerable: livelihoods, agricultural productivity, water availability and hydroelectricity production are all compromised[2]. Indeed, natural hazards, most of which are linked to climate change (e.g. droughts and landslides), result in annual losses equivalent to ~20% of the country's Gross Domestic Product (GDP)[3].

The vulnerability of Tajikistan to climate change is exacerbated by a low adaptive capacity as a result of ageing infrastructure, the disproportionate number of women in poverty compared with men[4], and limited institutional capacity. This vulnerability is expected to intensify in the future, and consequently the building of climate resilience across the country is of paramount importance[5].

Given the above context, the proposed Adaptation Fund (AF) project will introduce an integrated approach to landscape management to develop the climate resilience of rural communities in

[1] Third National Communication of the Republic of Tajikistan under the United Nations Framework Convention on Climate Change. 2014. Committee on Environmental Protection, State Administration for Hydrometeorology, Government of The Republic of Tajikistan.
[2] World Bank (WB). 2013. Tajikistan: Overview of climate change activities.
[3] WB 2013 Tajikistan: Overview.
[4] This phenomenon is referred to as the 'feminisation of poverty', where women bear the burden of poverty – particularly in developing countries – as a result of lack of income and gender biases.
[5] WB 2013 Tajikistan: Overview.

Tajikistan. The proposed project's activities will focus in particular within one of the most climate-vulnerable river basins, namely the Kofirnighan River Basin (KRB). An integrated catchment management strategy will be developed for this basin which will be operationalised at *raion* (district), *jamoat* (sub-district) and village levels[6]. The strategy will provide detailed guidelines for suitable landscape management interventions to reduce the vulnerability to climate change.

Important principles underpinning the strategy will include: i) climate risks will need to be managed at a range of spatial scales (catchment and watershed[7]); ii) upstream-downstream interactions at different time scales (e.g. via glacial lake outburst floods, flooding and soil erosion) will need to be understood by planners and decision-makers in the KRB; iii) long-term development plans for the KRB will need to include a focus on climate risk management; iv) a cross-sectoral and integrated approach for managing water resources, forests, pasture land and agricultural land at the watershed level will be required to build climate resilience; v) landscape management interventions will need to focus on Ecosystem-based Adaptation (EbA), which will invariably include elements of both Sustainable Land Management (SLM) and Climate-smart Agriculture (CSA) practices; and vi) existing knowledge management platforms and hubs will need to be used to present lessons learnt within the KRB for promoting future national upscaling and replication of the project's activities.

Complementing the catchment management strategy, the proposed project will directly build the resilience of selected communities by: i) implementing on-the-ground EbA; ii) supporting agro-ecological extension services to provide technical assistance on climate change adaptation practices to local community members; iii) promoting the development of business models that capitalise on EbA interventions; and iv) developing a Payment for Ecosystem Services (PES) approach to support the long-term financing of climate-resilient catchment management plans across Tajikistan.

Geographical context

Tajikistan is a small, landlocked country bordered by China to the east, the Kyrgyz Republic to the north, Afghanistan to the south and Uzbekistan to the north-west. The total land area of the country is 142,600 km^2, making it the smallest of all the Central Asian countries[8,9]. Over 90% of the land is mountainous terrain, with approximately half the country being more than 3,000 metres above sea level (masl). The topography of the country is extremely steep, with elevations ranging from 300–7,495 masl (Figure 1). This elevation range has resulted in a significant inter-seasonally and regionally variable climate. Elevation also influences the mean annual temperature, which ranges from -20ºC–30ºC, depending on the region. Similarly, mean annual precipitation varies geographically, ranging from ~30–1,800 mm per annum, and occurring mostly during a unimodal rain season that lasts ~7 months.

The mountainous regions of Tajikistan are of global importance as a glacial area. Approximately, 60% of the total number of glaciers in Central Asia are located within the country. Together, these

[6] The administration delineations are explained in the following sub-section on the socio-economic context of Tajikistan.
[7] The terms 'catchment' or 'basin' refer to a portion of land drained by a river and its tributaries, and are used interchangeably throughout this document. Catchments/basins can be subdivided into 'watersheds' i.e. areas of land around a smaller river, stream or lake.
[8] Third National Communication 2014.
[9] The total land surface areas of the remaining four Central Asia countries, in order of increasing size, are: i) Kyrgyzstan at 199,900 km^2; ii) Uzbekistan at 448,978 km^2; iii) Turkmenistan at 491,210 km^2; and iv) Kazakhstan at 2,725,000 km^2.

glaciers make up ~6% of Tajikistan's land area (Figure 2) and are important water reserves, storing ~406 km^3 of water and contributing to between 40 and 60% of the national renewable freshwater resources[10]. Two principle mountain ranges in Tajikistan – namely, the Pamir and Alay – give rise to several glacial-fed streams and rivers that are used to irrigate large areas of farmlands. Increased intensity of glacier melting is likely to lead to significant changes in the hydrological system and a greater risk of water-related natural disasters, such as floods and mudflows[11]. Over the last decade, water-related natural disasters have cost the Government of Tajikistan (GoT) more than US$1 billion and have resulted in the loss of hundreds of lives[12].

Figure 1. Map showing the five administrative regions of Tajikistan, namely Sughd, Khatlon, Districts of Republican Subordination (DRS) (previously known as Karotegin Region), Badakhshan and Dushanbe[13,14].

Tajikistan's water resources are an integral contributor to the local economy, specifically for the agricultural and energy sector. Irrigation agriculture and livestock farming account for over 90% of annual water withdrawals, primarily from surface water sources. Despite this disproportionate water resource allocation to the agricultural sector, Tajikistan only develops 700–1,200 ha of land

[10] United Nations Economic Commission for Europe (UNECE). 2017. Environmental Performance Review: Tajikistan, Third Review.
[11] Pathways to Resilience in Semi-Arid Countries (PRISE). 8 September 2018. "COMMENT: Tajikistan's glaciers melting – far more than just a loss of ice". Available at: http://prise.odi.org/comment-tajikistans-glaciers-melting-far-more-than-just-a-loss-of-ice/ [accessed 03.07.2018].
[12] PRISE 2018 "Tajikistan's glaciers melting".
[13] The five administrative regions of Tajikistan are: i) Sugd *oblast*; ii) Khatlon *oblast*; iii) Gorno-Badakhshan *oblast*; iv) Regional Republic Subordination (RRS) – which consists of 13 autonomous districts; and v) Dushanbe.
[14] Maps of the world. 2016. Maps of Tajikistan. Available at: http://www.maps-of-the-world.net/maps-of-asia/maps-of-tajikistan/ [accessed 03.07.2018].

for irrigation annually. This amount is ~10 times less than what was planned in the Water Sector Development Strategy for 2010–2025[15]. Such slow progress in irrigating agricultural land is attributed to insufficient investment into the agricultural sector and has resulted in the country needing to import ~50% of most of its staple foods.

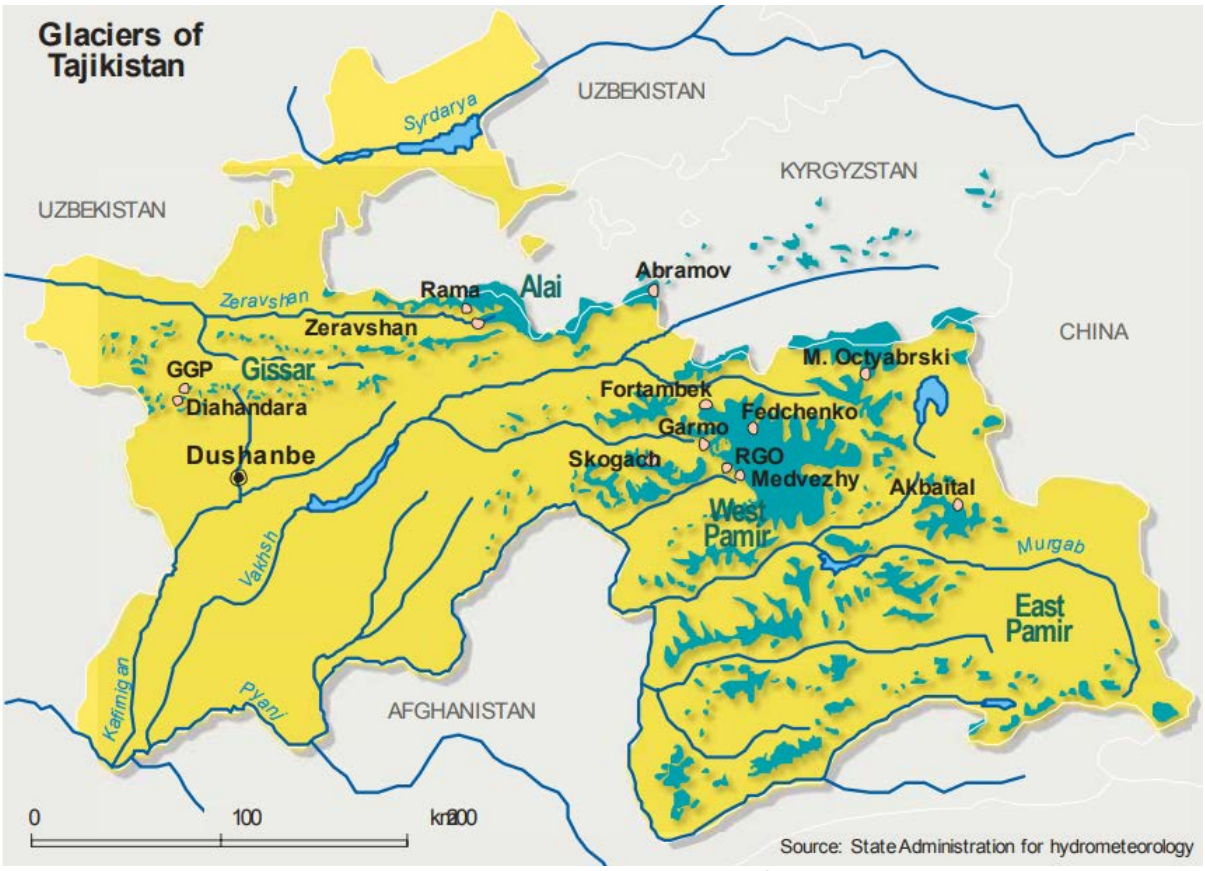


Figure 2. Map illustrating the extent of glacier coverage in Tajikistan[16].

Socio-economic context

Tajikistan has a rapidly growing population, which at present numbers ~8.35 million[17]. Most people live in rural areas and are heavily dependent on agriculture for their livelihoods. Between 2005 and 2014, the population increased by ~22%[18]. Unlike many other countries globally, this rapid growth has not led to increased urbanisation. Indeed, the proportion of rural (~73%) to urban residents (~27%) has remained relatively constant since 2005[19].

[15] Water Sector Development Strategy for 2010–2025. 2009. Ministry of Land Reclamation and Water Resources (MLRWR) & Organisation for Security and Cooperation in Europe (OCSE), Dushanbe, Tajikistan.
[16] Kayumov A. 2016. Glaciers resources of Tajikistan in condition of the climate change. State Agency for Hydrometeorology of Committee for Environmental Protection under the Government of the Republic of Tajikistan. Designer: Minikulov N.
[17] UN DESA/Population Division. 2017. World Population Prospects 2017. Available at: https://esa.un.org/unpd/wpp/Graphs/DemographicProfiles/ [accessed 03.07.2018].
[18] UNECE 2017 Environmental Performance Review.
[19] Ibid.

The economy of Tajikistan is relatively weak compared with neighbouring countries – having the lowest per capita GDP (of ~US$970) in the United Nations Economic Commission for the Europe (UNECE) region. There has, however, been continuous growth in GDP over the last 20 years[20], with a total increase of 100% between 1998 and 2018. This growth has significantly improved the living standards of the population, resulting in a decrease in the number of people living below the poverty line from 53% to 36%[21].

Current socio-economic development trends in Tajikistan are closely connected to growth in the agricultural sector. This is because agriculture accounts for 75% of total employment and 23% of GDP, despite only 7% of the land surface being classified as arable. Cotton farming makes up the majority of the sector and is Tajikistan's main agricultural export product. Other agricultural focal areas include rice, grain, tobacco, corn, potato, vegetables, horticulture, vineyards and cattle breeding[22]. Like in other Central Asian countries, agricultural productivity showed a marked decline during the transition period from the Soviet Regime to independence[23], with productivity levels dropping ~50% by 1997[24]. By 2007, agricultural productivity in the country had, however, almost recovered to pre-transition levels, with the quantity of agricultural produce doubling again between 2005 and 2014[25].

Given the mountainous terrain of the country, transportation networks are integral to economic development[26] because they provide links to markets for multiple sectors, including agriculture. The main economic sectors in Tajikistan are, however, severely at risk from extreme climate events, particularly glacial lake outburst floods (GLOFs) and avalanches. GLOFs pose the most significant large-scale risk to transport networks – and consequently many other sectors – because of their unpredictability and the extent of affected area[27]. These events often cause extensive damage to trade networks, making them extremely detrimental to the economy[28]. In addition, both sudden and slow onset flooding events can cause landslides that have major negative impacts on the population[29].

Administrative delineations

The administrative division of the country is established by its parliament and consists of three tiers of local government. These tiers are described below.

- First tier: sub-district- or *jamoat*-level. These are village and town governments in rural areas.
- Second tier: district- or *raion*-level. These are the administrations of large cities and *raions* which are subordinate to *oblasts.*

[20] Trading Economics. 2018. Tajikistan GDP per capita. Available at: https://tradingeconomics.com/tajikistan/gdp-per-capita [accessed 03.07.2018].
[21] UNECE 2017 Environmental Performance Review.
[22] National Action Plan of Tajikistan for Climate Change Mitigation (NAPCC). 2003. Main Administration on Hydrometeorology and Environmental Pollution Monitoring Ministry for Nature Protection of the Republic Tajikistan, Dushanbe.
[23] causes include the Tajik Civil War, removal of the centralised Soviet infrastructure and limited agricultural expertise
[24] Lerman Z. 2007. Tajikistan: An overview of land and farm structure reforms. The Hebrew University of Jerusalem. Discussion Paper 208.
[25] UNECE 2017 Environmental Performance Review.
[26] NAPCC 2003.
[27] Monhanty A, Mishra M, Mohanty B & BalaSuddareshwara A. 2011. Climate changes and natural hazards in mountain areas. Mountain Hazards 2011. Dushanbe, Tajikistan.
[28] The World Bank (WB). 13 September 2017. Strengthening infrastructure in Tajikistan for disaster and climate resilience. Available at: http://www.worldbank.org/en/news/feature/2017/09/04/strengthening-infrastructure-in-tajikistan-for-disaster-and-climate-resilience [accessed 03.07.2018].
[29] WB 2017 Strengthening infrastructure in Tajikistan.

- Third tier: *oblast*-level. These are the administrations of the capital city Dushanbe, as well as the *oblasts* of the Gorno-Badakhshan Autonomous Region (GBAR), Khatlon and Sougd, all of which are directly subordinate to the national government.

There are also District of Republican Subordination (DRS) which cover districts of Rasht and Gissar Valleys as well as those around the city of Dushanbe.

Tajikistan's capital city, Dushanbe, has 4 city districts, while the country's three *oblasts* have 58 rural districts between them. The GBAR is subdivided into 7 *raions* and 1 city; Sougd into 14 *raions* and 8 cities; and Khatlon into 24 *raions* and 4 cities[30]. Each *oblast, raion* and city has its own *khukumat*, or local council, with a chairperson who is appointed by the president and approved by respective council members. Local councils of second- and third-tier governments exercise the rights of self-government in their respective territories. Their decisions are legally binding for all institutions and organisations within their territories. Legislation does not address local self-government activity below the level of villages and towns. However, grassroots organisations of community self-government, such as *Mahala* committees are widespread and often exercise limited autonomy in solving local issues[31].

Environmental context

Tajikistan is situated at the confluence of several diverse biogeographic regions. Influenced by variable weather patterns, these regions host a wide range of ecosystems, including glaciers, forests, woodlands, rangelands (steppe and grasslands), semi-deserts, deserts and wetlands[32,33]. The country is part of the Central Asia biodiversity hotspot[34], which supports a rich diversity of flora and fauna[35]. Ecosystems in Tajikistan are home to more than 23,000 plant species (of which ~8% are endemic) and more than 13,500 animal species (of which ~6% are endemic)[36]. Mountain ecosystems, situated between 600 and 7,000 masl, contain ~80% of the country's biodiversity and have high levels of endemism[37]. These mountain ecosystems also provide essential water resource services to their respective regions and to most of the country's summer pastures.

Tajikistan's 142,600 km^2 total land area is comprised of diverse ecosystems that support a range of land uses and resources, including:

- ~3% forests and shrublands;
- ~5% intensively-used arable land;
- ~32% agricultural lands, predominantly pastures; and
- ~60% natural (non-agricultural) areas, including glaciers, snowfields, well-vegetated mountain slopes, mountain deserts and rock/pebble fields[38].

[30] Ilolov M & Khudoiyev M. 2001. Local government in Tajikistan. In: Munteanu I (ed.) Developing New Rules in the Old Environment. Local Governments in Eastern Europe, in the Caucasus and in Central Asia. Budapest: Open Society Institute 603–648.
[31] Ilolov & Khudoiyev 2001 Local government in Tajikistan.
[32] Squires VR & Safarov N. 2013. Diversity of plants and animals in mountain ecosystem in Tajikistan. Journal of Rangeland Science 43–61.
[33] National Strategy and Action Plan on the Conservation and Sustainable Use of Biodiversity (CBD Strategy). 2003. Government of Republic of Tajikistan, Dushanbe.
[34] Fauna and Flora International. 2018. "Tajikistan: Wild riches in a mountainous terrain". Available at: https://www.fauna-flora.org/countries/tajikistan [accessed 03.07.2018].
[35] World Wide Fund for Nature (WWF). 2018. Central Asia: Kyrgyzstan, Tajikistan, and Uzbekistan. Available at: https://www.worldwildlife.org/ecoregions/pa0808 [accessed 03.07.2018].
[36] CBD Strategy 2003.
[37] Squires & Safarov. 2013.
[38] NAPCC 2003.

Of Tajikistan's total land area[39], ~22% is currently conserved[40,41].

Conservation areas within Tajikistan are formally recognised in the form of reserves and environmental protection zones[42,43,44]. Five wetlands are listed in terms of the Ramsar Convention[45] and one conservation area has been declared a United Nations Educational, Scientific and Cultural Organisation (UNESCO) world heritage site[46]. Despite these conservation efforts, degradation continues to occur over large parts of the country[47]. Illegal poaching and uncontrolled harvesting of plant species are of particular concern within the reserves and protection zones[48]. Because there is such rich diversity in the country[49], the extinction risk to biodiversity is also high, with 226 plant species and 162 animal species currently classified as rare or threatened[50]. Expanding protected areas and eliminating threats to species extinction are focal areas for the GoT going forward[51,52].

Most territories of Tajikistan are prone to both natural and anthropogenic factors that contribute to land degradation (Figure 3). Tajik landscapes are affected by harsh climatic processes which degrade their health and function. Such harsh processes include freezing, thawing, physical destruction of soils from fluctuations in diurnal temperatures, dehydration, wind erosion and intense rainfall events[53]. Inappropriate land management such as the unsustainable use of forests and pastures, and the conversion of steep slopes for use in agriculture have contributed to the degradation of landscapes[54]. The effects of the harsh climatic processes coupled with the mismanagement of land are magnified by climate change factors[55]. These factors include increasing air temperatures, increasing intensity of extreme rainfall events and the shortening of rainfall seasons. Climate change events have also resulted in the intensification of desertification, landslides, gully erosion and sheet erosion – with the washout of fertile topsoil affecting more than 100,000 ha[56,57]. Available estimates indicate that ~82% of all land in Tajikistan is degraded by soil erosion to some degree. This translates into ~98% of agricultural land being currently affected by soil erosion, with almost ~89% being affected by medium to 'very high' levels of erosion[58].

[39] Third National Communication 2014.
[40] 3.1 million ha
[41] Third National Communication 2014.
[42] 4 reserves, 2 national parks and 13 wildlife reserves
[43] Third National Communication 2014.
[44] The Food and Agriculture Organisation of the United Nations (FAO). 2008. Country Report on the State of Plant Genetic Resources for Food and Agriculture. Republic of Tajikistan.
[45] Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention). 1971. UN Treaty Series No. 14583. As amended by the Paris Protocol, 3 December 1982, and Regina Amendments, 28 May 1987.
[46] Third National Communication 2014.
[47] FAO 2008 Country Report.
[48] Ibid.
[49] Fauna and Flora International 2018 "Tajikistan: Wild riches in a mountainous terrain".
[50] CBD Strategy 2003.
[51] e.g. Tajikistan's national programmes on biodiversity and biosafety
[52] FAO 2008 Country Report.
[53] NAPCC 2003.
[54] Third National Communication 2014.
[55] Ibid.
[56] NAPCC 2003.
[57] Third National Communication 2014.
[58] Poverty-Environment Initiative in Tajikistan. 2012. The Economics of Land Degradation for the Agricultural Sector in Tajikistan – A Scoping Study. Final Report, United Nations Development Programme (UNDP) and United Nations Environment Programme (UN Environment).

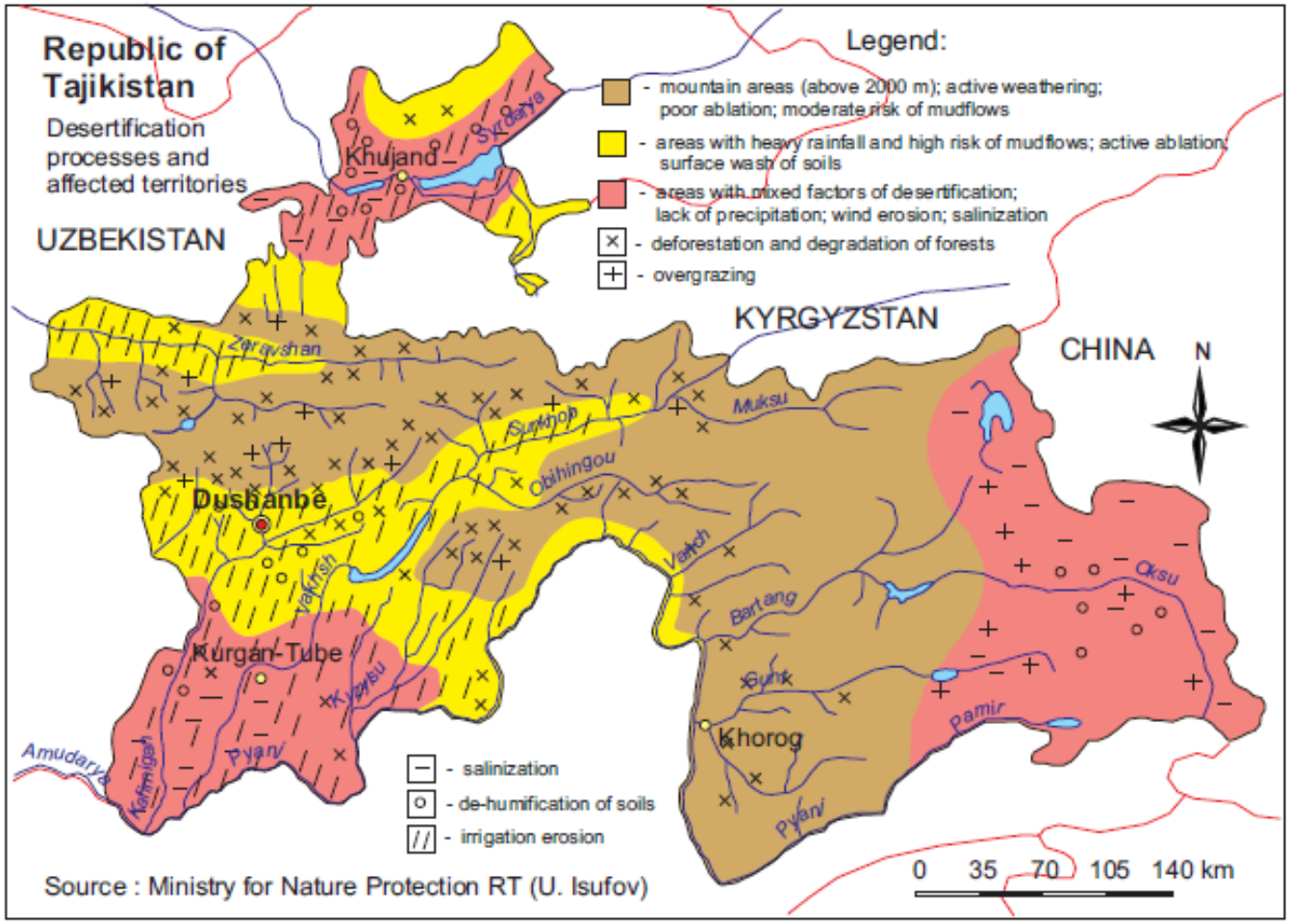


Figure 3. Desertification processes and territories in Tajikistan affected by *inter alia*: i) moderate risk of mudflows (brown); ii) high risk of mudflows, heavy rainfall and surface wash of soils (yellow); iii) desertification, lack of precipitation, wind erosion, salinization (pink); iv) deforestation (x); v) overgrazing (+); vi) salinisation (-); and vii) de-humification of soils (o).[59]

River systems

The terrain of Tajikistan has been eroded to form a diverse range of mountains and steep valleys. The country's mountain ranges create several hydrographic areas, which in turn form the two main river systems. These two rivers feed into six primary rivers across the country. In order of decreasing size and length, these six rivers are: i) Bartang; ii) Vahksh; iii) Pyanj; iv) Kofirnighan; v) Zarafshan; and vi) Karatag. Figure 4 illustrates the river basins in Tajikistan.

[59] NAPCC 2003.

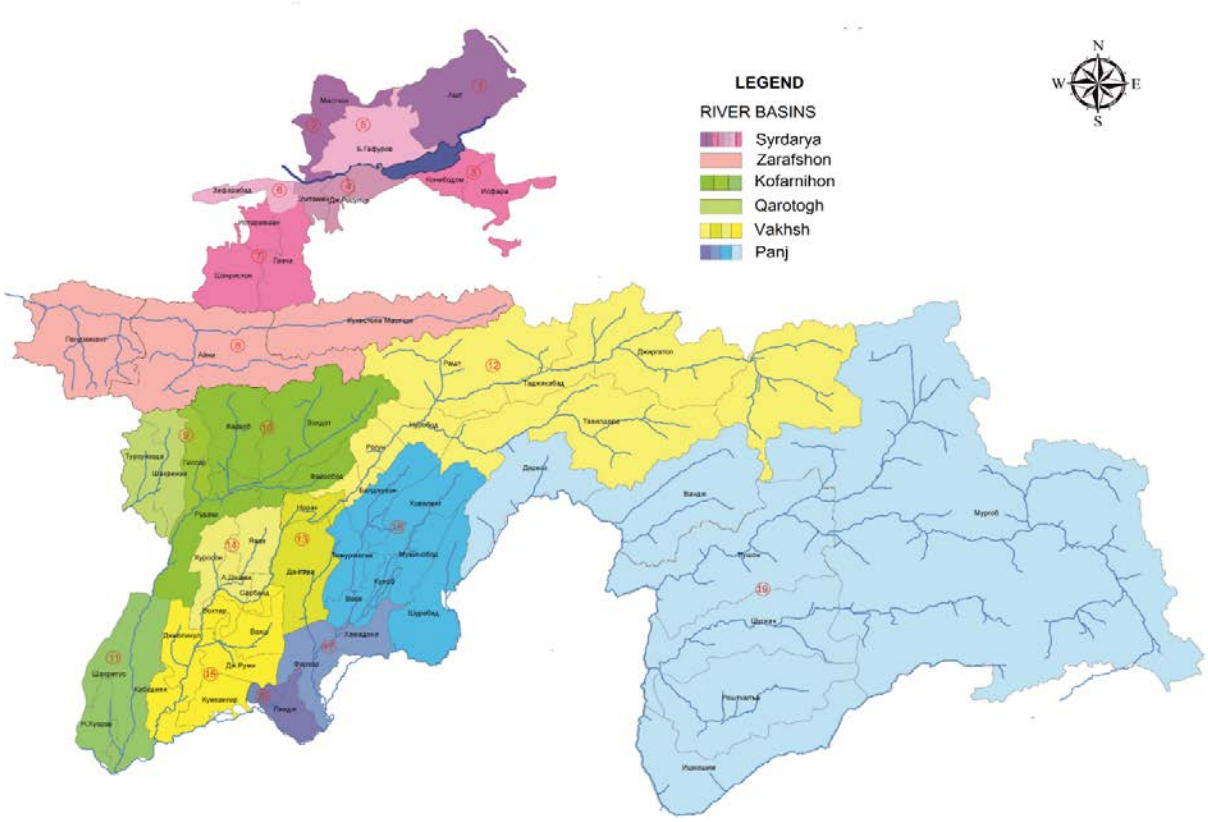


Figure 4. Map of river basins in Tajikistan, namely Bartang (labelled as Surdarya), Vahksh, Pyanj, Kofirnighan, Zarafshan and Karatag[60].

The Water Sector Reform Programme of Tajikistan for 2016–2025 (Water Reform Programme)[61] delineates four river basins according to hydrological boundaries. These four basins are the: i) section of the Syr Darya River that is located in Tajikistan; ii) section of the Pyanj River located in Tajikistan; iii) Vakhsh River Basin; and iv) the Kofirnighan River Basin.[62] By defining these river basins, the Water Reform Programme highlights the shift in the GoT towards improving management of these river systems away from using administrative boundaries. The programme also outlines the GoT's goal of promoting the implementation of integrated water resources management (IWRM) at a basin level.

Of the four river basins identified by Tajikistan's Water Reform Programme, the Kofirnighan River Basin (KRB) is one that currently does not have focused efforts being made towards IWRM[63]. Compared to the other three basins, KRB has received the fewest interventions from government and donors to date. The KRB is topographically and climatically very variable and is highly vulnerable to extreme climate events such as GLOFs, floods, mudflows and landslides[64,65]. It is also the smallest of Tajikistan's four basins and is fully encompassed within Tajikistan (i.e. is not

[60] Fergana Valley Water Resources Management (WRM). 2018. Kafirnigan River Basin Plan and Management Plan (KRBMP) Draft. Unpublished, Dushanbe, Tajikistan.
[61] Water Sector Reforms Programme of the Republic of Tajikistan for 2016–2025 (Water Reform Programme). 2015. Resolution of the Government of the Republic of Tajikistan. Unofficial translation.
[62] Water Reform Programme 2015.
[63] Fergana Valley WRM 2018 KRBMP Unpublished.
[64] State Agency for Hydrometeorology (Hydromet). 2018. Assessment of Kofirnighan River Basin (KRB), natural disasters and needs. Unofficial document.
[65] see sub-section on KRB below

transboundary). A Kofirnighan River Basin Management Plan (KRBMP) has been developed for the basin. Although this plan includes the measures for the improvement of water management, it does not integrate land and natural resources into the water management. Neither does it consider probabilistic impacts of climate change on the river basin hydrology and a broader catchment.

Kofirnighan River Basin

The proposed project focuses its activities within the Kofirnighan River Basin (KRB) as, of the four basins within Tajikistan: i) the KRB has received limited international support for the implementation of integrated catchment management; ii) a large number of communities within the basin are highly vulnerable to a wide range of climate risks; iii) the basin's variable topographic and climatic conditions are highly representative of the conditions in Tajikistan; and iv) there are no transboundary disputes along the river[66]. A detailed justification for the selection of the KRB for project activity implementation has been included as Annex 3.

Situated in the south-western and western parts of the country, the KRB occupies a total area of ~11,600 km^2, with the mountain catchment making up 8,070 km^2 of this (equating to ~70% of the total basin area)[67]. The basin is divided into two regions, namely the north and the central/south regions[68]. The Gissar Valley encompasses the north region, which includes the city of Dushanbe, while the Kofirnighan and Beshkent valley depressions make up the south region. The Gissar Ridge forms the highland areas, extending for 250 km to elevations of ~4,500 masl and is home to 343 glaciers, covering a total area of 115 km^2.[69] The river of Kofirnighan, at ~387 km long, is one of the major contributing inflows of Tajikistan's largest river, the Amu Darya River[70]. It flows through different mountain ranges and zones within the basin including high mountains, intermediate foothills and low and flat zones. The basin's groundwater reserves are economically important and are used to irrigate crops (~98,000 ha) and pastures (~56,000 ha). Most of the irrigated land is in the arid southern sub-basin, while cultivated land in the northern sub-basin is largely rain-fed.

The mountain ranges and glaciers have a major influence on the air temperatures within the KRB. Temperature and precipitation gradients exist along the zones (mountainous, foothill, low), with temperatures increasing as one moves from the mountainous to the low-lying zones, and precipitation decreasing in this direction. In the mountainous areas of KRB, average temperatures range from 18°C in the summer months (hottest summer temperatures being ~35°C) to –8°C in the winter months (with cold air masses sometimes resulting in temperatures as low as –30°C). Intensely hot summer temperatures are typical for the south of KRB, which experiences mild winters compared with the north. Average temperatures in the southern areas of KRB range from ~31°C in the summer months (hottest summer temperatures being ~48°C) to ~2°C in winter (with temperatures dropping to as low as -28°C) [71].

In terms of political divisions, the KRB is made up of 10 administrative districts, 4 cities including Dushanbe, 10 villages and 77 *jamoats* (rural self-governance bodies). This division in the population is recorded in Table 1. As of January 2017, the total KRB population was 2.8 million people, with ~62% living in rural areas and ~38% in towns. Over the past 13 years, the KRB

[66] reducing the project partners and stakeholders to within the country
[67] Tahirov IG & Kupayi GD. 1994. Water resources of Tajikistan of the Republic of Tajikistan. Dushanbe 1:181.
[68] Fergana Valley WRM 2018 KRBMP Unpublished.
[69] Ibid.
[70] Tahirov & Kupayi 1994 Water resources of Tajikistan.
[71] Fergana Valley WRM 2018 KRBMP Unpublished.

population has increased by 712,000 people (representing a ~34% total increase and an annual growth rate of 2.5%).

Table 1. Kofirnighan River Basin population numbers according to cities and villages[72].

No.	Districts and cities	Population[73]			Population density[74]	No. of cities	No. of urban-type settlements	No. of *jamoats*
		Total	City (%)	Village (%)				
1	Dushanbe	816,200	100	0	8162	1	0	0
2	Varzob	76,900	3	97	45,2	0	1	6
3	Vakhdat	324,000	17	83	87,6	1	1	10
4	Gissar	287,400	14	86	287,4	1	1	11
5	Faizobod	96,900	10	90	107,7	0	1	7
6	Tursunzade	280,000	19	81	233,3	1	0	9
7	Rudaki	476,500	11	89	264,7	0	3	13
8	Nosiri Khusrav	35,900	0	36	44,9	0	0	3
9	Kabodiyon	173,800	7	93	96,6	0	1	7
10	Shaartuz	120,500	14	87	80,3	0	1	5
Total		**2,802,500**	**38**	**62**	**180,8**	**4**	**10**	**77**

The State Agency for Hydrometeorology (Hydromet) has conducted research on the river basins in Tajikistan, identifying KRB as a basin particularly vulnerable to extreme climate events[75,76]. Such extreme events have affected 163 communities within the basin. These KRB communities are illustrated in Figure 5, including the main river and tributaries.

A methodology which ranks rural areas in terms of their vulnerability to climate impacts has been used to identify the specific districts within the KRB that are the most vulnerable to climate change[77,78]. Ranking of areas used the following criteria[79]:

- exposure to extreme climate events caused by climate change including temperature, precipitation, floods and drought;
- sensitivity to climate change on sectors/elements including productivity, poverty, access to land resources, dependence on agricultural production and diseases; and
- adaptation potential which included access to health care, education, drinking and irrigated water, cattle density and internal and external migration.

Taking the above criteria into account, the following districts were deemed the most vulnerable districts within KRB: i) Vakhdat, Faizobod and Varzob in the north; and ii) Nosiri Khusrav, Kabodiyon and Shaartuz in the south.[80] These six districts are described in greater detail in the sub-sections below[81].

[72] Agency for Statistics. 2017. Regions of the Republic of Tajikistan. Under the President of the Republic of Tajikistan.
[73] Population census as at 1 January 2017.
[74] Population density is measured per km^2.
[75] Hydromet 2018 Assessment of KRB, Unofficial document.
[76] Further information concerning the KRB's vulnerability to extreme climate events is presented under 'Climate change context'.
[77] Asian Development Bank (ADB). May 2016. Tajikistan: Building Capacity for Climate Resilience – Mid-term Report (MTR). Technical Assistance Consultant's Report. Prepared by ABT Associates for the ADB and GoT. Project No: 45436–001; TA 8090.
[78] This methodology was developed under ADB project, titled 'Building capacity for climate resilience in Tajikistan', which contributed to the development of the National Climate Change Adaptation Strategy Tajikistan (NCCAS).
[79] ADB 2016 Tajikistan: Building Capacity for Climate Resilience – MTR.
[80] Fergana Valley WRM 2018 KRBMP Unpublished.
[81] Further information concerning districts' vulnerability to extreme climate events is presented under district descriptions.

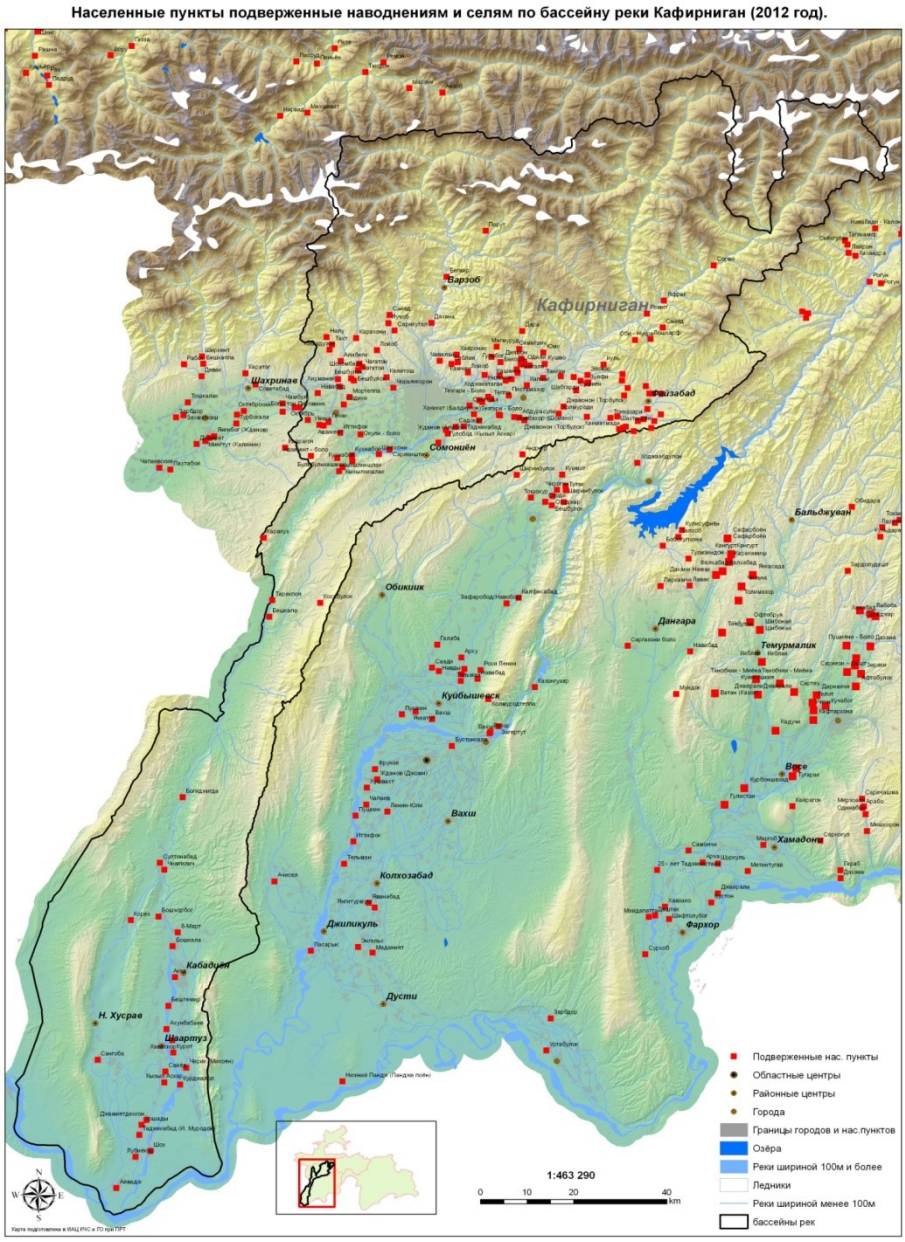


Figure 5. Map of Kofirnighan River Basin (outlined in black) indicating the most vulnerable communities to extreme climate events. Communities are indicated by a red dot.

Vahdat District

The district of Vahdat (Figure 6) is situated ~10 km east of Dushanbe and, at 3,700 km^2, is one of the largest districts in Tajikistan. Altitude, which ranges from ~1,500 masl to more than 3,000 masl, is a major factor influencing the Vahdat climate. Warm summers and cool winters are experienced up to 1,500 masl, with average temperatures between 25–35°C in summer (July) and -5–0°C in winter (January). Between 1,500–2,500 masl, a moderate climate with a cool summer and a cold winter is experienced. At a height of more than 3,000 masl, cold winters are

the norm, coupled with an average annual precipitation of 700–900 mm. The district has five rivers with the largest being the Kofirnighan River, at a length of 70 km[82].

As of 2017, the total population of Vahdat was 324,000 people, with ~83% of the population living in rural areas[83]. Of the total area of the district, agricultural land comprises ~142,000 ha (~38%), of which ~87% is pasture, ~9% is arable land and ~3% is cultivated with perennial trees. Approximately 58% of Vahdat's agricultural production is derived from the production of crops, whilst the remaining ~42% is derived from livestock products. More than 10% of the population works as migrant labourers outside the district[84].

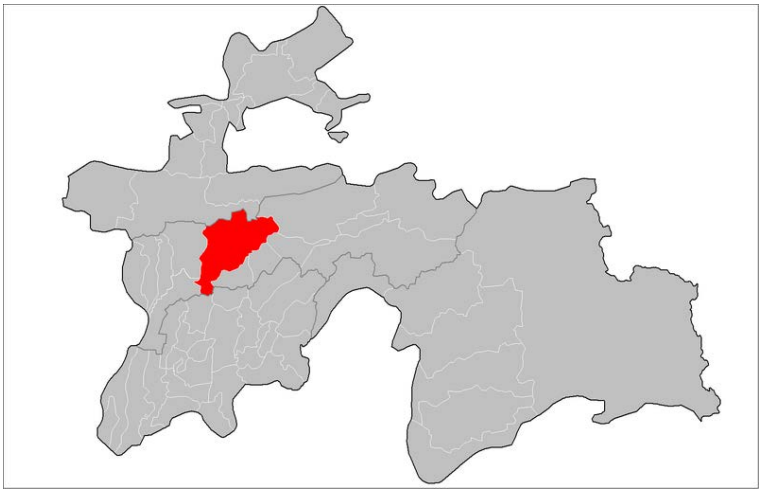


Figure 6. Location of Vahdat District within Tajikistan[85].

Varzob District

Varzob District (Figure 7) is situated north of Dushanbe and covers an area of ~1,700 km^2. The northern extent of Varzob is comprised of the Gissar Mountain Range with the Varzob River running through the entire district from north to south. The Gissar range results in a variable climate, with cold winters. In winter months, the temperature drops to -31°C, with snow thickness reaching up to 1.5 m. Annual average annual precipitation for the district is 960–990 mm. Snow deposits and glaciers make up ~52 km^2 of the total land area in Varzob. These large snow- and glacier-covered areas within the district render most of the territory prone to natural disasters[86].

An array of natural disasters affect the district, including prolonged rainfall events, mudflows, landslides, rockfalls and avalanches. Approximately 31% of existing settlements within the district (22 out of 70) are prone to natural disasters, with ~4% of households located in hazardous areas[87].

[82] Fergana Valley WRM 2018 KRBMP Unpublished.
[83] Ibid.
[84] Ibid.
[85] Government of the United Kingdom (UK). 2018. Romanisation of Russian. BGN/PCGN 1947 System.
[86] Fergana Valley WRM 2018 KRBMP Unpublished.
[87] Ibid.

The total population of the district is ~769,000 people[88], with ~97% of the population living in rural areas. Most of the land in the district comprises mountains (96%), with agricultural lands making up only ~2% (163,133 ha), pastures ~0.8% (67,811 ha) and non-agricultural lands ~1.1% (91,794 ha)[89]. Of the total agricultural land, ~0.6% (260 ha) is irrigated. Cultivated crop species include perennial fruit-bearing trees (309 ha), vineyards (383 ha), mulberry trees (51 ha) and other perennial trees[90] (19 ha). Approximately 56% of Varzob's agricultural production is derived from livestock, with ~44% derived from crops. Of the district's total working population, more than 4% works as migrant labourers outside of the district[91].

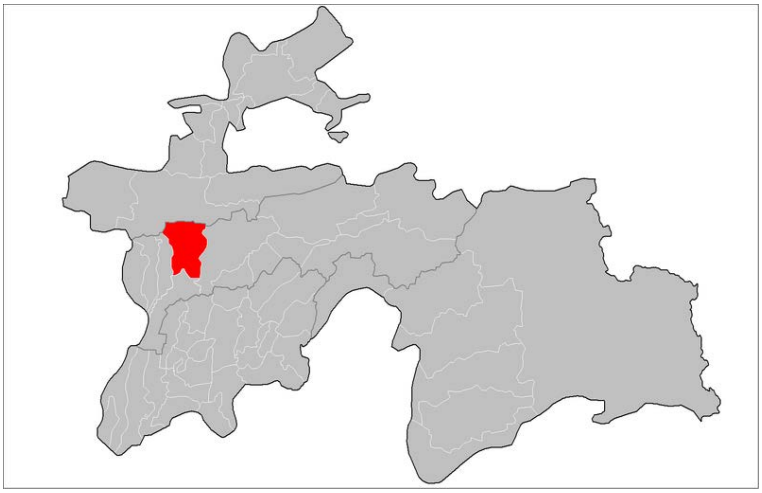


Figure 7. Location of Varzob District within Tajikistan[92].

Faizobod District

The district of Faizobod (Figure 8) covers an area of ~900 km^2 and is situated at an average altitude of ~1,200 masl. Faizobod climate is medium continental, with average temperatures ranging from ~14-28°C in summer (July) and 3°C in winter (January). Average annual precipitation in the mountainous areas is 1,136 mm and is 767 mm in the valleys[93].

As of 2017, the total population of the district was 96,900 people. Approximately 90% of the district's population live in rural areas, with the remaining 10% living in urban settlements. Land use within the district is divided between pastures (~58%), arable land (~9%), forests and shrubs (~8%) and perennial trees (~5%). The Faizobod agricultural sector is comprised of livestock production (~57%) and crop production (~43%). More than 13% of the population works as labourers in other districts[94].

The main natural disasters occurring within Faizobod are floods, mudflows and landslides. All these disasters are primarily caused by the flooding of the Surkhdara and Elok Rivers. Negative impacts from these disasters threaten 26 villages, which make up ~7% of the district's population. This equates to ~6,559 people or 1,059 households[95].

[88] as of January 2017
[89] Fergana Valley WRM 2018 KRBMP Unpublished.
[90] e.g. walnut orchards
[91] Fergana Valley WRM 2018 KRBMP Unpublished.
[92] Government UK 2018 Romanisation of Russian.
[93] Fergana Valley WRM 2018 KRBMP Unpublished.
[94] Ibid.
[95] Ibid.

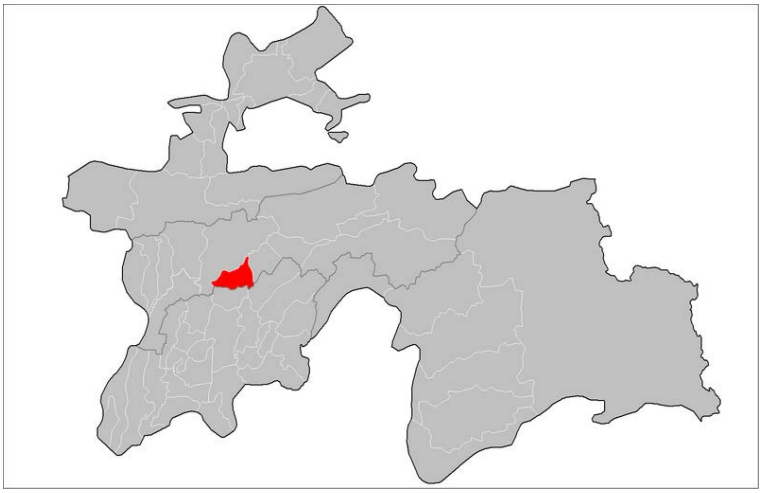
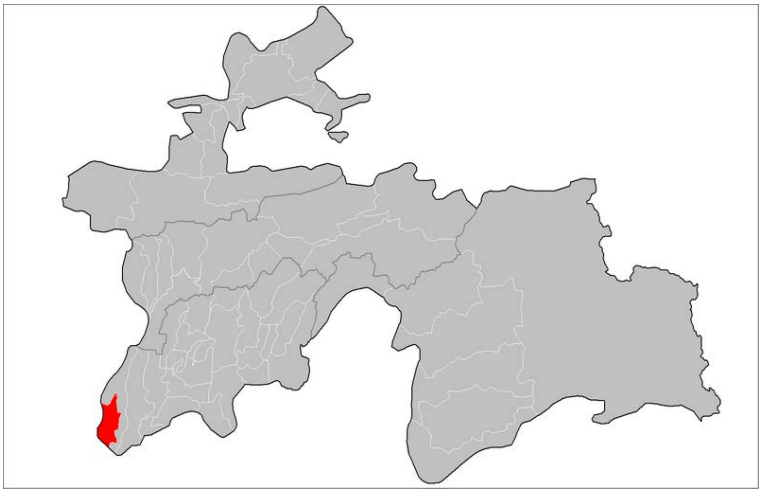


Figure 8. Location of Faizobod District within Tajikistan[96].

Nosiri Khusrav District

The Nosiri Khusrav district (Figure 9) is ~800 km^2 and occurs at altitudes ranging from 380–400 masl. The climate in the district is dry and subtropical, with hot and dry summers and mild winters. The average temperature in summer (June–August) ranges from 40–55°C and is 10°C in winter (January). Total annual precipitation during winter months reaches 80 mm, with even less precipitation during spring and autumn months (up to 25–30 mm).

In 2017[97], the total population of Nosiri Khusrav was 35,900 people, with the entire population living in rural areas. As of 2014, ~84% (67,423 ha) of the district's total area was comprised of agricultural land, with ~16% (11,022 ha) of this land being irrigated. Of the total working population, more than 12% work outside of the district as labour migrants.



[96] Government UK 2018 Romanisation of Russian.
[97] as of January 2017

Figure 9. Location of Nosiri Khusrav District within Tajikistan[98].

Shaartuz District

The district of Shaartuz (Figure 10) covers ~1,500 km^2, with a flat topography relative to other KRB districts. Only ~9% of the total district area is occupied by low mountain ranges. These ranges include: i) Bobotog (up to 2,100 masl); ii) Tuyuntog (up to 1,314 masl); and iii) Ariktog (just over 800 masl). The climate of the region is dry and subtropical, with warm-hot, dry summers and mild winters. The average annual temperature is ~32°C[99], with an average annual precipitation of 143 mm. In the low mountain areas, this annual precipitation average reaches 200 mm. The warm summer period lasts for ~190 days with humidity during these months reaching ~23%.

As of 2017, the total population of the district was 120,500 people. Approximately 87% of the population live in rural areas, with the remaining ~13% being situated in urban areas. The density of the population is 80 people per km^2. Of Shaartuz's total working population, more than 7% work as migrant labourers beyond district borders.

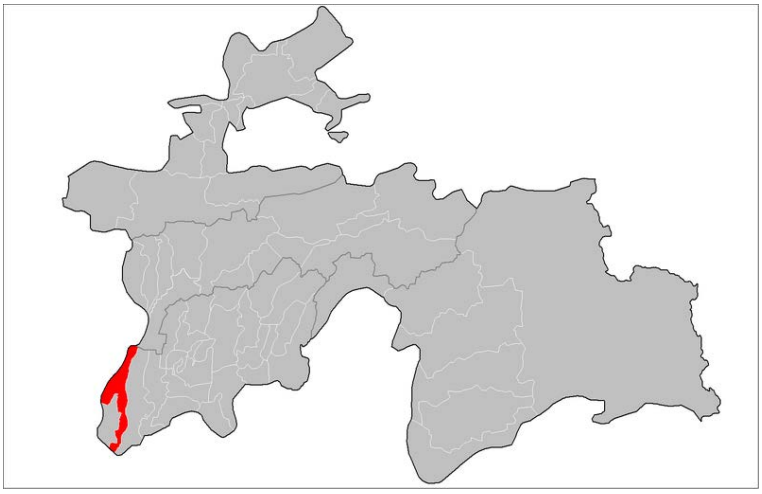


Figure 10. Location of Shaartuz District within Tajikistan[100].

Kabodiyon District

The district of Kabodiyon (Figure 11) covers 1,900 km^2. It is located in the south of the Gissar and Alai Highlands, at an average altitude of ~788 masl. Kabodiyon is surrounded by the mountain ranges of Bobotog, Oktoi, Karotog and Chilontoy and consequently has a dry and continental climate. In winter (January), air temperatures range from -2–2°C, while summer (July) temperatures range from ~24–41°C.

The total population of the Kabodiyon District[101] is 173,800 people. Approximately 93% of the population lives in rural areas, with a density of ~97 people per km^2. More than 11% of Kabodiyon's working population works as migrant labourers outside of the district.

[98] Government UK 2018 Romanisation of Russian.
[99] in the sub-region of Ayvadzhe, and in some years reaches up to 46°C
[100] Government UK 2018 Romanisation of Russian.
[101] as of January 2017

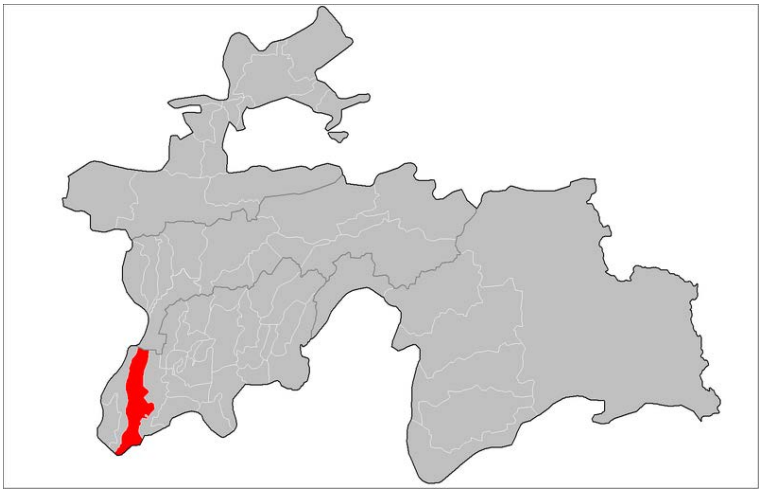


Figure 11. Location of Kabodiyon District within Tajikistan[102].

Ecosystem goods and services

Tajikistan's natural systems provide numerous ecosystem goods and services. These critical ecosystem services can be broadly categorised into:

- provisioning services – products obtained directly from ecosystems;
- regulating services – benefits obtained through the regulation of ecosystems;
- cultural services – non-material benefits obtained through ecosystems; and
- supporting services – services necessary to produce all other ecosystem services.

Ecosystem services that are currently under threat from climate change and the effects thereof in Tajikistan are outlined in Table 2 according to the above four categories.

[102] Government UK 2018 Romanisation of Russian.

Table 2. A description of ecosystems goods and services in Tajikistan threatened by climate-induced and anthropogenic factors.

Service	Description of threat to service
Provisioning services	
Fresh water	Catchments – particularly in the Pamir Mountains in western Tajikistan – provide fresh water not only to the country, but to the greater Central Asian region. The impacts of climate change on these areas significantly affect areas downstream. Predicted climate change impacts on river discharge are varied, with models under 'hot and dry' scenarios showing a reduction in river discharge and 'warm and humid' scenarios showing the converse. Additionally, climate-induced rising air temperatures are causing increased melting of glaciers, snow cover and permafrost soils[103]; all of which affect catchment hydrology through increased run-off and large-scale gully and sheet erosion[104].
Food	Tajikistan's agricultural sector is an integral component of the country's economy, contributing more than 20% of the GDP[105,106]. Approximately 70% of Tajikistan's population live in rural areas and is dependent on agriculture. Crop and livestock productivity, especially in dry-land farming, are vulnerable to climate variability, particularly drought and extreme temperatures[107], as well as soil erosion, declining soil fertility and unsustainable use of pastures[108].
Raw materials	Forests are a critical resource to communities[109], providing food and wood, as well as fodder and grazing to support livelihoods[110]. Permanent pastures currently cover ~3.6 million ha[111,112] of land in Tajikistan. Degradation is widespread in these areas and is primarily characterised by an increase in unpalatable grasses as well as a 15–20% decrease in productivity[113]. Sheep and goats are generally shepherded to high-altitude, summer pastures[114], returning to low-altitude, village pastures for the winter period[115,116]. Cattle are often grazed near villages resulting in severe degradation of rangelands through overgrazing[117]. Climate change impacts – predominantly droughts and extreme temperatures – have been greatest on dry-land farms and pasture lands, resulting in declining crop productivity and livestock carrying-capacity, respectively[118].
Energy	Hydropower currently contributes 98% to Tajikistan's energy supply, with coal-, solar- and biomass-derived power providing the balance; however, this supply does not meet the country's annual requirements. Tajikistan has considerable hydropower potential[119,120] and development of more hydropower plants is a national priority[121]. Large-scale soil erosion and intense climate-induced hydrometeorological

[103] Third National Communication 2014.
[104] NAPCC 2003.
[105] Third National Communication 2014.
[106] Curtain M. 2001. Environmental profile of Tajikistan. Asian Development Bank (ADB).
[107] Third National Communication 2014.
[108] Ibid.
[109] Fauna and Flora International 2018 "Tajikistan: Wild riches".
[110] A large part of the remaining forest area is given for long-term use as pasture.
[111] equivalent to almost 29% of its total land area
[112] The Food and Agriculture Organisation of the United Nations (FAO). 2008. Tajikistan: Reducing the Impact of Price Surge and Agriculture Rehabilitation Programme. Appraisal Document.
[113] Third National Communication 2014.
[114] ~500–1,000 masl
[115] FAO 2008 Tajikistan: Reducing the Impact.
[116] In some cases, where owners cannot afford the costs of shepherding, animals are kept on overgrazed village pastures all year round leading to pasture degradation and deterioration in carrying capacity.
[117] Third National Communication 2014.
[118] Ibid.
[119] approximately 3.6 mln kWh/1 km/year
[120] Third National Communication 2014.
[121] Ibid.

Service	Description of threat to service
	events damage hydropower infrastructure, for example through siltation of dams and damage to turbines[122]. The ability to generate hydropower is negatively impacted by climate-induced fluctuations in river discharge[123].
Genetic plant resources	Tajikistan is an important source of agro-biodiversity and is one of the main countries of origin for cultivated plants worldwide[124] for example the mountainous regions of the country host wild plantations of many different species of fruit trees[125,126]. Numerous anthropogenic[127] and natural factors pose a risk to this indigenous plant genetic material[128]. Some of the natural factors exacerbated by climate change include drought, hot and dry winds, extreme frosts, plant diseases, plant pests and soil salination. National plant breeding programmes are prioritising the development of varieties and cultivars adapted to biotic and abiotic stresses, especially increased resistance to drought, disease and pests[129].
Regulating services	
Water purification, water regulation and erosion control	Excessive climate change-induced run-off of water from mountain slopes is causing large-scale soil erosion, including sheet and gulley erosion[130], across the country. This erosion poses considerable risk to Tajikistan's food, water and energy security[131]. Such large-scale soil erosion is affecting water infiltration, percolation and retention and is consequently hampering water purification and regulation services[132]. Inappropriate land-use – such as deforestation, over-grazing and cultivation of steep slopes – further reduces soil function[133].
Climate regulation; carbon sequestration	Although pastures in Tajikistan contribute less plant biomass per unit area than forests, pastures cover ~32% of the total land area[134] and consequently fulfil an important function in climate regulation and absorption of atmospheric carbon. The natural vegetation of Tajikistan produces ~80 million tonnes of phytomass annually, ~39% of it occurring above-ground and 61% underground[135]. Pastures are particularly vulnerable to climate change-induced degradation that causes reduced vegetation cover, negatively affecting livestock productivity[136].
Disease regulation	Climatic variability increases the vulnerability of Tajikistan's population to infections and diseases including malaria and typhoid[137,138]. The agricultural sector in the country is also increasingly at risk to plant pathogens and pests. Crop breeding programmes in the country are currently aiming to produce crop varieties with enhanced resistance[139] to mitigate these negative effects.
Cultural services	

[122] Third National Communication 2014.
[123] Ibid.
[124] UNDP-GEF. 2009. Project title: Sustaining agricultural biodiversity in the face of climate change in Tajikistan: vulnerability and adaptation. GEF Project ID No. 3129 (Atlas Project ID 00070411); UNDP Project ID No. PIMS: 3647. Multi-focal area project with biodiversity and climate change adaptation. Terminal Evaluation Report available at: https://www.thegef.org/sites/default/files/project_documents/3647%2520PIMS_Tajikistan%2520EBD%2520TE%2520July2015.pdf [accessed 03.07.2018].
[125] In many cases, the distinction between cultivated and wild plants is unclear.
[126] FAO 2008 Country Report.
[127] including deforestation, overgrazing, overharvesting for fuelwood and medicinal purposes, and grubbing of old orchard
[128] FAO 2008 Country Report.
[129] Ibid.
[130] Third National Communication 2014.
[131] Ibid.
[132] NAPCC 2003.
[133] Third National Communication 2014.
[134] NAPCC 2003.
[135] FAO 2008 Country Report.
[136] Third National Communication 2014.
[137] The transmission of typhoid is increasing, which has been coupled with a reduction in the quality of drinking water especially during intense rainfall events.
[138] Third National Communication 2014.
[139] FAO 2008 Country Report.

Service	Description of threat to service
Scenic and cultural resources	Tajikistan's rich culture derives from natural, heritage and spiritual resources. The country has two UNESCO world heritage sites: i) the Tajik National Park in the Pamir Mountains; and ii) the Proto-urban Site of Sarazm, an archaeological site.[140] The ancient Silk Road network of the Central Asian region passes through Tajikistan[141,142], and is a major tourist attraction along with the numerous towns, castles and ruins along the route[143]. The country's scenic and cultural services are threatened by climate change impacts (such as GLOFs, floods, mudflows, landslides and drought) that cause the damage or degradation of natural, heritage and spiritual resources.
Recreation	Tajikistan's mountainous areas[144,145] host a hiking industry, and a growing tourism sector has supported the establishment of health resorts around the country's natural springs. Tourism has recently become an important sub-sector in the country's economy[146]. In 2016, tourism contributed 8.2% to GDP (equating to US$0.6 billion). The contribution to employment of this sub-sector, including jobs indirectly supported by it, was ~21% of total employment (490,500 jobs)[147]. The dependence of nature-based tourism on natural resources renders recreational services particularly vulnerable to the impacts of climate change.
Science and education	Tajikistan's natural protected areas are increasingly being used by schools to promote science and ecological research. The GoT recognises that scientific institutions, in partnership with the institutes of higher education, are important for developing research capacities on climate change and environmental science[148]. Public environmental organisations are also playing an important role in environmental protection and education in Tajikistan. There are ~40 registered environmental NGOs in Tajikistan, primarily addressing biodiversity conservation in and around protected areas. Their principal activities include ecological awareness, education, information generation, information dissemination, and research related to biodiversity and protected area development[149]. Climate change impacts — resulting in the degradation of landscapes (within which research sites occur) and the physical damage to infrastructure (e.g. community education centres) and in-field research equipment — negatively impact the country's scientific and educational services.
Spiritual and religious	Approximately 90% of Tajikistan's population is Muslim[150,151], with the balance comprising several other religions[152]. Despite having been predominantly Muslim since the 10th century, in some communities, traditional, non-Muslim, cultural practices are still held, particularly among the elderly. Ancestors of Tajik people worshipped nature and natural phenomena, and many of these methods are still being practised. In some mountainous regions, animals such as eagles and hawks are considered animal totems, and the elements of earth, water and fire hold particular cultural significance in day-to-day life and ceremonies. For example, fire is used in wedding rituals (fires are burnt near to the groom's house to light the road; the bride jumps over a large fire before entering her husband's house) and rituals for pregnancy and childbirth (a fire is kept burning during pregnancy, childbirth and for the 40 days of the child's life)[153]. Since some aspects of the spiritual/religious services are underpinned by nature, although difficult to quantify, the climate change-induced degradation of natural resources would result in the gradual erosion of these services.

[140] United Nations Educational, Scientific and Cultural Organisation (UNESCO). 2018. World Heritage Convention: Tajikistan. Available at: https://whc.unesco.org/en/statesparties/tj [accessed 03.07.2018].
[141] including the areas of Penjikent, Khujand, Istarafshan and Gissar
[142] The road splits west of the Pamirs, one branch passing to the north of the Pamirs and the other to the south. See further: UNESCO 2018 World Heritage Convention.
[143] Third National Communication 2014.
[144] near to Dushanbe city (Varzob, Qaratag, Shirkent and Romit gorges), Kuhistan (the Fann mountains, Marghuzor and Alauddin lakes, Iskanderkul) and the Pamir Mountains
[145] Third National Communication 2014.
[146] Ibid.
[147] World Travel and Tourism Council (WTTC). 2017. Travel and Tourism: Economic Impact 2017 Tajikistan.
[148] Third National Communication 2014.
[149] FAO. 2008. Tajikistan: NFP update.
[150] with Sunni Muslim comprising ~85% and Shia Muslim comprising ~5%
[151] Central Intelligence Agency (CIA). 2018. The World Factbook: Central Asia: Tajikistan. Available at: https://www.cia.gov/library/publications/the-world-factbook/geos/ti.html [accessed 03.07.2018].
[152] There are 85 non-Muslim groups registered with Tajikistan's Department of Religious Affairs at the Ministry of Culture.
[153] Advantour. 2018. "Tajikistan Rituals". Available at: https://www.advantour.com/tajikistan/traditions/wedding-rituals.htm [accessed 23.07.2018].

Climate change context

Observed climate change

Tajikistan has experienced a considerable warming of its climate since 1950[154] (Figure 12). The most recent warming trend from 1976 to 2010 averaged ~0.15ºC per decade in winter and spring, ~0.3ºC per decade in summer and ~0.2ºC per decade in autumn. From 2001 to 2010, the country experienced the warmest decade in its history (12)[155]. Average temperatures for the decade were: i) 1ºC above the long-term average in the foothills (0–1,000 m); ii) 0.8ºC above the long-term average in the mid-hills (1,000–2,500 m); and iii) 0.2ºC above the long-term average in the highlands (above 2,500 m).[156]

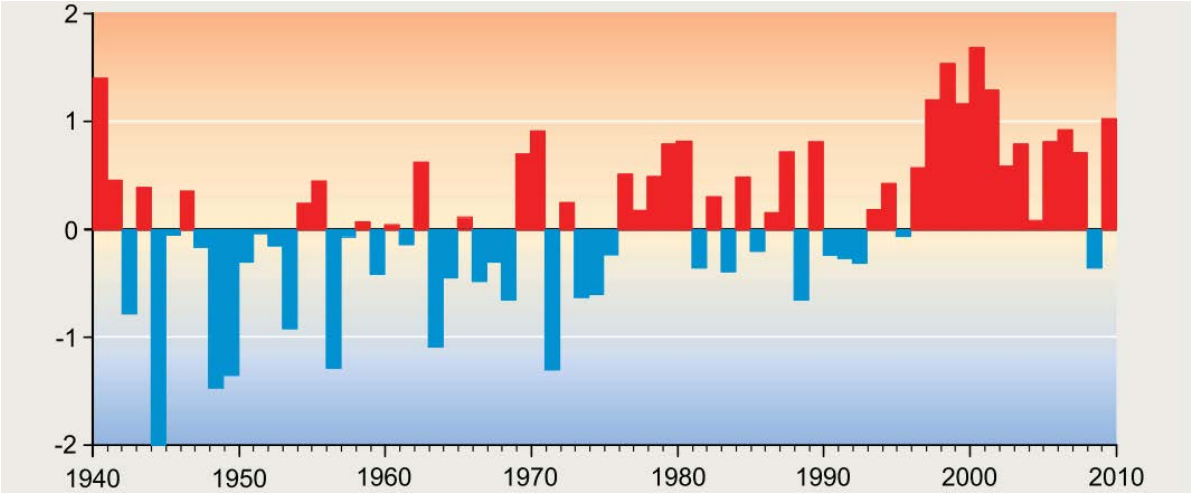


Figure 12. Illustration of the annual temperature (ºC) departure from the average long-term norm for the period 1961–1990 in Tajikistan[157].

The temperature changes across Tajikistan have been accompanied by increasingly erratic rainfall (Figure 13) which has resulted in both: i) an increase in rainfall intensity; and ii) longer dry spells.[158] In recent years, the amount of precipitation[159] received across the country has been above the long-term annual average. For example, from 1940–2010, average annual precipitation increased by ~7%. This trend has not been uniformly distributed across the country, with some regions experiencing increases in annual rainfall and others experiencing decreases. Decreases in annual precipitation have been experienced in the following regions:

- mid-hills and highlands of Central Tajikistan;
- valleys of southwestern and northern Tajikistan;
- foothills of Turkestan range;
- highland areas of Eastern Pamir; and
- foothills, mid-hills and highlands of the Khatlon region.

[154] Third National Communication 2014.
[155] State Agency for Hydrometeorology. 2018. Under the Committee for Environmental Protection under the Government of the Republic of Tajikistan Available at: http://www.ijozat.tj/index.php?option=com_content&view=section&id=30&lang=en [accessed 03.07.2018].
[156] Third National Communication 2014.
[157] State Agency for Hydrometeorology 2018.
[158] Ibid.
[159] 'Precipitation' refers to the combined amount of rainfall and snowmelt.

Over the same period, annual precipitation increased in the Rasht and Darvaz regions by 14–18%, the Western Pamir region by 12–17% and in the Fedchenko Glacier by 36%[160].

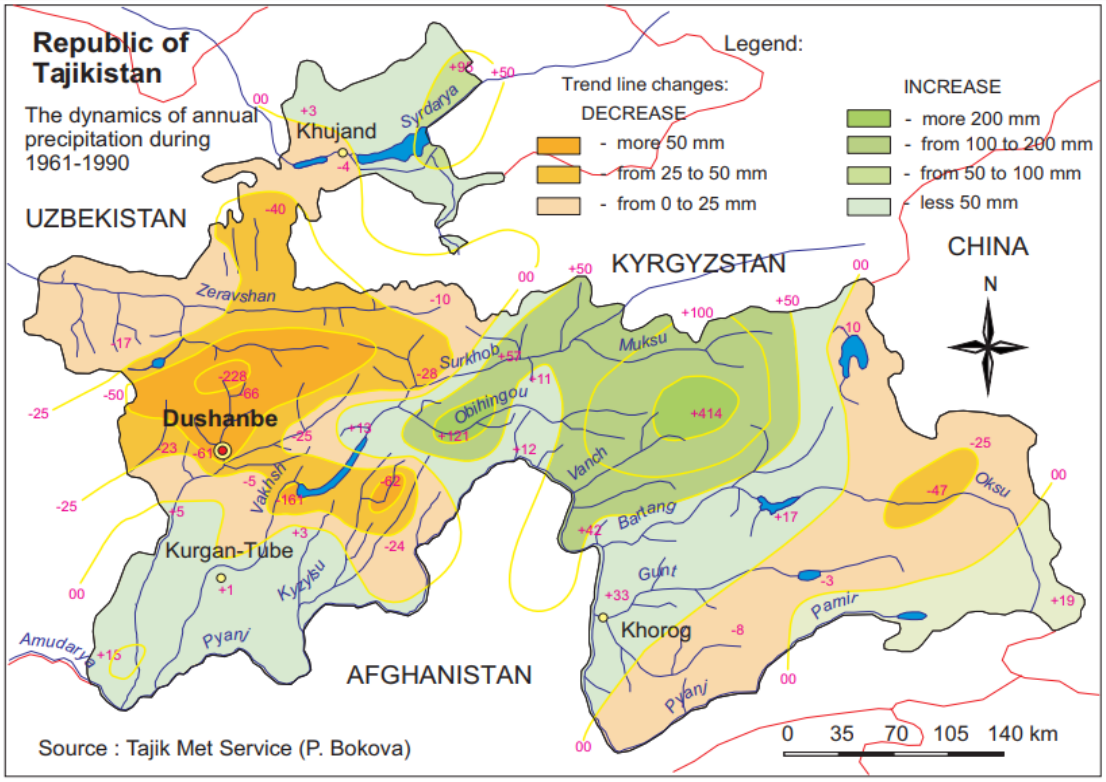


Figure 13. Changes of mean annual precipitation observed across Tajikistan during 1961–1990[161].

The number of days with precipitation (hereafter referred to as 'rain days') has decreased across the country since 1961[162]. By contrast, the number of days in which heavy precipitation events have occurred have increased[163]. The decrease in rain days coupled with the increase in heavy precipitation events equates to an increase in rainfall intensity in Tajikistan[164].

Fewer rain days and increased temperatures have resulted in a greater incidence of intense dry spells across Tajikistan[165]. In the major crop-growing regions, droughts that impact yields by at least 20% have been increasing in frequency over the past decade. Currently, these droughts occur once in every[166]:

- 3 years in south and south-east Tajikistan, Danghara, Kulyab, Bokhtar, Kabodiyon and Shaartuz regions;
- 4 years in the Eastern Tajikistan region; and
- 5 years in the North-Tajikistan region.

[160] NAPCC 2003.
[161] Third National Communication 2014.
[162] Ibid.
[163] Kayumov 2016 Glaciers resources of Tajikistan.
[164] Third National Communication 2014.
[165] World Food Programme (WFP). 2017. Climate Risks and Food Security in Tajikistan: A Review of Evidence and Priorities for Adaptation Strategies.
[166] The Food and Agriculture Organisation of the United Nations (FAO). 2017. Drought Characteristics and Management in Central Asia and Turkey. FAO Water Report 44: Policy Support and Governance.

Severe droughts – those that reduce average crop yields by at least 50% – have been observed once in every[167]:

- 4–5 years in the Bokhtar, Kabodiyon, Vakhsh and Shaartuz regions;
- 6–8 years in the Danghara, Kulyab, Temurmalik, Baljuvon, Vose and Balkhi regions;
- 9–11 years the in Devashtji, Spitamen and Istaravshan regions; and
- 12–15 years in the Kanibadam Asht and Isfara regions.

Climate risks, impacts and vulnerabilities

As noted previously in this document, Tajikistan is the most vulnerable country to climate change in Central Asia[168]. This vulnerability is attributed to the country's: i) weak social structures; ii) low adaptive capacity; ii) underdeveloped infrastructure; iv) low-income insecurity; v) poor service provision; vi) strong dependence on agriculture; and vi) institutional constraints. Losses from natural hazards currently amount to ~20% of the country's GDP[169] and climate change impacts are predicted to increase the frequency and magnitude of such losses. In the future, loss amounts are expected to rise from ~US$50 million in 2014 to ~US$132 million by 2030[170] (Table 3).

Table 3. Total countrywide damages caused by climate change and extreme climate events[171].

Risks and hazards	Total damage countrywide			
	2014 (US$)	**2030** (US$)	**Increase** (US$/year)	**Increase** (%)
Rise in temperature	22,230,000	42,210,000	19,980,000	90
Drought	22,230,000	42,210,000	19,980,000	90
Pasture degradation	4,131,000	41,310,000	37,179,000	900
Mudflows	432,000	2,331,000	1,899,000	440
Intense precipitation	342,000	531,000	189,000	55
Water logging	324,000	504,000	180,000	56
High water and flooding	144,000	2,313,000	2,169,000	1,506
Gusty winds	144,000	144,000	0	0
Decrease in air temperature/freezing	126,000	126,000	0	0
Duration of snow cover	90,000	90,000	0	0
Landslides	63,000	540,000	477,000	757
Agricultural insects and pests	63,000	630,000	567,000	900
Dust storms	45,000	45,000	0	0
Avalanches	27,000	270,000	243,000	900

Negative effects of climate change on the Tajik population include: i) glacial and permafrost melt; ii) increased rainfall intensity; and iii) longer and more frequent dry spells.[172] Together, these effects have increased the rate of topsoil erosion, threatening the food, water and energy security of the country[173]. Approximately 33% of all agricultural losses in the country are currently

[167] FAO 2017 Drought Characteristics and Management.
[168] WFP 2017 Climate Risks and Food Security.
[169] Ibid.
[170] National Climate Change Adaptation Strategy Tajikistan: Building Capacity for Climate Resilience (NCCAS). 2016. Asian Development Bank (ADB) and the Government of Tajikistan (GoT). Draft prepared by Abt Association with the GoT Committee of Environmental Protection (CEP).
[171] United Nations Development Programme (UNDP). 2014. Central Asian Multi-Country Programme on Climate Risk Management (CA-CRM). Regional Project Document. Atlas Award ID 59476.
[172] UNDP 2014 CA-CRM.
[173] Third National Communication 2014.

attributable to climate change and variability[174]. Furthermore, it has been projected that crop yields in Tajikistan will decrease by an additional 5–30% by 2050, with the potential for severe negative impacts on the country's economy[175].

Glacial melt poses a particularly large risk to the population of Tajikistan, currently averaging ~2 km^3 per year and leading to meltwater flows which often result in large-scale sheet and gully erosion[176]. Further negative impacts of meltwater flows include high frequency, low–medium impact hazards (such as extreme river flows and flooding, mudflows and landslides), and low frequency, high impact hazards (such as GLOFs) [177]. These low frequency, high impact hazards are particularly problematic because they are likely to trigger multiple other hazards, such as flash floods and landslides, as well as aggravate the scale and magnitude of such hazards. The impacts of flooding, mudflows, landslides and other hazards have resulted in considerable economic damages and losses of life across Tajikistan. Such damages and losses of life are particularly marked in the KRB (Table 4).

Table 4. Economic damages as a result of climate hazards occurring within the Kofirnighan River Basin, including number of events occurring from 1998–2014 and losses in life[178].

Climate hazard	**Number of events** (occurring from 1998–2014)	**Economic damages** (US$)	**Loss of life** (no. of people)
Flooding	31	5,577,682	0
Mudflows	98	191,898,148	38
Avalanches	8	326,808	8
Landslides and rockfalls	39	138,115	3
Drought	17	3,359,363	0
Earthquakes	83	1,37,017	0
Total	**276**	**202,437,132**	**49**

The negative impacts described above have been exacerbated by increasingly erratic rainfall. Floods and droughts caused by such erratic rainfall directly impact water quality and quantity across the country, and have also contributed to topsoil erosion[179]. The increasing rate of topsoil erosion is a threat to Tajikistan's food, water and energy security, which impacts the livelihoods, health and wellbeing of the population with regards to: i) food production, whereby decreasing soil fertility is reducing crop and livestock productivity; ii) water supplies, whereby the siltation of rivers is further contributing to declining water quality; and iii) energy security, whereby damage from silt to turbines in hydropower plants and reservoirs is reducing the efficiency of hydropower generation.

The KRB has been identified as a region within Tajikistan that is particularly vulnerable to the impacts of extreme climate events, with almost 200 communities living in the basin experiencing severe negative impacts[180,181]. All four of Tajikistan's agro-ecological zones are represented

[174] National Human Development Report (NHDR). 2012. Tajikistan: Poverty in the Context of Climate Change. United Nations Development Programme (UNDP), Dushanbe.
[175] Third National Communication 2014.
[176] Jacob P. 9 October 2016. "Global warming imperils Tajikistan's landscape". Aljazeera. Available at: https://www.aljazeera.com/news/2016/10/global-warming-imperils-tajikistan-landscape-161009175837236.html [accessed 03.07.2018].
[177] WFP 2017 Climate Risks and Food Security.
[178] Committee for Emergency Services (CoES). 2018. Statistical damages data for 1998–2014. Provided by the UNDP DRMP.
[179] Ibid.
[180] Hydromet 2018 Assessment of KRB, Unofficial document.
[181] Further information concerning the KRB's vulnerability to extreme climate events is presented under 'Climate change context'.

within the KRB as a result of the considerable altitudinal variation from south to north[182]. This altitudinal variation also results in the KRB being vulnerable to a wide range of climatic hazards, including both sudden-onset and slow-onset climate events, such as GLOFs and droughts, respectively. Communities in the KRB are frequently exposed to such extreme climate events. Flooding and landslides pose the greatest threats to these communities, with flooding seasons differing between upper, middle and lower reaches of the KRB. Upstream reaches experience floods from April to June, the middle reaches from March to May, and the downstream reaches from February to May. Because of the longer season in the downstream areas, the risk of flooding and landslides is much greater for these communities[183].

Six districts within the KRB have been identified as the most vulnerable to the impacts of climate change. These are the: i) Vakhdat, Faizobod and Varzob districts in the north; and ii) Nosiri Khusrav, Kabodiyon and Shaartuz districts in the south.[184] Many of the households in these districts are located in hazardous areas and experience a number of climate-related threats and disaster events including: i) floods; ii) mudflows; iii) landslides; iv) rockfalls; and v) avalanches[185]. In addition to increased exposure to climate-related threats, these are all rural communities with limited adaptive capacity because of their dependence on agriculture for livelihoods, and limited opportunities for alternative income. About one-third of the agricultural losses in Tajikistan are currently attributable to climate change and variability[186], meaning that communities in the KRB who rely on agriculture for income are extremely vulnerable to the current and future impacts of climate change.

The impacts of climate change are likely to be different in the northern sub-basin of the KRB to those in the southern sub-basin. Rural communities in the Vakhdat, Faizobod and Varzob districts are expected to become increasingly exposed to hydrometeorological hazards such as increased flooding, landslides and GLOFs. In particular, the steep terrain in these areas increase the likelihood of sudden onset multi-hazard risks, such as landslides occurring directly after a GLOF or similar flooding event. Concomitantly, watersheds in the northern sub-basin are frequently degraded as a result of unsustainable land-use practices that increase the likelihood and impact of the above-mentioned risks. Such unsustainable practices also increase the rate of erosion and soil loss, which compromises agricultural productivity in these regions and increases flood risk in downstream areas.

Communities in the Nosiri Khusrav, Kabodiyon and Shaartuz districts, conversely, are increasingly exposed to slow onset hazards such as drought and river bank erosion. In these areas, water availability is the greatest threat to livelihoods. Water availability is limited by poorly functioning irrigation supply infrastructure. This infrastructure is being damaged by: i) high levels of sedimentation from water-borne and wind-borne sediment; and ii) floods in the Kofirnighan River that damage irrigation dams and canals. Floods in the Kofirnighan River also cause riverbank erosion that results in the loss of arable land.

Future climate projections and scenarios

[182] Tajikistan's agro-ecological zone are classified according to elevation, with the lower zones (1 and 2) primarily being used to grow irrigated crops such as cotton and sub-tropical fruit. Zones of higher elevation (3 and 4) are primarily rain-fed agriculture and used primarily for pasture land and for growing wheat, barley and Lucerne.
[183] Hydromet 2018 Assessment of Kofirnighan River Basin.
[184] Fergana Valley WRM 2018 KRBMP Unpublished.
[185] Further information concerning district-specific vulnerability to extreme climate events is presented under district descriptions.
[186] NHDR 2012 Tajikistan: Poverty in the Context of Climate Change.

Climate models, developed during the preparation of the Third National Communication, project a number of negative impacts from climate change[187,188]. Specifically, rising temperatures and an increase in intensity of rainfall events have been predicted (Figure 14).

Average temperatures in Tajikistan are projected to increase by 2.9°C by 2050[189]. By the end of the 21st century, temperatures are projected to further increase in the: i) southern districts of the country (including the districts of Nosiri Khusrav, Kabodiyon and Shaartuz); ii) mountains of central Tajikistan (including those in the KRB); and iii) the mountains of the western Pamir.[190] In addition, diurnal temperature ranges and the occurrence of heat waves are predicted to increase, most notably in the country's southern lowlands. These temperature changes will exacerbate glacial and permafrost melt[191]. Glacial cover is projected to reduce by 15–20%, with most small glaciers predicted to disappear in 30–40 years. Ultimately, it is expected that reduced glacial cover will reduce the renewable water resources of Tajikistan.

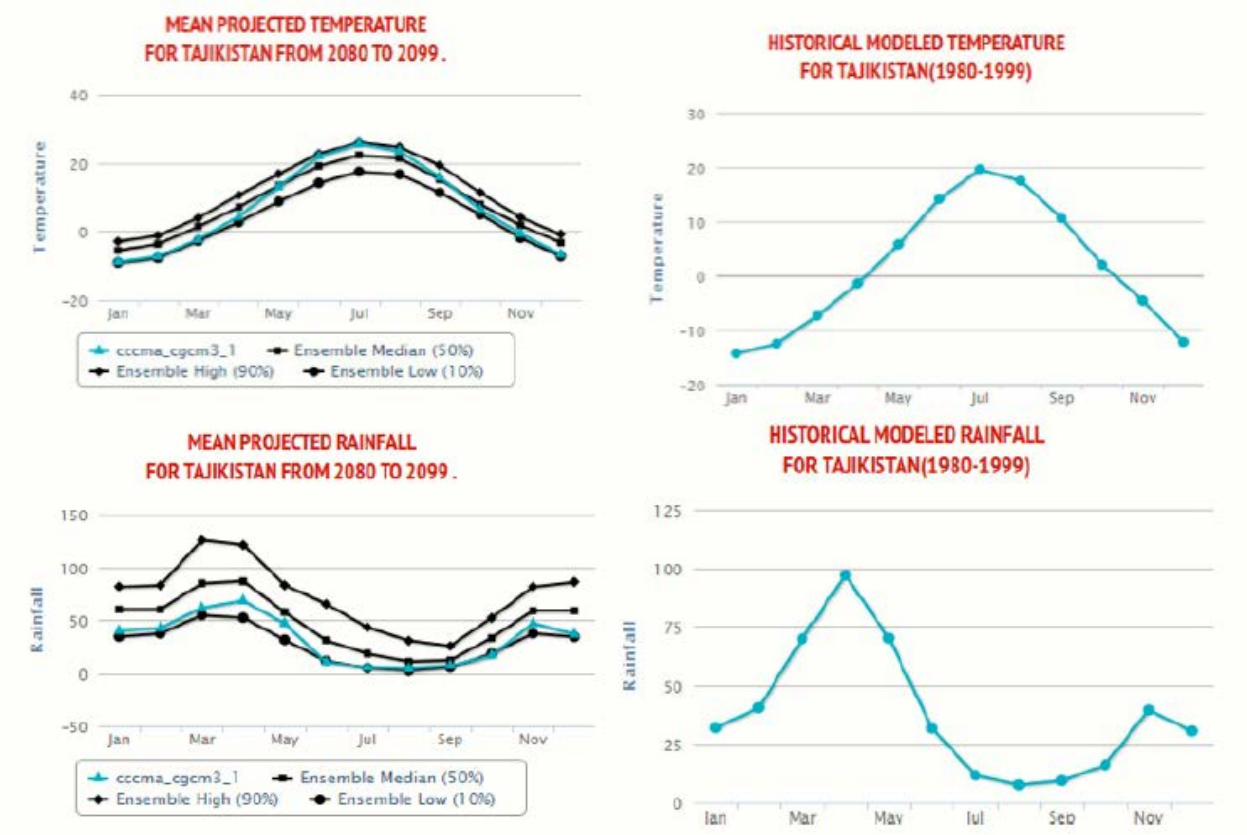


Figure 14. Projected mean temperature and rainfall for 2080–2099 against historically-modelled data for 1980–1999[192].

[187] The climatic models used were the CCSM3, ECHAM5 and CSIRO.
[188] WFP 2017 Climate Risks and Food Security.
[189] Third National Communication 2014.
[190] Ibid.
[191] Dusik J & Sheraliev B. 2016. Strategic framework for developing and prioritizing climate change adaptation initiatives in the agricultural sector in Tajikistan. Technical Report. Research Gate.
[192] WFP 2017 Climate Risks and Food Security.

No significant change in mean annual precipitation is predicted by 2050 in Tajikistan[193]. However, precipitation patterns will continue to change, resulting in[194]:

- an increased variation in maximum and minimum precipitation levels;
- wetter summers and drier winters, causing both flooding and prolonged periods of drought; and
- an increased rainfall intensity.

These climatic changes will have negative impacts on climate-sensitive sectors, including agriculture, water, energy and transport. For example, a decrease in dry-season water availability will adversely affect the agricultural sector, which in turn increases the risk of food insecurity in the country. Decreasing water availability is also likely to result in a climate change-induced migration of farmers to areas with improved water access. This shift in the population would result in an increase in the number of people living in areas exposed to extreme climate events such as floods and landslides[195]. It is predicted that by 2050, ~77% of the country population will be living in areas with considerable exposure to extreme impacts of climate change[196].

Climate change has had negative and lasting impacts on different sectors in Tajikistan. An overview of these impacts on the agricultural, water, energy and transport sectors is provided in the sub-sections below.

Agriculture

The predicted decrease in agricultural yields as a result of decreasing water availability and soil loss will directly impact ~2 million people in Tajikistan[197]. Agricultural yields are predicted to decline by as much as 30% by 2100[198], which is likely to result in rising food costs[199,200]. This will cause an increase in poverty levels and a decline in food security in the country[201].

Coupled with a decrease in water availability, increasing temperatures will result in greater crop evapotranspiration rates. Farmers will consequently need to alter their planting and harvesting practices to accommodate longer growing seasons while managing reduced water availability for agriculture use[202]. Reduced water supplies in the drier regions of the country are expected to result in major economic losses for farmers[203].

Water and energy

Tajikistan's energy production and transmission are predicted to be negatively impacted from changes to precipitation regimes[204]. Energy and water systems are interconnected and therefore

[193] Dusik & Sheraliev 2016 Strategic framework for developing and prioritizing climate change adaptation.
[194] WFP 2017 Climate Risks and Food Security.
[195] NCCAS 2016.
[196] World Bank (WB). 2013. Tajikistan – Overview of Climate Change Activities. World Bank. Washington, DC.
[197] WB 2013 Tajikistan – Overview.
[198] Schellnhuber HJ, Reyer C, Hare B, Waha K, Otto IM, Serdeczny O, Schaeffer M, Schleußner CF, Reckien D, Marcus R & Kit O. 2014. Turn down the heat: confronting the new climate normal. The World Bank. Washington, DC.
[199] Heltberg R, Reva A & Zaidi S. 2012. Tajikistan: Economic and Distributional Impact of Climate Change. World Bank Knowledge Brief #50. World Bank. Washington, DC.
[200] World Health Organisation (WHO) Europe. 2009. Protecting health from climate change in Tajikistan. Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).
[201] NCCAS 2016.
[202] Ibid.
[203] Ibid.
[204] Ibid.

any changes in precipitation amounts[205] or an increased drought risk has the potential to adversely affect energy production and supply to the population. For example, changes in river flow and increasing erosion are likely to impact hydroelectric production capacity, while reduced availability of water is likely to increase energy costs for pumping water[206].

Transport

Farmers and pastoralists in Tajikistan will be further negatively affected by climate change impacts on the transport sector[207]. Roads and railways are predicted to be damaged and/or washed away as a result of more frequent and severe flooding events. Increases in the rate of erosion and landslide frequency are also expected to result in both transport blockages and increased maintenance costs for road infrastructure. The continued rise in temperatures is also predicted to damage the surface material of roads resulting in temporary or permanently blocked transport routes[208].

Adaptation gaps in Tajikistan

Currently, there are a number of gaps that hinder the effective implementation of climate change adaptation in Tajikistan. Many of these gaps are related to limited institutional and technical capacity for the implementation of adaptation projects to develop the climate-resilience of Tajikistan communities.

Importantly, there is no targeted, national climate change adaptation policy in place in Tajikistan. The two primary national strategies that guide development in the country currently do not include climate change and adaptation. These strategies are the 'National Development Strategy for the Republic of Tajikistan for the period up to 2030' (NDS)[209] and 'Mid-term Development Programme 2016–2020' (MTDP)[210,211]. To address this gap, development of the National Climate Change Adaptation Strategy Tajikistan (NCCAS)[212] began in 2016 with a focus on building capacity within the country for climate resilience. The NCCAS is currently in draft form and has yet to come into effect, however the strategy preliminarily highlights the following as focal points[213]:

- existing laws, regulations, and codes on environmental protection, energy, drinking water supply, construction, and disaster risk management do not incorporate climate change; and
- policy, strategy, and legislative environments do not incentivise governments to reduce vulnerability and pursue adaptation measures.

In additional to the NCCAS, the Agricultural Reform Programme for 2012–2020[214] lists 'developing agricultural technologies for climate-change adaptation and resilience' as one of 22 specific objectives in Tajikistan[215]. However, there is little acknowledgement of climate change

[205] including from a reduction in snowpack as well as increased variation in snowmelt timing
[206] NCCAS 2016.
[207] Ibid.
[208] Ibid.
[209] National Development Strategy for the Republic of Tajikistan for the period up to 2030 (NDS). 2016. Republic of Tajikistan, Dushanbe.
[210] NDS 2016.
[211] Poverty Reduction Strategy for the Republic of Tajikistan for 2010–2012 (PRS). 2010. Republic of Tajikistan, Dushanbe.
[212] NCCAS 2016.
[213] Ibid.
[214] Agricultural Reform Programme for 2012–2020 of the Republic of Tajikistan. 2012. Ministry of Agriculture, Government of Tajikistan.
[215] World Health Organisation (WHO). 2012. Policy – Program on Agricultural Reform 2012–2020/Program of Reforming of Agriculture of the Republic of Tajikistan for 2012–2020. Global Database on the Implementation of Nutrition Action (GINA). Available at: https://extranet.who.int/nutrition/gina/en/node/14962 [accessed 11.07.2018].

challenges in other sectoral policies, including water and health. This limited mainstreaming is compounded by a lack of clear, institutional responsibilities and governance for land and water management at a catchment level. The absence of a cross-sectoral approach to climate change adaptation poses a significant barrier to integrated, landscape-level, adaptive planning.

In 2015, the GoT took steps to shift towards managing water resources according to hydrographic rather than administrative boundaries[216]. The Water Sector Reforms Programme of the Republic of Tajikistan for 2016–2025 (Water Reform Programme) aims to promote the implementation of Integrated Water Resources Management (IWRM) at the basin level. Through the programme, River Basin Organisations (RBOs) and River Basin Councils (RBCs) will be established in each of the six identified basins in the country, as well as in sub-basins, where required. RBOs will mainly be responsible for: i) planning the use and protection of water resources annually and in the long-term; and ii) monitoring the distribution of water as well as the state of rivers. Concurrently, RBCs will mainly be responsible for reviewing the plans developed by the RBOs and managing interactions with stakeholders such as water users and Water User Associations (WUAs). RBOs are expected to become operational in 2019, with the GoT being expected to allocate ~US$160,000 annually towards the operation of RBOs and RBCs. While the Water Reform Programme is likely to modernise water management in Tajikistan, it does not adequately consider the impacts of climate change on the water sector. While climate change impacts are acknowledged to impact water resources, the extent of these impacts is not well understood – particularly at the river basin level. Furthermore, the focus of the Water Reform Programme is restricted largely to water resources management and does not adequately consider the impacts of multiple hazards at the river basin and watershed level. While flood management will be the responsibility of RBOs, other climate-linked hazards such as erosion and landslides are not addressed through the programme[217].

The latest version of the PRS, the 'Living Standards Improvement Strategy of Tajikistan for 2013–2015' (LSIS)[218], is one of the first non-ecological strategy documents to acknowledge climate change as a threat to development in the country. This acknowledgement has been in response to the reliance on agricultural productivity and disaster risk information from previous hydrometeorological events, including glacial melt. The most recent NDS, for the period 2016–2030[219], reflects the significance of climate change as a barrier to achieving the desired development goals for the country by 2030.

Climate change expertise currently only exists within a limited number of institutions in Tajikistan, most notably the State Agency for Hydrometeorology (Hydromet) of the Committee for Environmental Protection (CEP). Within these institutions, specialists have either specific skills (e.g. meteorologists, hydrologists) or broader knowledge (e.g. environment, water management) related to climate change and its impacts. As a result, the staff employed by these institutions do not have the technical capacity to recognise the need for climate change adaptation and implementing necessary measures for it.

During the Soviet era, these research institutions were staffed by qualified and trained international and regional scientists. However, since the early 1990s, climate and agricultural

[216] Water Sector Reforms Programme of the Republic of Tajikistan for 2016–2025 (Water Reform Programme). 2015. Resolution of the Government of the Republic of Tajikistan. Unofficial translation.
[217] Water Reform Programme 2015.
[218] Living Standards Improvement Strategy for the Republic of Tajikistan for 2013–2015 (LSIS). 2013. Republic of Tajikistan, Dushanbe.
[219] NDS 2016.

research in Tajikistan has been critically underfunded which has resulted in limited scientific capacity. Salaries in research are poorly remunerated and financial research resources are limited[220]. The former capacity building and reward systems that functioned under the Soviet Regime are no longer in place, while the existing culture of centralised decision-making limits initiative and innovation.

An additional problem facing research in the country is that limited incentives and strong hierarchical barriers have reduced the recruitment of young research scientists. As a result, most research staff are nearing retirement age. Furthermore, limited contact with the international scientific community, and limited English language skills, have resulted in a technology lag which, in turn, has prevented scientists from keeping abreast of scientific advances. Indeed, only recently have initiatives such as the University of Central Asia (UCA) and the Central Asia and the Caucasus Association of Agricultural Research Institutions (CACAARI) have been established in Tajikistan. A brief description of each of these initiatives is outlined below.

- The **UCA** is an internationally chartered not-for-profit secular institution. It was formed as a partnership between the governments of Kazakhstan, the Kyrgyz Republic and Tajikistan under the sponsorship of the Aga Khan Development Network (AKDN). Founded in 2,000, its first campus opened in 2016 in Naryn, Kyrgyzstan and offers five-year undergraduate programmes in Computer Science (BSc) and Communications and Media (BA). In 2017 the Khorog Campus in Tajikistan was opened, offering five-year undergraduate programmes in Earth and Environmental Sciences (BSc) and Economics (BA).
- The **CACAARI** was established in 2,000 when leaders of the eight National Agricultural Research Systems (NARS) came together under the aegis of the Consultative Group on International Agricultural Research (CGIAR) Central Asia and the Caucasus (CAC) Program facilitated by the International Centre for Agricultural Research in Dry Areas (ICARDA). The purpose of the organization is to facilitate regional cooperation in agricultural research for development by providing a neutral platform where ideas and experiences can be shared. Moreover, the association acts as a two-way communicative mechanism, supporting information flow between global organizations and local partners. The membership is open to research institutions, universities, NGOs and farmer associations located in Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan[221].

Non-climatic problems

There are a number of non-climatic environmental challenges in Tajikistan that are exacerbating vulnerability to climate change. Such challenges include land degradation, which is compromising and poor water supply[222]. Following the collapse of the Soviet Union in 1991, previously collectivised farms were divided. The disruptions following this division put pressure on Tajik farmers who had become accustomed to collective structures and living within *avlods*[223]*.* There are now few associations or institutions which support individual farmers, as most present-day state and collective farms work with groups of *dehkan*[224] farmers. A country-wide organisation

[220] Central Asian Countries Initiative for Land Management Multi-Country Support Project (CACILM). 2009. Research Prospectus: A Vision for Sustainable Land Management Research in Central Asia. Sustainable Agriculture in Central Asia and the Caucasus. Regional Office of ICARDA for Central Asia and the Caucasus.
[221] CACAARI. 10 February 2017. Meeting of the GFARC Steering Committee. Available at: http://www.cacaari.org [accessed 23.07.2018].
[222] World Bank Group (WBG). 2008. Tajikistan: Country Environmental Analysis. Washington, DC.
[223] an extended patriarchal family that serves as an informal mutual support structure
[224] A *dehkan* farm is a term for an individual or family farm in Central Asia.

exists to provide support to the *dehkan* farmers, but small-scale farmers do not benefit significantly from this.

Unsustainable land management practices in Tajikistan – including overgrazing and overploughing on steep slopes – have resulted land degradation, which has been characterised by the reduced productivity of agricultural lands and pastures[225]. These unsustainable land management practices have also compromised the supply of water to the population of Tajikistan, specifically by increasing erosion. Accelerated erosion has resulted in an increase in suspended solid material in the Kofirnighan River. This negatively impacts water supply, as suspended solids damage pumps and other water supply infrastructure. These damages increase the treatment costs for producing potable, industrial and irrigation water.

In addition to damaging water supply infrastructure, suspended solids also increase the downstream flood risk. When suspended solids settle out of suspension, they reduce the capacity of the river channel and increase the likelihood and extent of flooding. Other negative water quality impacts are currently being experienced as a result of agricultural practices in the KRB. Fertiliser and other agricultural inputs are washed from agricultural land and into streams and rivers. These inputs are commonly nutrients, which cause downstream eutrophication of water bodies. Nutrients may also reduce the suitability of water for human consumption – in particular, nitrates in fertiliser may be converted into toxic nitrites. Climate change is expected to exacerbate the negative impacts of agriculture on surface water quality in Tajikistan. This is because the use of agricultural inputs is likely to increase as increased rates of erosion negatively impact soil fertility.

Further to the above-described unsustainable land management practices, the quality and quantity of water in Tajikistan has been affected by deforestation. Firstly, and as with overgrazing and overploughing, deforestation has caused increased erosion in several river basins in the country, including in the KRB. Trees are important for sustaining ecosystem functions in the following ways: i) the high infiltration rate in forests reduces the incidence of surface runoff and reduces erosion transport; and ii) the binding effect of tree roots enhances slope stability, which reduces erosion. Hence, with deforestation, these ecosystem functions are being compromised. Secondly, deforestation has also impacted river flows in Tajikistan and within the KRB. Because trees regulate river flows (specifically through promoting transpiration and infiltration), deforestation in Tajikistan has led to water deficits (droughts) during the dry season and water excesses (floods) during the wet season. With the combined effects of erosion and compromised river flows, deforestation is severely impacting the hydrological functioning in the KRB as well as in river basins throughout Tajikistan.

Problem statement

The problem to be addressed by the proposed project is that the livelihoods of small-scale rural farmers and pastoralists in the Kofirnighan River Basin (KRB) of Tajikistan are being negatively affected by climate change. Rising temperatures and extreme climate events, including floods and droughts, are resulting in: i) damages to crops; ii) increased rates of soil erosion and concomitant declines in agricultural productivity; and iii) damages to properties and infrastructure. These effects are greatly exacerbated by a baseline situation of unsustainable management of land and water resources in the KRB. Future prospects for rural communities in this river basin are limited, with their livelihoods expected to be further threatened as climate change impacts intensify, making sustainable management of their natural resources increasingly challenging.

[225] WBG 2008 Tajikistan: Country Environmental Analysis.

Alternative solution and barriers

Preferred solution

The preferred solution would be for the small-scale farmers and pastoralists within the KRB of Tajikistan to become resilient to climate change impacts. This would be achieved by developing and then implementing a climate-resilient catchment management strategy for the KRB, which will enhance the provision of ecosystem services in the river basin. Such a strategy would promote a wide range of new approaches, including: i) long-term planning at the river basin scale, informed by integrated catchment management principles; ii) explicit consideration of the trends, risks and impacts of extreme climate events and their interactions in catchments of various scales iii) consideration of all landscapes (i.e. urban, pastoral, agricultural as well as conservation areas) within the KRB; iv) the use of ecosystem goods and services under climate change conditions to support climate-resilient livelihoods; v) ecosystem-based adaptation (EbA) interventions, including watershed rehabilitation and sustainable management of all natural resources; and vi) the development of appropriate adaptation responses by communities and relevant public services for both sudden- and slow-onset climatic events.

Barriers

Barriers to implementation of the above solution within the KRB include: i) a lack of coherent climate risk information coupled with limited knowledge sharing within the country; ii) weak institutional structures for developing integrated catchment management strategies; iii) limited technical capacity of public services to promote climate change adaptation among communities; and iv) limited knowledge among communities of the benefits of EbA. The activities within the project are designed to overcome these barriers and are detailed in Part II[226].

Barrier 1. Lack of systematic production, collection and sharing of climate risk information. A wide range of projects and programmes have been conducted in river basins across Tajikistan, which have assessed the impact of various environmental and socio-economical factors on the population. However, most of these initiatives have not accounted for climate change and its associated risks, resulting in these risks not being included in basin-level planning and management.

For example, a management plan is in development for the KRB[227], but does not take an integrated approach to landscape planning and will not include climate risk projections.

The relevant climate information authority in Tajikistan, Hydromet, also lacks the necessary capacity to measure and collect climate risk information. In the KRB, three of the major hydrological stations[228] have been identified as having poor performance, with equipment that is poorly maintained. This limitation has resulted in communities in the KRB not receiving advanced climate risk information on events such as flooding or landslides.

An additional limitation is that all information and data being generated on climate and climate change in the country are not currently being housed in a well-managed and accessible information centre. Although centres for storing such information do exist in Tajikistan in the form of hubs or platforms, the relevant institutions do not benefit from the services provided by such

[226] Part II: A, where details on the project components, outcomes, outputs and activities are provided.
[227] The KRBMP is being developed by Fergana Valley Water Resources Management and is to be completed in 2019. Further details are presented in the environmental context sub-section.
[228] These three stations are the Tartki and Chinar on the Kofirnighan River and Romit on the Sardai-Miyona River.

centres. Relevant centres include the Open Centre being hosted by the Department of Geology and an information centre being established by the Ministry of Water and Energy. These centres are still in a nascent stage, with a limited capacity for information production, management and sharing. As a result, information on climate risks is not available on a central, readily accessible platform.

With the limited sharing of existing knowledge within the country on climate change risks, there is a significant gap in available knowledge on appropriate adaptation interventions. Specifically, rural Tajik communities have limited or no access to information on climate risks and appropriate adaptation practices.

The proposed project will overcome the above barrier in the KRB by: i) strengthening the collection of climate data through rehabilitating identified hydrometeorological stations in the KRB (Outcome 1); and ii) supporting existing knowledge management platforms to improve the systematic collation and sharing of climate knowledge (Outcome 3).

Barrier 2. Limited institutional capacity to include climate change adaptation into river basin management plans and policies, and to apply catchment management approaches to climate risk reduction.

Integrated land and water resource management is particularly relevant under climate change conditions and the associated increase in climate risks. This is because upstream land uses, such as agriculture, affect downstream risks, such as flooding. These interactions between land use and climate risks are complex and not well understood in Tajikistan. This is particularly true for a topographically diverse basin such as the KRB, where both steep mountainous regions and arid lowlands occur. The basin is affected by multiple climate risks but lacks an integrated catchment management approach for the management of such risks.

While a river basin management plan is currently being developed for the KRB under the Water Reform Programme, this management plan will focus on water resources management. Integrated management of land and water resources as well as multi-hazard climate risk management will not be covered by the scope of proposed basin management plan. Consequently, the RBOs and RBCs that will be established in the northern and southern KRB sub-basins will not be capacitated to plan for the implementation of integrated climate risk reduction practices at the basin, sub-basin and watershed scales.

Outcome 1 of the proposed project will overcome this barrier by developing an integrated catchment management strategy for the KRB that will propose measures for adopting a climate risk-management approach. Furthermore, existing co-ordination and training measures will be strengthened to develop the institutional capacity for integrated catchment management. As a result of the outputs under Outcome 1, the GoT will be capacitated to implement specific climate-resilient catchment management throughout the country, beyond the target basin.

Barrier 3. Limited technical capacity of local government to implement adaptation activities that promote climate resilience within local communities.

Local government authorities in the KRB currently lack the knowledge and expertise to monitor extreme climate events, transmit early warning information and take adequate and appropriate response measures to manage climate risks. This limitation results in local KRB communities receiving minimal training and information on climate change adaptation. In particular, public services from local government that provide climate advisories, agricultural extension services and livestock health services do not take climate risks into account. The end result is that local communities: i) are not being regularly updated on local, regional nor international best practices

for reducing the impacts of climate change; and ii) are not being made aware of climate risks in time to take adequate action.

The proposed project will overcome this barrier by: i) strengthening the capacity of local government to implement adaptation activities (Outcome 1); and ii) strengthening local communities' knowledge and capacity to implement relevant adaptation measures through local demonstrations.

Barrier 4. Limited knowledge among communities of livelihood benefits from implementing climate risk reduction and EbA measures.
Farmers and pastoralists in Tajikistan have had limited exposure to EbA and its benefits for reducing the impacts of climate change as well as improving livelihoods. This is particularly true for communities in the KRB, where there have been limited climate change projects and initiatives. Consequently, KRB rural community members do not have the technical capacity to implement EbA interventions and are also not incentivised to do so. Because of this limitation in climate change projects and initiatives within the KRB, communities have not been exposed to demonstration plots that showcase the benefits of EbA activities for improving climate resilience. It is also unlikely that rural community members in KRB will autonomously implement EbA interventions because farming practices in the country have shown limited innovation since the end of the Soviet era.

Community knowledge on EbA will be developed through on-the-ground implementations of EbA in degraded watersheds throughout the KRB. Knowledge sharing will be facilitated through Farmer Field Schools (FFS), where community members will have the opportunity to learn local best practices in a locally appropriate manner. Communities will also be engaged through participatory land-use planning to develop Watershed Action Plans (WAPs). These WAPs will guide the systematic implementation of EbA interventions to reduce the vulnerability of rural communities in the KRB.

Project Objective:

The objective of the proposed project is to enhance the livelihoods of the small-scale farmers and pastoralists living in the Kofirnighan River Basin under future climate change conditions. Such conditions are expected to include increased frequencies and intensities of extreme climate events such as intense rainfall, flooding and droughts. Three interrelated outcomes within the project (detailed in Part II[229]) will contribute to achieving this objective, namely: i) catchment management strategy to manage climate risks operationalised at *raion* and *jamoat* levels in the KRB; ii) an integrated approach to building the climate resilience of agro-ecological landscapes operationalised at a village level; and iii) existing knowledge management platforms supported for integrated catchment management and EbA.

The overarching approach of the project is to employ integrated catchment management within the KRB. To this end, a climate-resilient catchment management strategy will be designed for the basin which will enable national rural development planners, local government and local communities to manage a wide range of climate risks. As noted in the introduction of this document, this strategy will be underpinned by the following concepts and principles:

[229] See Part II: A, which gives a project overview and details the components, outcomes, outputs and indicative activities of the project design.

- climate change can cause or exacerbate multiple hazards (e.g. GLOFs, floods, mudflows, landslides, soil erosion and drought), all of which need to be taken into account when designing adaptation measures;
- management of climate risks needs to be tailored for a particular spatial scale (e.g. catchment or watershed);
- there are complex upstream-downstream interactions (involving flooding and erosion processes) that need modelling before effective adaptation interventions can be designed;
- long-term development planning for the KRB will require careful consideration of the multiple hazards associated with climate change;
- a cross-sectoral approach, which takes linkages between sectors (e.g. agriculture, conservation, energy and water) into account, is required for effective adaptation;
- a landscape approach that considers urban environments, rural villages, agricultural fields and all ecosystems (forests, pastures) is critical for managing climate risks in the long-term; and
- adaptation in the KRB will require considerable investment in EbA interventions that increase the supply of critical ecosystem goods and services under conditions of climate change.

With regards to the project's implementation of EbA within the KRB, communities will be trained on EbA interventions for managing pastoral, forest and agricultural landscapes at a watershed scale under climate change conditions. These interventions will follow the principles of sustainable land management (SLM) and climate-smart agriculture (CSA) wherever applicable. The training will be targeted, in particular, at the *raion* (district) and *jamoat* (sub-district) levels. In so doing, the project will enhance support services to villages and enable participatory, local-level planning. The lessons learned from the project will enable a policy and investment framework to be developed for replicating and scaling up EbA interventions across the country. Existing knowledge management platforms and hubs will be used for promoting this replication and upscaling. The project's climate resilient catchment management approach, lessons learned and best practices will inform and contribute to the ongoing process of water sector reform in Tajikistan. As noted above, the country is currently undergoing water sector reform that among other includes the development of the river basin plans and the establishment of the River Basin Organisations (RBOs). The project will closely align with these processes to integrate the EBA methods at the catchment level that are to yield significant water and land management benefits in the face of increasing climate change risks. Integration of the project defined adaptation strategies into the basin plans and RBO activities will enable replication and upscale. Furthermore, the project will closely coordinate with the National Adaptation Plan (NAP) process that is ongoing with UNDP's support to embed necessary policy measures across all priority sectors for further scale up. As part of this process, adaptation measures will be mainstreamed into four priority sectors (Energy, Water, Transport and Agriculture). Lessons learned and best practices from the Adaptation Fund project will inform the ongoing NAP development process to ensure that project activities and the climate-resilient catchment management approach are scaled up across all basins of the country. Furthermore, the project lessons and the best adaptive practices as well as the project generated climate risk information will also inform the ongoing process of water reform in Tajikistan.

Each of the proposed project's activities have been designed to address the climate change problem described in Part II[230], and to contribute to overcoming the barriers described above.

Project Components and Financing

[230] See Part II: A, which gives a project overview and details the components, outcomes, outputs and indicative activities of the project design.

The duration of the project is proposed to be five years (60 months) beginning in 2020 and ending in 2024.

Table 5 presents the proposed components, expected outcomes, concrete outputs and indicative activities of the project, which are further detailed in Part II[231]. During the development of the Full Proposal, the activities were outlined to ensure their alignment with national target areas. A detailed breakdown of costings per activity is provided in Part III[232].

Table 5. Project components, expected outcomes and an outline of concrete outputs, with component-level grant amounts.

Project Components	**Expected Outcomes**	**Expected concrete Outputs**	**Amount** (US$)
1. Integrated catchment management to build climate resilience.	1. Catchment management strategy to manage climate risks operationalised at *raion* (district) and *jamoat* (sub-district) levels in Kofirnighan River Basin (KRB).	1.1. Multi-hazard climate risk model developed for target watersheds in the KRB.	1,012,000
		1.2. Support provided for upgrading automated weather stations in Kofirnighan River Basin watersheds.	
		1.3. Integrated catchment management strategy developed for the KRB.	
		1.4. Strengthened coordination and training mechanisms for integrated climate-resilient catchment management.	
		1.5. Payment for Ecosystem Services models developed for the KRB.	
2. Ecosystem-based Adaptation, including Climate smart Agriculture and Sustainable Land Management, in agro-ecological landscapes.	2. An integrated approach to building climate resilience of agro-ecological landscapes operationalised at a village level.	2.1. Agro-ecological extension services supported at the *jamoat* level to provide technical support for EbA implementation.	7,282,810
		2.2. Watershed Action Plans developed that promote climate resilience and enhance economic productivity for target watersheds.	
		2.3. EbA interventions implemented in target watersheds by local communities.	
3. Knowledge management on building climate resilience through integrated catchment management and EbA in the KRB.	3. Existing knowledge management platforms supported for integrated catchment management and EbA.	3.1. Existing knowledge management platforms supported for collating information on the planning, implementation and financing of EbA interventions.	142,500
		3.2 An impact evaluation framework established to enable effective adaptive management of EbA activities.	
4. Component sub-total			**8,437,310**
5. Project Execution cost (9.20%)			776,000
6. Implementing Entity Fee (8.5%)			783,131
7. Total Project Cost			**9,996,441**

[231] Ibid.
[232] See Part III: G, which illustrates the budget and detailed budget notes.

Projected Calendar:

The projected timeline for the proposed project is a five-year implementation from 2020–2024. Estimated milestones are outlined in Table 6.

Table 6. Projected milestones and expected timeline for the proposed project.

Milestones	Expected dates
Start of Project Implementation	January, 2020
Mid-term Review	June, 2022
Project Closing	March, 2024
Terminal Evaluation	June, 2024

PART II: PROJECT JUSTIFICATION

A. Project components

To achieve its objective of enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan, the proposed project focuses on strengthening the integrated management of the KRB and implementing concrete on-the-ground EbA interventions. The three components of the project are: i) integrated catchment management to build climate resilience; ii) Ecosystem-based Adaptation, including Climate-smart Agriculture and Sustainable Land Management, in agro-ecological landscapes; and ii) knowledge management on building climate resilience through integrated catchment management and EbA in the Kofirnighan River Basin. The first component will strengthen the institutional and technical capacity of government and local communities to manage climate risks. The second component will support local communities to implement interventions that reduce climate risks by enhancing the ecosystem functionality of degraded watersheds. The last component will compile and disseminate lessons learned for future national and regional upscaling and replication.

The outcomes, concrete outputs and indicative activities under each component are described below.

Component 1. Integrated catchment management to build climate resilience.

The GoT has initiated a water sector reform[233] that will result in water resources being managed according to hydrographic boundaries rather than administrative ones. For the KRB, this will result in the establishment of River Basin Organisations (RBOs) and River Basin Councils (RBCs) in the northern and southern sub-basins by the end of 2019. While this will strengthen the management of water resources throughout the KRB, the KRB Management Plan (KRBMP) that is being developed will not address: i) the linkages between land and water management and the consequent impacts on climate risks; and ii) the importance of an EbA approach to risk reduction at the watershed level. Consequently, Component 1 has been designed to build on the KRBMP that is currently being developed and facilitate climate-resilient integrated catchment management in the KRB.

[233] Water Reform Programme 2015.

Outcome 1. Catchment management strategy to manage climate risks operationalised at raion (district) and jamoat (sub-district) levels in Kofirnighan River Basin.

Under this outcome, integrated land and water resources management principles will be introduced to Tajik authorities at the *raion* and *jamoat* levels to effectively address the climate change impacts described in Part I[234]. An integrated, climate-resilient catchment management strategy for the KRB will be developed using a multi-hazard climate risk approach. This strategy will detail the climate risk scenarios in each KRB watershed and will provide the *raion* and *jamoat* government levels with guidelines for managing these risks. This will enable climate-resilient land-use management in the KRB.

Outcome 1 will be achieved through five linked outputs. These outputs will: i) contribute towards improved transparency on multi-hazard climate risks throughout the KRB through risk modelling and improved climate data production; ii) develop a cross-sectoral strategy for managing these risks throughout the KRB by using an integrated catchment management approach; iii) strengthen the capacity of government bodies and local communities for managing climate risks by implementing EbA; and iv) incentivise ecosystem management as a risk management approach by developing a framework for a Payment for Ecosystem Services (PES) approach.

Output 1.1. Multi-hazard climate risk model developed for vulnerable watersheds in the Kofirnighan River Basin.

A gap analysis will be conducted based on all available information that covers the KRB, including baseline projects and the ongoing assessment being conducted as part of the KRBMP[235]. It is expected that the outputs of the KRBMP will include watershed delineation for the KRB, as well as information on water scarcity at the watershed level. However, it is not expected to include information on risks related to water access and climate change impacts on basin hydrology. The gap analysis will inform the identification of watershed-level risks to be prioritised for the north and south sub-basins of the KRB.

Under this output, priority risks, which will include flooding and landslides, will be modelled at the watershed level for the north and south KRB sub-basins. For climate-specific risks – which also include floods, landslides and droughts – downscaled climate predictions will be included in the risk models. These models will inform the development of cohesive Multi-Hazard Climate Risk Models (MHCRMs) for the KRB.

The MHCRMs will be used to inform the development of detailed Watershed Action Plans (WAPs) under Outcome 2. In addition, the models and their results will be archived and disseminated through knowledge centres that will be supported under Outcome 3.

Indicative activities to be implemented under Output 1.1 are detailed below.

Activity 1.1.1. Conduct a gap analysis on existing risk information in the Kofirnighan River Basin.

A detailed gap analysis will be conducted on the KRBMP. The analysis will be informed by existing information on *inter alia*: i) the vulnerability of the KRB; ii) baseline projects in the KRB and

[234] See Part I: Project Background, on the climate change context in Tajikistan.
[235] scheduled to be completed in 2019

surrounding regions; iii) the ongoing assessment for the development of the KRBMP[236]; and iv) water availability in the KRB. The collation of data on water availability will support the assessment of identified climate risks[237] as well as producing the climate change projections that will inform the MHCRMs [Activity 1.1.3[238]].

The gap analysis will take into account all recommendations and watershed delineations made through the KRBMP assessment. If the assessment does include watershed delineations, the design of the integrated catchment management strategy for the KRB will refer to those delineations.

Once the gap analysis has been completed, missing primary data will be collected for the KRB. Satellite imagery will be used to obtain land use, vegetation cover and slope data. Where existing data on soils is limited, ground-truthing studies will be conducted. For watersheds that are expected to be particularly vulnerable, satellite imagery will be supplemented with topographic models derived from high-resolution drone imagery.

To accurately consider the impacts of climate change on the risk profile of the KRB, regional climate change predictions will be downscaled. These downscaled predictions will be used in Activity 1.1.2 to inform the climate risk models.

Activity 1.1.2. Develop Multi-Hazard Climate Risk Models for the Kofirnighan River Basin.

Multi-Hazard Climate Risk Models (MHCRMs) will be developed at the watershed scale for the KRB. These models will be calibrated with historical data, but will also be run using downscaled climate change predictions developed under Activity 1.1.1. Notably, multi-hazard models will consider the relationships between different types of hazards. In many cases, the onset of one hazard alters the likelihood or impact of another hazard. For example, a GLOF may result in river bank destabilisation that could trigger a landslide event. Similarly, landslides and other forms of mass movement may alter river morphology and increase the risk of flooding. These interactions may be closely linked temporally and spatially (e.g. a GLOF triggering a landslide). Conversely, some hazards may interact across larger temporal and spatial scales; for example, rapid erosion upstream in a catchment may result in downstream sediment accumulation, which slowly increases downstream flood risk.

In this activity, priority hazards such as GLOFs, floods, mudflows and landslides will be modelled for the KRB. While different priority risks have been identified in both the north and south sub-basin of the KRB, the vertical linkage between the two regions will markedly impact the risk profile. In particular, land uses in the northern sub-basin (upstream area), will have impacts on the southern sub-basin (downstream area) risk profile. For example, inappropriate land uses in the upstream areas could result in increased sedimentation, erosion and landslides, as well as reduced dry season water availability, in the downstream areas. Conversely, upstream land uses that maintain the ecosystem functionality of watersheds will result in downstream benefits of drainage control, flood reduction, improved water quality and increased dry season water flow.

<u>Output 1.2. Support provided for upgrading automated weather stations in Kofirnighan River Basin watersheds.</u>

[236] scheduled to be completed in 2019
[237] Validation of the identified climate change risks for the KRB is being conducted under Activity 1.1.2.
[238] Use of square brackets is specifically to highlight linkages between outcomes, outputs and activities.

Currently, there are 11 weather stations across the KRB, which equates to an approximate density of one station per 1,000 km^2. This is regarded as an appropriate density[239,240] according to WMO guidelines[241]. Notwithstanding this, existing weather stations throughout Tajikistan face technical challenges, limited automation and problems regarding data quality. In addition, weather stations are being degraded because of insufficient resources and technical capacity to rehabilitate them following extreme climate events.

Under this output, the State Agency for Hydrometeorology (referred to hereafter as 'Hydromet') will be supported by providing capacity building to repair existing weather stations in the KRB. Support to Hydromet will also be provided in the form of equipment for the rehabilitation and upgrading of selected weather stations. This support will improve the quality and quantity of hydrometeorological data that is collected from the weather stations. Collected data will contribute to building an in-depth understanding of the climate change risks on different soil types and land units. The data will also be used to: i) refine the MHCRMs (Output 1.1); and ii) deliver climate risk information and adaptation advisories to agro-ecological extension service providers (Output 2.1). Weather data will be disseminated under Output 3.1.

Indicative activities to be implemented under Output 1.2 are detailed below.

Activity 1.2.1. Provide technical support for the modernisation of automated weather stations in the most vulnerable districts of the Kofirnighan River Basin.

In order to provide relevant and up-to-date climate risk information and associated advisories for rural farmers and pastoralists in KRB, weather stations need to be regularly updated. In addition, following extreme climate events, weather stations should be inspected for potential repair needs. Existing weather stations within the KRB, although regarded as operational, are in need of rehabilitation. This is in response to limited resources for regular inspections following extreme climate events that have resulted in the stations undergoing significant wear and tear[242].

Of the 11 total weather stations in KRB, 3 have been identified for rehabilitation and modernisation, namely 'Tartki' and 'Chinar' situated on the Kofirnighan River, and 'Romit' on the Sardai-Miyona River. The rehabilitation will ensure that the three stations are capable of procuring a greater density of data required for the climate projections for their respective areas.

Hydromet will be supported through this activity by providing training to relevant technical personnel on the ongoing maintenance of weather stations, as well as repairs following extreme climate events. In addition, required equipment will be provided to Hydromet under this activity to rehabilitate the existing three identified weather stations. Support will also be provided to install stream gauging equipment. This equipment will include sensors to automatically measure stream velocity, depth, width and water turbidity, as well as supporting infrastructure. Supporting infrastructure will include cabling, observer cabins and electric drum winches (details of hydrometric equipment are presented in Annex 5).

[239] Third National Communication 2014.
[240] World Meteorological Organization (WMO). 2008. Guide to Meteorological Instruments and Methods of Observation. Seventh Edition, WMO-No. 8.
[241] World Meteorological Organization (WMO). 2018. Country Profile Database: Tajikistan Regional Association II (Asia). Available at: https://www.wmo.int/cpdb/tajikistan [accessed 19.07.2018].
[242] Currently, KRB weather stations frequently collect unreliable or insufficient data. Therefore, high-quality climate information cannot be disseminated to the respective end-users. Automated data collection protocols will be implemented at all weather stations in the KRB and suitable data management software will be acquired. This software will ensure that data collected by weather stations is accurate and that all data is safely stored.

Activity 1.2.2. Collect and collate data from improved automated weather stations.

All data and information from both existing and supported automated weather stations [under Activity 2.1.1] will be collected. This data will be collated for dissemination through the existing knowledge centres in the country [Outcome 3] for analysis and further dissemination in usable formats. In addition, historic records dating back 100 years will be digitised.

To date, data collected from weather stations have been digitally archived through the process of scanning written records. However, this data is not usable for the necessary analysis that should take place in order to inform climate risk projections because it is in image format. In light of this shortfall, this activity will involve using Intelligent Character Recognition (ICR)[243] software to automatically convert scanned images into machine-readable data. This will significantly improve the historical weather records for the KRB and will be considered an innovative advance in climate data management capability in the country.

Activity 1.2.3. Use collected data to inform climate risk information and adaptation advisories for agro-ecological extension service providers.

The collected and collated data from available automated weather stations in the KRB [under Activity 2.1.2] will be fed into the existing knowledge management centres supported under Outcome 3. This data will then be used to develop climate risk and advisories for farmers and pastoralists. Adaptation advisories will be tailored to the local needs based on the collected data as well as existing climate forecasting for the country. Mobile service providers will be engaged with to identify partners for the long-term and to ensure sustainability of advisory delivery. Advisories will be disseminated to all agro-ecological extension service providers in KRB so that they are able to make informed decisions on adaptation recommendations.

By developing and disseminating advisories, the adoption of climate-resilient and high market-value crop and seed varieties will be promoted. These seed varieties include – but are not limited to – Lucerne (*Medicago sativa* L.) and sainfoin/'especet' (*Onobrychis viciifolia* Scop.)[244]. Not only will advisories inform the selection of crops that take climate risks into account, they will inform alternative agricultural options for communities. Such options could include introducing fodder production into agricultural practices and establishing agroforestry and intercropping practices. The introduction of alternative land-use options will result in increasing soil fertility and conservation of natural resources for valuable ecosystem services for future seasons[245].

Included in the advisories will be guidance on planting time and season specific to the target areas. The guidance will include suggested crop types, timing of planting and reason for selection.

<u>Output 1.3. Integrated catchment management strategy developed for the Kofirnighan River Basin.</u>

Under Output 1.3, an integrated catchment management strategy will be developed for the KRB. This strategy will outline how to implement integrated land and water resources management in watersheds throughout the KRB in order to manage climate risks. The strategy will address the

[243] ICR is an advanced optical character or handwriting recognition software system that enables different fonts to be learned by a computer. This system has been used to improve accuracy and recognition levels within data collection and analysis.
[244] FAO. 2008. State of Plant Genetic Resources for Food and Agriculture (PGRFA) in the Republic of Tajikistan: Country Report. By Prof. Dr Hafiz Muminjanov, Dushanbe.
[245] FAO 2008 PGRFA: Country Report.

linkages between upstream and downstream impacts at the river basin scale and outline approaches for identifying and managing such impacts at the watershed scale.

The integrated catchment management strategy will further inform the KRBMP that is currently being developed. RBOs and RBCs in the KRB will be closely involved in the development of the strategy. Staff from RBOs and RBCs, along with relevant staff from CEP, Agency for Land Reclamation and Irrigation (ALRI) and local government at *raion* and *jamoat* levels will be trained on the implementation of the strategy. Strategic approaches and objectives of the strategy will be operationalised at *raion* level through District Development Plans (DDPs).

Indicative activities to be implemented under Output 1.3 are detailed below.

Activity 1.3.1. Develop an integrated catchment management strategy for the Kofirnighan River Basin to inform and facilitate cross-sectoral landscape planning.

This activity will build on the training provided under Activity 1.3.2 to develop an integrated catchment management strategy for the KRB. Relevant government authorities will be included in the design of the strategy to ensure that it is coherently linked with existing sectoral and local level policies. The strategy will detail how the identified climate risks [under Activity 1.1.2] will be managed using a cross-sectoral approach to integrated catchment management. The strategy design will consider all relevant individual sector mandates and align their objectives within the context of integrated management for the KRB.

Based on the MHCRMs [developed under Output 1.1], the strategy will provide guidance on risk management at various catchment scales within the KRB. This means that factors such as soil erosion and flood risk will be incorporated into cross-sectoral land-use planning to facilitate efficient management across all relevant government sectors. These sectors include *inter alia* water, environment, agriculture, and education.

The strategy will provide overall guidance for the integrated management of watersheds by local communities. This guidance will ensure that WAPs developed under Outcome 2 take downstream impacts into consideration and that interactions between different watersheds are accounted for in a strategic manner.

Activity 1.3.2. Deliver a training programme on mainstreaming climate risks for integrated catchment management planning.

Relevant government and academic staff, of which at least 30% will be women, will be trained on mainstreaming climate risks into integrated catchment management planning. Identified agencies include CEP, Hydromet, MEWR, ALRI, the Department of Geology (DoG), RBOs of the KRB and UCA. Additional agencies and entities to be trained will be identified during the project inception phase. These partners will be trained on international best practices for integrating climate risks into integrated catchment management. In addition, this training will include identifying relevant risk management measures for existing and emerging climate risks. The overall objective of the training programme will be for relevant institutions, government levels and departments to effectively implement an integrated catchment management strategy for managing the impacts of climate change.

Trainings will be tailored to the specific needs of the department/institution to ensure that all partners acquire equal knowledge on the most appropriate mechanism for integrated

management. All relevant sectors will be included to ensure that – although mandates will continue to differ slightly – the goals of each align with the strategy for the KRB.

Sub-activities for the trainings under Activity 1.3.2 are outlined below.

- 1.3.2.1. Training conducted to relevant CEP representatives to integrate catchment management into implementation and monitoring activities for all projects going forward, both those with a focus on climate change and without.
- 1.3.2.2. Training provided to the personnel of the supported knowledge management centres – including the DoG Open Centre and to UCA – on assessing available climate risk information and ensuring it is all made available through the relevant portals/hubs.
- 1.3.2.3. Training provided to *raion*-and *jamoat*-level government departments on integrated catchment management and identifying climate risks that require such a management approach.

Activity 1.3.3. Provide training for selected communities on identification of EbA activities and implementation.

Rural communities across the six identified most vulnerable districts of the KRB will be selected for training on identifying and implementing appropriate EbA interventions. These identified six districts include Vahdat, Varzob and Faizobod Districts in the north of the KRB and Nosiri Khusrav, Shaartuz and Kabodiyon Districts in the south of KRB[246]. From these districts, it is expected that communities in ~100 villages across 14 *jamoats* will benefit from training on EbA interventions. Women will be encouraged to participate in these training activities, and of the total number of community members trained, at least 30% will be women.

The selected communities will be trained by representatives from those institutions trained under Activity 1.3.2, including district and *jamoat* representatives of CEP. This training-of-trainers (ToT) approach will build the capacity of selected communities to identify climate risks, and to design and implement appropriate EbA interventions. All trainings will be delivered in local Tajik dialects specific to each target district. This will ensure that trainings are accessible to all participants.

Output 1.4. Strengthened coordination and training mechanisms for integrated climate-resilient catchment management.

Relevant co-ordination and training mechanisms will be strengthened for the implementation of integrated climate-resilient catchment management. Co-ordination structures to be strengthened include the RBOs and RBCs in the KRB. These entities are currently being established and, by project inception, will have been capacitated on water management at the catchment level. The proposed project will build their capacity on climate-resilient catchment management that includes land use as well as the management of water resources under climate change conditions. Training on cross-sectoral management will be provided to RBOs and RBCs in the KRB, as well as *raion* and *jamoat* level staff. This training will strengthen the existing coordination structures in the KRB to include integrated and climate-resilient management of land and water resources.

Opportunities for establishing/supporting existing local training mechanisms will be identified. Currently, no institutionalised or systematic training mechanisms exist for farmers and pastoralists.

Indicative activities to be implemented under Output 1.4 are detailed below.

[246] Details on these six districts are provided in Part I, where the environmental context of Tajikistan is described.

Activity 1.4.1. Strengthen existing training mechanisms at the *raion* and *jamoat* levels.

Under this activity, existing training programmes will be strengthened at the *raion* and *jamoat* government and administration levels. The programmes will be adopted from existing mechanisms within the *raion* and *jamoat* government for targeted catchment and/or watershed management. Improved training programmes will include coordination mechanisms for integrating holistic landscape management practices through the integrated catchment management strategy [Output 1.3]. Trainings will be coordinated between the RBOs and RBCs to ensure that the process of continued training is adopted into regular management within the government.

Activity 1.4.2. Provide training on integrating EbA into catchment management.

Following on from Activity 1.4.1, the strengthened training programmes will be carried out for *raion* and *jamoat* level government officials in the targeted districts[247]. The training will focus on providing support for agro-ecological extension services and will include EbA measures as part of an integrated approach to management. Main recipients of this training will include RDPP, CEP and *jamoat* government-level officials to ensure that the administrative and organisational processes are strengthened for EbA implementation.

This training will be linked with activities under Output 2.1 where community demonstration plots of EbA interventions will be established [under Activity 2.1.2] and farmer field schools will be conducted [under Activity 2.1.3]. All trainings will be delivered in local Tajik dialects specific to each target district. This will ensure accessibility to all willing and necessary participants.

Output 1.5. Payment for Ecosystem Services models to support the long-term financing of integrated catchment management strategy implementation.

Payment for Ecosystem Services (PES) has been identified as a viable approach for conserving the supply of ecosystem goods and services of Tajikistan under climate change conditions. Currently, no viable models for PES have been identified in the KRB. However, there are a number of ecosystem services within the KRB that could be eligible for a PES approach. These include water provision, flood reduction, sediment retention and biodiversity conservation. The activities of this project will support the delivery of the above ecosystem services and, consequently, the possibility of implementing PES in the KRB will be investigated under this output.

The indicative activity to be implemented under Output 1.5 is detailed below.

Activity 1.5.1. Develop suitable Payment for Ecosystem Services models for the KRB.

Under this activity, appropriate PES models will be developed for the KRB. Relevant ecosystem services will be identified, such as water provision from restored and ecologically-sound watersheds. Willing buyers and willing sellers for each ecosystem service will be identified and engaged with to determine: i) the feasibility of PES for a particular ecosystems service; and ii) pricing structures for PES-compatible ecosystem services. Where willing buyers and willing sellers of a particular ecosystem service have been identified, potential intermediaries will be engaged with. Intermediaries may include government entities, NGOs and financial institutions.

[247] Vahdat, Varzob, Faizobod, Nosiri Khusrav, Shaartuz and Kabodiyon Districts.

Negotiation platforms will be established between buyers, sellers and intermediaries to determine prices and payment methods for the delivery of ecosystems services.

Component 2. Ecosystem-based Adaptation, including Climate-smart Agriculture and Sustainable Land Management, in agro-ecological landscapes.

Adaptation measures such as EbA are increasingly being recognised as a cost-effective approach for building the climate resilience of vulnerable communities. In the context of watersheds, EbA interventions are most effective when implemented in degraded landscapes. In the KRB, many watersheds are degraded because of unsustainable land management practices – such as overgrazing and deforestation – and the impacts of climate change. These watersheds are prone to increased risks of flooding, mudflows and landslides and are characterised by low agricultural productivity. Implementing EbA interventions such as erosion control measures, agroforestry and sustainable pasture management in these watersheds will restore ecosystem services of flood reduction, soil stabilisation and increased water availability. Concomitantly, these interventions will provide long-term benefits to local communities by: i) providing climate-resilient and ecologically-sound livelihood opportunities; and ii) reducing both the likelihood and impact of climate risks.

EbA interventions for watershed management function optimally as part of an integrated upstream-downstream approach that considers risk avoidance and risk protection. For example, if a watershed is prone to flooding, EbA interventions in the upstream areas can promote ecological processes of flood attenuation and runoff infiltration that reduce downstream flood impacts. Downstream communities can then be further protected by combined grey-green infrastructure such as reinforced river banks that are stabilised with riparian vegetation. Under Component 2, vulnerable watersheds in the KRB will be climate-proofed through the implementation of integrated watershed management with a focus on an EbA approach that provides long-term benefits to local communities.

Outcome 2. An integrated approach to building climate resilience of agro-ecological landscapes operationalised at a village level.

The integrated catchment management strategy developed under Outcome 1 will inform development across all economic sectors at a catchment scale in the KRB. It will not, however, be sufficiently detailed to inform land-use management practices at a watershed scale. Outcome 2 will consequently include the development and operationalising of Watershed Action Plan (WAPs). These plans will have an overarching focus on addressing climate risks, thereby ensuring full alignment with the catchment management strategy [developed under Output 1.3]. A total of six districts[248] have been identified for EbA implementation, namely Vahdat, Varzob, Faizobod, Nosiri Khusrav, Shaartuz and Kabodiyon. This implementation will serve to demonstrate the cost-effectiveness and adaptation benefits of such EbA interventions.

Under this outcome, an integrated approach for building community resilience to climate change will be established, demonstrated and subsequently implemented. This approach will be informed by detailed WAPs and community enterprise plans that will focus on building the climate resilience of the communities.

There are four outputs to achieve the above-described outcome. These outputs are interlinked through the respective activities by providing support to communities and implementing EbA

[248] Refer to the Part I sub-section on the environmental context in Tajikistan for details on these districts.

activities in target regions. The four outputs and their indicative activities are detailed below, including linkages between the three project outcomes.

Output 2.1. Agro-ecological extension services supported at the *jamoat* level to provide technical support for EbA implementation.

Agro-ecological extension services are currently provided by private enterprises – largely agronomists – at the *jamoat* level on an ad-hoc basis in response to farmer requests. Through a ToT approach, these service providers will be supported to ensure that communities have access to the necessary guidance for effectively implementing EbA.

Indicative activities to be implemented under Output 2.1 are outlined below.

Activity 2.1.1. Support agro-ecological extension services by training existing service providers on EbA, climate-resilient agriculture and multi-hazard climate risk management.

Currently, agro-ecological extension services are being provided to farmers and pastoralists by private enterprises at the *jamoat* level. Under this activity, these existing service providers will be supported to ensure that communities have access to the necessary guidance for effectively implementing EbA. This support will be through a ToT approach that ensures all knowledge sharing is ongoing among *jamoats* and communities. Training will include a focus on EbA, climate-smart agriculture (CSA) and sustainable land management (SLM) to ensure that an integrated approach to management is adopted following the provision of extension services. By providing additional training on multi-hazard climate risk management, existing extension service providers will be informed of the relevant and up-to-date technologies for climate information.

The ToT programme provided to the existing agro-ecological extension service providers will include training on specific processes that are essential to implementing an effective integrated catchment management strategy. These specific processes include measures on EbA, CSA and SLM that all contribute to improved river and water management. The processes are outlined below.

- **Developing land-use plans (LUPs) that take into account all natural resources within and surrounding a particular area**. Efficient land-use planning will prevent social conflicts over land and ensures the sustainable use of available resources. LUP could involve the implementation of rotational grazing and/or cropping as well as intercropping or alternate harvesting. In this way, LUP contributes to increased soil fertility and improved productivity. The ToT programme will train extension service providers on developing land-use plans for specific areas within the target districts. Importantly, this training will differ between regions and within districts because of considerable variability in landscapes.
- **Developing implementation protocols for EbA that are specific to particular soil types, ecosystems and landscape units**. Together with LUP, such implementation protocols will assist with ensuring maximum sustainability of all available resources. Such protocols make use of previous seasons' experiences and outputs to adapt for future seasons. Training to extension services providers will be focused on the process of identifying potential EbA measures to be implemented in a specific region. The training will also include how to determine the appropriate intervention according to the landscape and needs of the community.
- **Training extension service providers on the technical implementation of EbA, including theoretical and practical aspects**. This is because the providers are private enterprises, meaning that farmers may often request guidance rather than hands-on assistance. Extension

services consequently need to be able to describe in detail the identified EbA measure as well implement it on the ground.

- **Connecting agricultural producers to markets**. Improving market connectivity among agricultural producers will be a focus in the training of extension service providers. Currently, the existing extension services are not adequately trained or equipped to guide the farmers towards the EBA, including CSA solutions. Neither are the farmers aware of productive benefits of EBA and CSA options or related market opportunities.
- **Introducing agro-processing to extension service providers.** Through agro-processing, there will be added value to primary agricultural products. Training will focus on what the different options are for processing/transformation of raw and intermediate products and how it could benefit the communities in terms of increase in incomes and greater adaptive capacity.
- **Training extension service providers on post-harvest storage handling.** This will promote the use of post-harvest storage facilities among Tajik farmers to reduce crop losses due to climate events and to improve prices received at markets. Training will include the appropriate steps immediately following harvest such as cooling, cleaning, sorting and efficient packing.
- **Training farmers on improving livestock productivity.** With climate change, farmers are likely to become more reliant on their livestock for their livelihoods. By focusing on supporting the health and nutrition of livestock, the resilience of local communities will be improved. Such examples of guidance would be to establish small fodder production units for livestock and to shift from an entirely plant-based diet to a semi-animal-based protein.
- **Developing advisories from climate risk information received from Hydromet**. These advisories will be delivered to farmers to inform their decision-making for the season ahead.

Activity 2.1.2. Establish EbA demonstration plots in each of the target villages.

Under this activity, community demonstration plots will be established in the target villages. These plots will consist of the main EbA interventions to be implemented. The training provided under Activity 1.4.2 will serve as the base for the implementations of these plots. These demonstration plots will be the main platform for: i) demonstrating enhanced crop and livestock productivity; ii) training farmers and pastoralists on the technical details of how to implement EbA interventions; and iii) demonstrating how the interventions reduce climate change-induced soil erosion.

The EbA measures included in the demonstration plots will be selected from the shortlist of EbA interventions to be developed under Activity 2.2.2. Examples of the measures that have been identified as successful and/or potentially successful in the KRB are described in Table 7.

Table 7. EbA measures that have been identified as successful/potentially successful in the KRB. In the 'Applicable area' column, 'N' denotes the northern sub-basin while 'S' denotes the southern sub-basin.

No.	Description	Applicable area
1	Construction of 'protection' gabions along rivers to provide buffers during flash floods.	N,S
2	The introduction of water-saving irrigation techniques such as drip irrigation, dry farming, composting/mulching and making use of cover crops.	N, S
3	Rehabilitation/restoration of degraded forest ecosystems making use of *saxaul* species, as well as others.	N, S
4	Sustainable harvesting for livelihoods from existing 'healthy' forest ecosystems.	N
5	Establishing livestock exclusion zones for the growing of fodder crops such as Lucerne and sainfoin.	N, S
6	Establishing shelterbelts to reduce the deposition of wind-eroded sediment on crops and integrating bio-drainage measures to improve water infiltration.	N, S
7	Introducing indigenous and palatable grass seeds into degraded rangelands.	N, S
8	Introducing rotational grazing of livestock between pastures to assist with increasing field water absorption and decreasing water runoff.	N, S

No.	Description	Applicable area
9	Pasture management such as land-use planning and introducing improved management measures such as exclusion zones and rotational grazing of livestock.	N, S
10	Establishing joint forest management involving communities and local government.	N, S
11	Introducing intercropping and agroforestry, and in specific areas may include apiculture, i.e. beekeeping.	N, S
12	Introducing sustainable long-term community services such as renewable energy and energy-efficient stoves.	N, S
13	Setting up shelterbelts in areas frequently exposed to erosion.	S
14	Establishing commercial plantations making use of an array of indigenous fruit species in degraded lands.	S
15	Introducing organic mulching for farmers to use on croplands which promotes soil fertility as well as water-saving.	S
16	Diversifying crop use, including drought-tolerant and climate-resilient crops.	S
17	Establishing greenhouses for horticulture including local lemon, tomato and cucumber.	S
18	Establishing community woodlots in abandoned areas for fuelwood.	S
19	Providing additional and improving existing extension services provision which will include developing advisories for farmers.	S
20	Establishing on-farm water resource management.	S
21	Rehabilitating existing irrigation, drainage and pumping systems.	S

The proposed techniques outlined above will include EbA practices as well as CSA and SLM measures. EbA is currently not being undertaken by local communities because of limited technical capacity to plan, implement and sustainably finance the interventions. Under this activity, this capacity will be enhanced at the village level. In addition, Outcome 1 will contribute to building the capacity by strengthening local extension services and village governance structures.

EbA measures listed in Table 7 above have been identified as priority interventions in the northern and southern sub-basins of the KRB, as indicated. Final selection of activities in each watershed will be through the participatory development of WAPs (Activity 2.2.2). Communities will select the most appropriate interventions for their watersheds through the WAP development process. It is expected that all activities mentioned in Table 7 above will be implemented; however, a right combination of measures will be determined and appropriately customized for each local sub-watershed through local engagement and community participation. The measures will also be scrutinized as part of the project ESMP process.

As such, the project activities where plant introduction/management is an aspect (e.g. forest rehabilitation, agroforestry, shrubland conservation, pasture rehabilitation, crop production) the following safeguarding measures will be put in place, as part of the ESMP implementation:.

- **Expert input.** Experts (ecological, hydrological and agricultural) will be appointed to provide input into the selection and development of protocols for each of the EbA interventions, particularly where plant-introduction/management is an aspect.
- **Site selection.** As part of the participatory mapping process, expert input (ecological, hydrological and agricultural) will inform the selection of sites for EbA interventions. For example, it is envisaged that existing woodlots will be supplemented; newly-planted woodlots will be situated in appropriate, low-risk areas (a safe distance from areas of high conservation value or biodiversity hotspots).
- **Species selection.** Wherever possible, naturally-occurring species will be planted. Where necessary, non-invasive, non-naturally-occurring species will be planted. Known invasive species or species with potentially invasive traits will be avoided. Where alien species will be

introduced, the Committee for Environmental Protection (CEP) will be consulted prior to such introduction to ensure that these species do not pose a risk to endemic biodiversity.

- **Operational monitoring and management.** Regular monitoring by the appointed regional/local ecologist/s will be undertaken to ensure early detection and rapid response to any species emerging as potentially invasive. An appropriate invasive species eradication plan will be developed and implemented according to stipulated timeframes.

Activity 2.1.3. Conduct farmer field schools (FFs) in target villages making use of demonstration plots.

The strengthened training programmes under Activity 1.4.2 will inform the development of a curriculum for farmer field schools (FFSs). These FFSs will be conducted in the target villages of Vahdat, Varzob, Faizobod, Nosiri Khusrav, Shaartuz and Kabodiyon Districts and will include training on EbA, CSA and SLM. Specifically, trainings will demonstrate the importance of improved livestock husbandry and community-based rangeland practices. FFSs will be advertised through the activities under Outcome 3. Through the provision of FFSs, local community capacities will be built with specific wide-spread knowledge of EbA, CSA and SLM.

Training of *jamoat*-level extension service providers will be focused on within the FFSs. By including these local experts in the FFSs, the project will promote farmer interaction whereby both government and communities learn from previous experiences. This will allow upstream versus downstream experiences to be shared as well as the development of possible measures that will benefit each other in the future. Through the establishment of demonstration plots [under Activity 2.1.2], training by community members to fellow community members will take place. This will facilitate a training-of-trainers (ToT) approach which further promotes sustainability of project interventions. Community leaders will be selected to take part in the training and sharing of experiences.

Curricula of the FFSs will include training on avoiding soil erosion threats at the community level. This training will be tailored to: i) increase infiltration of rainwater into topsoils; ii) increase the water-retention capacity of soils; and iii) restore soil horizons in landscapes with sheet/gulley erosion. Such management of soils will be underpinned by increasing the vegetative cover of the landscape and the organic matter content of the soil. To this end, a wide range of land management techniques will be presented for implementation to improve SLM in target villages. Such management interventions and techniques are separated according to the northern and southern sub-basin of the KRB. The specific EbA measures proposed for the northern and southern sub-basins are outlined in Table 7 above.

The proposed techniques outlined above will include EbA practices, which are usually a form of CSA and/or SLM. EbA is currently not being undertaken by local communities because of limited technical capacity to plan, implement and sustainably finance the interventions. Under this activity, this technical capacity will be enhanced at the village level. In addition, Outcome 1 will contribute to building the capacity by strengthening local extension services and village governance structures. FFS will be inclusive, and it is expected that participants will be at least 30% women.

<u>Output 2.2. Watershed Action Plans developed that promote climate resilience and enhance economic productivity for target communities.</u>

Under this output, climate risk information will inform the development of fine-scale Watershed Action Plans (WAPs). These WAPs will assist local government and communities in ensuring that all identified EbA measures are carried out in an efficient and effective manner. The WAPs will include detailed budgets that will assist in determining the extent to which EbA measures can be implemented.

WAPs will be developed through a participatory process with communities from target villages in Vahdat, Varzob, Faizobod, Nosiri Khusrav, Shaartuz and Kabodiyon Districts. Such participatory processes will be conducted by holding regular consultation meetings in the villages with local government, PUUs and other relevant organisations. Through this output, the appropriate EbA measures in each watershed will also be shortlisted for future implementation.

Indicative activities to be implemented under Output 2.2 are detailed below.

Activity 2.2.1. Conduct participatory mapping at the watershed level.

All mapping will be conducted in a thorough participatory manner with local communities and community-based organisations (CBOs). These CBOs are likely to include forestry organisations and Pasture User Unions (PUUs). Experts undertaking the mapping will be required to consult with local communities, learning from their on-the-ground experiences in the region. Communities will also be part of the final decision-making process for the shortlisting of EbA interventions [under Activity 2.2.2]. The meetings will be to consult with communities on their knowledge of watershed mapping, as well as to inform, update and make decisions for the future planning.

PUUs are currently in place in certain regions of the country. These PUUs have been established through previous and ongoing projects. Further development of existing associations, as well as the establishment of new PUUs, will be supported under this activity by conducting participatory mapping of each target watershed in the KRB. The mapping will make use of ecological, hydrological and agricultural data as well as regional and local experts to determine the most appropriate EbA measures to be implemented at the watershed level to improve community resilience.

These ecological, hydrological and agricultural experts will also assist with determining the most appropriate land-use management changes necessary to address the climate change threats in the villages' surrounding landscapes. The recommendations will take into account the integrated catchment approach of the project, based on the strategy developed under Output 1.3.

Activity 2.2.2. Develop Watershed Action Plans (WAPs) for vulnerable watersheds in the Kofirnighan River Basin.

Results of the participatory mapping conducted at the watershed level [Activity 2.2.1] will inform the selection of a wide range of EbA measures for each targeted watershed. These interventions will be assessed to form a shortlist that will be used for implementation recommendations going forward.

The land-use plans informed by these recommendations will be treated as working documents, primarily because of the: i) participatory nature of the mapping; ii) selection of shortlisted EbA interventions; and iii) monitoring to be conducted of implementation interventions. These working documents are flexible in nature in that they can be changed in an iterative manner as more relevant and up-to-date information becomes available. Importantly, these WAPs will be carefully aligned with the integrated catchment management strategy developed under Outcome 1 [under

Output 1.3]. WAP development will be facilitated by district representatives from CEP and *jamoat*-level government in a participatory process with local communities living in the watersheds.

These WAPs will outline what types of EbA interventions will be implemented in which areas, propose sustainable rates of extraction for local ecosystems, and identify the types of protection measures that need to be undertaken. This will ensure that the plans will be responsive to local needs, while also building local community ownership of WAPs. Through the participatory development of WAPs, local community members will gain an increased understanding of climate risks, DRR and the importance of sustainably managing watersheds.

Output 2.3. EbA interventions implemented in target watersheds by local communities.

Under Output 2.3, local communities will be supported in implementing EbA interventions identified in Output 2.2. These interventions will reduce climate risks in two ways. Firstly, interventions such as reforestation, agroforestry and sustainable pasture management in degraded watersheds will strengthen the provision of ecosystem services. These ecosystem services include increased groundwater recharge and soil stabilisation, which will reduce the downstream impacts of flooding, landslides, soil erosion and limited water availability. Secondly, project activities will include protection interventions downstream. These interventions will include river bank stabilisation and flood protection.

The sustainability of watershed rehabilitation activities will be ensured by promoting local community livelihoods that are decoupled from unsustainable natural resource extraction. This will be done by using economically valuable species such as fruit and nut trees for watershed reforestation wherever possible. Reforestation activities will also be guided by existing Forest Development Plans. In addition, the environmental sustainability of local community livelihoods will be increased through the implementation of sustainable livelihood alternatives. Such alternatives will include low energy cookstoves, as well as harvesting fuelwood and timber species from local community woodlots.

The implementation of sustainable livelihoods will increase the environmental sustainability of local communities by providing these communities with sources of supplemental income that is decoupled from environmental degradation. For example, community woodlots will provide local communities with access to fuelwood and timber from suitable fast-growing species that will reduce their reliance on sourcing fuelwood from nearby forests. Woodlots will also be situated nearby beneficiary communities to reduce the labour burden of collecting fuelwood. Improved management practices from agricultural and pasture lands will reduce environmental degradation from overgrazing and soil degradation while also increasing local biodiversity.

Activity 2.3.1. Support local communities to implement priority EbA interventions.

Under this activity, local community members in ~100 villages across 14 *jamoats* in the six target districts will be supported in implementing the priority EbA interventions demonstrated in Output 2.2. Community member support will be gender inclusive and it is intended that at least 40% of recipients will be women. Communities will be provided with technical assistance and inputs for implementing risk-reduction activities such as watershed reforestation, erosion control measures and flood reduction measures. Additionally, inputs will be provided for measures that increase energy efficiency and consequently reduce unsustainable practices (such as low-energy cook stoves).

Nurseries will be established in each of the 14 *jamoats* to provide local community members with suitable climate-resilient species for watershed reforestation, agroforestry and intercropping. Economically useful species such as fruit trees or high-value timber trees for woodlots will be prioritised and species selection will be informed by local conditions as well as community needs.

Selection of the EbA interventions will be informed by an assessment of their social, environmental and economic impacts within a community. Local communities will be consulted to agree on which EbA interventions should be implemented in the different land categories. The proposed EbA interventions that will be assessed for selection on the shortlist have been listed under Output 2.1 [specifically under Activity 2.1.3] and a more detailed list is provided in Annex 9. This list also includes details on the expected cost-effectiveness of each intervention. While it is expected that all activities that have been listed will be implemented, each local community will have the opportunity to provide input into the selection of locally-appropriate activities. Consequently, some activities may not be implemented as a result of local preferences. Additional community consultations will be undertaken during the insipient phase, in the first year of project implementation to allow communities to provide their inputs into the final verification of these interventions. The consultations will be inclusive and conducted using locally-appropriate methods for community engagement.

Activity 2.3.2. Support local community members in developing Enterprise Plans (EPs) based on EbA interventions.

Under this activity, local communities will be supported in developing EPs. The activity will encourage women involvement, with at least 40% of participants being women. Local community members will receive training on enterprise development and be educated on the economic viability of ecologically-sound natural resource-based businesses. By demonstrating the economic viability of EbA interventions for watershed restoration to local communities, this activity will contribute towards the sustainability and scalability of project interventions.

Local community members will be trained on how to start and maintain enterprises based on EbA interventions. Training will include cash flow prediction, product processing and accessing suitable markets. Possible enterprise plans identified during the project development stage include beekeeping, fodder crop production, agricultural production from fruit and nut trees and supporting services. These are outlined below.

Beekeeping
Beekeeping is readily integrated into EbA activities that promote the planting of flowering plants, such as fruit trees or fodder crops. Honey is a highly marketable product in local markets and can be sold at up to TJS40[249] (~US$4) per kilogram. It is generally sold locally and also exported to surrounding Central Asian countries.

Fodder production
Fodder crops such as Lucerne (*Medicago sativa* L.) or sainfoin (*Onobrychis viciifolia* Scop.) can markedly improve the productivity of livestock agriculture. Pastures generally produce ~1.6 dry tonnes of feed per hectare per annum. Comparatively, fields planted with fodder crops can produce up to 10 dry tonnes of feed per hectare per annum. Fodder crops can be used as ground cover for intercropping with orchards or in agroforestry. Leguminous fodder crops, such as Lucerne and sainfoin, also increase soil fertility by fixing nitrogen. While fodder crop production

[249] 'TJS' refers to Tajikistan Somoni.

can be profitable, with Lucerne being sold at up to TJS15 (~US$1.50) per pressed kilogram on local markets, prices are highly variable according to season and climatic conditions.

Agricultural production from fruit and nut trees
Fruits and nuts are readily sold on local markets. Amongst others, peaches (*Prunus persica* L.), apricots (*Prunus armeniaca* L.), figs (*Ficus carica* L.), sour cherries (*Prunus cerasus* L.), pears (*Pyrus sp.* L.), plums (*Prunus divaricata* Led.) and apples (*Malus pumila* Mill.) are commonly grown fruit trees, while pistachios (*Pistacia vera* L.), walnuts (*Juglans regia* L.) and almonds (*Prunus dulcis* Mill.) are commonly grown nut trees. Pistachios and wild sour cherries, in particular, are frequently planted to stabilise slopes. Community members will be assisted in selecting the appropriate tree species to plant based on local soil conditions, climatic factors and markets.

Supporting services
A number of the interventions that will be undertaken in the proposed project will require supporting services. For instance, the introduction of low-energy cookstoves will require local community members that have the prerequisite skills to manufacture such stoves. During project implementation, supporting services for the long-term implementation of project activities will be identified and local community members trained on how to provide such services. In addition, to ensure productivity of fruit trees, pruning and grafting methods will be taught to local communities [for inclusion in Activity 2.3.1 and the establishment of nurseries].

Activity 2.3.3. Monitor the impacts of EbA interventions.

Continuous monitoring will be done at the community-level to provide an evidence-base on the effectiveness of EbA interventions and to enable adaptive management to take place. Community monitoring plans will be developed to enable continuous monitoring of WAPs [developed in Activity 2.2.2]. Local community members will monitor the impacts of EbA interventions and other actions implemented under WAPs. Authority figures in the local communities will be trained on interpreting monitoring information and taking adaptive management decisions based on the available information. Women will be encouraged to participate in these aspects of monitoring and adaptive management decision-making. Existing local-level gender dynamics will be taken into account to ensure that involvement in these activities does not place an additional labour burden on women and men. In addition, monitoring information will be shared with *jamoat*-level government officials and extension service providers, who will use this information to inform their decision-making at *jamoat* level.

Monitoring is likely to include the extent of damages from climate-related disasters, such as floods and landslides. In addition, the reliance of local community members on unsustainable practices will also be monitored. Indicators will be identified in community monitoring plans but are likely to include the amount of fuelwood harvested from natural forests.

Component 3. Knowledge management on building climate resilience through integrated catchment management and EbA in the Kofirnighan River Basin.

The activities of the proposed project have significant upscaling potential throughout Tajikistan and in Central Asia. Other countries in the region face similar climate change risks and are likely to benefit from adopting an integrated catchment management approach using EbA. Consequently, lessons learned from this project will provide an evidence-base to both inform and promote project activities beyond the project's geographical scope. To ensure that lessons learned are adequately collected, collated and disseminated, this component will focus on

strengthening knowledge management around integrated catchment management and EbA in Tajikistan.

Outcome 3. Existing knowledge management platforms supported for integrated catchment management and EbA.

A number of projects to address climate change impacts have been implemented at a village level across Tajikistan in the past decade. Many of these projects have had considerable success in terms of reducing soil erosion, raising finance for EbA interventions and increasing crop and livestock productivity. Consequently, numerous lessons have been learned for climate change adaptation activities in the country. These lessons include:

- establishing governance structures, from a national to village scale, to support EbA interventions;
- methods for engaging local communities;
- mechanisms for sharing lessons and best practices between villages;
- methods to undertake applied research in a participatory community approach;
- use of technology, such as smartphone applications, for training on and monitoring of interventions; and
- incentives[250] required to ensure long-term implementation and maintenance of EbA interventions by local communities.

The lessons listed above have, to date, not been collated, analysed and shared. They remain dissipated across projects and are consequently often viewed as unreliable because their underlying data is not available for public viewing. Under this outcome, activities will support existing knowledge management platforms and hubs to facilitate the exchange of lessons learned across Tajikistan. By providing much-needed support to these platforms, information will be readily accessible and available for dissemination to different organisation levels, including national government ministries to the villages. This method will ensure that local knowledge sharing continues beyond the project lifespan and also raises awareness of the benefits of EbA for integrated catchment management in the country. The evidence base assembled under this outcome will ultimately be used by policy-makers for informing the revision of legislation, policies and strategies relevant to upscaling EbA across Tajikistan.

There are three outputs to achieve the above-described outcome. These outputs are interlinked through the respective activities to ensure the necessary support is provided to knowledge sharing platforms to facilitate information transfer. The three outputs and their indicative activities are detailed below, highlighting the linkages between the three project outcomes.

<u>Output 3.1. Existing knowledge management platforms supported for collating information on the planning, implementation and financing of EbA interventions.</u>

Currently, several knowledge management platforms and hubs exist within Tajikistan as a result of previous and ongoing development projects. Because of this, a network already exists for the housing, viewing and transfer of new information. Such institutions include the University of Central Asia (UCA) and the Open Centre under the Department of Geology (DoG). These institutions are mandated with the responsibility of collating, analysing and disseminating information on climate risks and suitable adaptation options. By providing support through gender-

[250] e.g. financial, environment, cultural and aesthetic

disaggregated training and information transfer, this output will promote the sustainability of these platforms.

Indicative activities to be implemented under Output 3.1 are outlined below.

Activity 3.1.1. Support existing knowledge management platforms responsible for collating, analysing and disseminating information on climate risks and suitable adaptation options.

The existing knowledge management platform that has been identified for facilitation and support through Output 3.1 is the Open Centre under the DoG. As a reputable academic institution, the UCA will also be supported considering its goal and mandate to expand to rural regions of Tajikistan and other Central Asian countries. Through supporting these two institutions, awareness raising activities will be promoted on climate risks and the benefits of integrating EbA into landscape management.

In order to effectively provide support to the platforms, all new information to be provided will be screened to ensure it is scientifically sound. An emphasis will be placed on information underpinned by credible scientific analysis methods. Anecdotal information will be also be made available with, however, the caveat that further research is needed to determine its accuracy.

Training (gender disaggregated) will be provided to the relevant platform representatives under Outcome 1.

Activity 3.1.2. Collect and collate data and information from automated weather stations, agro-ecological extension centres and international publications..

Further to the data generated by automated weather stations (Outcome 1), additional data and information from *inter alia* local extension centres and from international publications will be collected and collated. This collated data and information will be made available to the supported information centres and participating local community members. While the Open Centre will provide a repository of information, to be disseminated to local communities, national decision-makers and academics, UCA will facilitate active sharing and training of the information (Activity 3.1.1.).

Output 3.2. An impact evaluation framework established to enable effective adaptive management of EbA activities.

To increase the quality of information available on the platform(s), Output 3.2 will include the development of an impact evaluation framework. This framework will be used for assessing EbA interventions implemented through the project, the sites selected for EP implementation, and also those villages that have had or are adjacent to areas where prior EbA interventions have been successful. Given that EbA benefits materialise fully over decades, the framework will need to be used by stakeholders during as well as after the completion of the project. A long-term research approach will consequently underpin the design of the framework.

Indicative activities to be implemented under Output 3.2 are detailed below.

Activity 3.2.1. Establish an impact evaluation framework to enable the effective quantification of project benefits and to provide information for future planning and implementation of EbA interventions.

An impact evaluation framework will be developed to monitor the impacts of project interventions. This framework will include the use of semi-randomised trials in areas with and without project interventions. In so doing, the framework will enable the effective attribution and quantification of project benefits and provide information for the future planning and implementation of EbA interventions across the country.

Activity 3.2.2. Obtain data and information through applying the framework will be disseminated via the knowledge platform(s).

The data and information obtained through applying the framework will be disseminated via the communication channels of the supported knowledge platform(s).

B. Economic, social and environmental benefits

Climate variability is already reducing agricultural productivity which is directly impacting food security in Tajikistan. This situation is likely to be exacerbated by predicted climate change-induced increases in extreme climate events. These events include floods, landslides and drought. The design of the proposed project is intended to provide adaptation alternatives for vulnerable Tajik communities to improve their resilience to climate change.

Activities and outputs of the project will have several economic, social and environmental benefits which will contribute to furthering sustainable development within Tajikistan. Activities have been designed to address the barriers identified as hindering climate change adaptation (CCA) in the country, namely: i) limited capacity of institutions to include CCA into national plans; ii) limited technical capacity of public services to implement activities among communities for CCA; and iii) limited knowledge sharing on CCA in Tajikistan.

The primary, overarching benefit of the project will be a reduction in climate risks. In doing so, environmental, social and economic damages as a result of climate change will be minimised among rural Tajik communities. This benefit will be realised by: i) reducing the exposure of vulnerable communities in the KRB to climate hazards; and ii) increasing the resilience of KRB communities and ecosystems to the impacts of climate hazards. To optimise sustainable development co-benefits, project interventions aimed at building climate resilience will use an EbA approach.

Implementing EbA in agricultural systems[251,252] has been proven to improve the ability of crops and livestock to adapt to climate change and variability. These practices can be implemented at various scales to improve land-use management. For example, on-farm management of genetic biodiversity can ensure a broader source of crop resistance-capacity to uncertain occurrences and effects of extreme climate events. Genetic biodiversity is promoted through the diversification of crop varieties or inclusion of wild relatives. Other farm-level practices include the use of: i) integrated pest management strategies; ii) new cropping systems to reduce the impacts of pests and diseases; iii) the planting of windbreaks; and iv) the planting of agroforestry systems or cover crops to help reduce the evapotranspiration effect. At the landscape level, EbA helps regulate

[251] Ecosystem-based Adaptation (EbA) is defined as in agricultural systems as the implementation of agricultural management practices that use or take advantage of biodiversity, ecosystem services or ecological processes (either at the plot, farm or landscape level) to help increase the ability of crops or livestock to adapt to climate variability. In contrast, practices that substitute the role of biodiversity in providing ecosystem functions and services for agricultural production such as excessive use of inorganic fertilizers or pesticides is not ecosystem-based.

[252] Vignola R, Harvey CA, Bautista-Solis P, Avelino J, Rapidel B, Donatti C & Martinez R. 2015. Ecosystem-based adaptation for smallholder farmers: Definitions, opportunities and constraints. Agriculture, Ecosystems and Environment 211:126–132.

water and nutrient cycling by ensuring tree cover or natural vegetation in areas of hydrological importance. EbA also reduces the incidence or severity of crop pest and disease outbreaks related to extreme climate events. This is because enhancing the structural complexity of the agricultural landscapes through diverse cropping systems or inclusion of natural vegetation and on-farm tree cover promotes pest regulation.

EbA practices benefit smallholders in multiple ways beyond helping them adapt to climate change. For example, they help ensure the continued provision of ecosystem services on which farming depends such as water provision, food provision, nutrient regulation, pest control and pollination. This contrasts with other non-EbA adaptation measures, such as excessive use of agro-chemicals. Such adaptation measures can yield adaptation benefits but may negatively impact the provision of ecosystem services, whilst having additional negative environmental off-site effects including the loss of biodiversity or contamination of streams. In addition, the use of EbA practices can help diversify production systems and sources of income generation, providing more stability to smallholder farmers. For example, the use of intercropping and agroforestry in production systems can diversify farmer revenue. This revenue is generated by providing timber, fruits, fuelwood and building materials that farmers can use for additional income, especially in years when income from the main cash crop is reduced. These additional products reduce farmer vulnerability to market changes as well as their dependence on outside products which improves farmer food security both directly and indirectly. The use of agroforestry practices can also make significant contributions to biodiversity conservation efforts. In addition, many EbA practices can help mitigate climate change by either reducing the amount of GHGs emitted from agricultural systems[253], or by increasing the overall farm biomass[254].

Environmental, social and economic benefits of the proposed project that will accrue to rural Tajik citizens are listed in Table 8. Brief description of each set of benefits follow.

Environmental benefits

EbA interventions increase the functionality of ecosystems and strengthen the provision of ecosystem goods and services. Environmental benefits that will be generated during the project are listed in Table 8 below and it is expected that these benefits will be generated during the proposed project and will remain beyond the project lifetime. This is because ecosystems, once established, tend to require less maintenance than hard infrastructure. In particular, it is expected that, as project practices are upscaled and replicated in the future, environmental benefits will be spread throughout the KRB.

Social benefits

A number of social benefits are detailed in Table 8 below. These benefits will accrue to rural Tajik citizens during and after project implementation. The main social benefits will be achieved through a reduction in the exposure of rural Tajik citizens to increasing climate risks through the restoration of vulnerable watersheds. Additionally, project activities are expected to particularly benefit women. Many of the activities of the project will generate benefits that will accrue to women, in particular. For instance, the sustainable harvesting of fuelwood from conveniently located woodlots is expected to reduce the time allocation of women for collecting fuel. Combined with energy-efficient cookstoves, this activity will largely improve the lives of rural Tajik women by reducing their labour. Other activities that generate supplemental incomes, such as apiculture,

[253] e.g. by reducing the use of inorganic fertilisers, agrochemicals, machinery and associated emissions
[254] e.g. by increasing soil carbon stocks or above-ground biomass

will be targeted specifically at women. In addition to promoting women-led small enterprises, the AF project will specifically target women for educational activities on climate change adaptation.

Economic Benefits

The project will generate two types of economic benefits: i) reduced losses from the impacts of climate change; and ii) gains in marginal utility as a result of project interventions. Marginal utility gains are expected as a result of the introduction of practices that: i) generate or increase income; and ii) reduce the labour burden of vulnerable communities. Project activities will provide opportunities for rural Tajik citizens to generate or increase income from agricultural activities, as shown in Table 8 below. However, some project interventions (such as the introduction of cookstoves or the planting of woodlots) are also predicted to reduce the labour burden of local community members.

Most of the economic benefits are expected to persist beyond the project lifetime. However, any employment of local community members in project activities is expected to cease after project closure. Where vulnerable community members are employed in project activities, these community members will be trained to ensure that they will be capable of establishing and maintaining natural resource-based enterprises. This will provide community members with a sustainable source of income beyond the project lifetime.

Table 8 illustrates the social, economic and environmental benefits associated with the EbA interventions to be implemented through the proposed project.

Table 8. Specific expected social, economic and environmental impacts and benefits per outcome of the proposed project under two scenarios: a) without the project (baseline); and b) with the project (additionality).

Outcome	**a) Without the project (baseline)**		
	Environmental impacts	**Social impacts**	**Economic impacts**
1. Catchment management strategy to manage climate risks operationalised at Raion (district) and jamoat (sub-district) levels in Kofirnighan River Basin (KRB).	• Continued climate-change induced degradation of the KRB catchment	• No beneficial changes in awareness, technical capacity or gender equality	• Increased economic losses expected as a result of climate-change induced catchment degradation and the loss of ecosystem goods and services
2. An integrated approach to building climate resilience of agro-ecological landscapes operationalised at a village level.	**Failure to construct gabions** • Existing environmental problems exacerbated by climate change impacts (increased slope instability, mudslides, landslides, runoff, soil loss, downstream siltation, downstream flooding and reduced water infiltration, soil moisture, soil organic matter)	• Reduced production area, land productivity and crop yield	• Increased economic losses as a result of increasing agricultural inputs and production costs

Outcome	a) Without the project (baseline)		
	Environmental impacts	**Social impacts**	**Economic impacts**
	Failure to implement stone lines and contour bunds • Existing environmental problems exacerbated by climate change impacts (increased runoff, soil loss, downstream siltation, downstream flooding and reduced water infiltration, soil moisture, soil organic matter, above-ground biomass)	• Reduced production area, land productivity and crop yield	• Increased economic losses as a result of increasing agricultural inputs and production costs
	Failure to implement water-saving irrigation techniques • Existing environmental problems exacerbated by climate change impacts (increased soil loss, evaporation of soil moisture, drought-stress, plant pathogens, above-ground biomass of weeds)	• Increased water consumption and decline in crop yield	• Increased economic losses as a result of drought-related crop losses, increased agricultural inputs and production costs
	Failure to diversify crops and use drought-resilient crops • Limited biodiversity conservation (of genetic resources) • Crops poorly-adapted to climate change conditions **Horticulture in greenhouses** • Decreased intensity of cultivation through un-consolidated production area under the BAU scenario	• Limited diversity of production within farms • Reduced nutrition for local community, negatively affecting community health and increasing the burden on women who are traditionally the primary care-givers within rural households • Reduced crop yield • Increased crop susceptibility to pests	• Increased economic losses as a result of climate change-related crop losses
	Failure to establish intercropping, agroforestry and woodlots • Increased pressure on natural forests • Crops and livestock exposed to extreme climate conditions • Existing environmental problems exacerbated by climate change impacts (increased runoff, soil loss, downstream siltation, downstream flooding and reduced water infiltration, soil moisture, soil organic matter, climate regulation and carbon sequestration)	• Limited diversity of production on and off-farm, reducing the opportunities to promote the involvement of rural women e.g. apiculture • Reduced provision of food and fodder, increasing the labour burden on rural women in particular who are traditionally responsible for the collection of fuelwood (e.g. a decrease in the abundance of fuelwood situated further from households would increase the time and effort required for harvesting) • Reduced nutrition for local community, negatively affecting community health and increasing the burden on women who are traditionally the primary	• Increased economic losses as a result of climate change-related crop losses • Reduced capacity of rural women in particular to pursue and maintain alternative livelihoods as a result of the increased labour burden

Outcome	a) Without the project (baseline)		
	Environmental impacts	**Social impacts**	**Economic impacts**
		care-givers in rural households	
	Failure to rehabilitate/restore degraded forest ecosystems • Increased biodiversity loss • Crops and livestock exposed to extreme climate conditions • Existing environmental problems exacerbated by climate change impacts (increased runoff, soil loss, downstream siltation, downstream flooding and reduced water infiltration, soil moisture, soil organic matter, climate regulation and carbon sequestration)	• Decreased nonmaterial benefits (e.g. scenic resources, recreation, science and education, spiritual and religious) derived from loss of conservation value of landscape	• Increased loss of trees to drought or dry spells • Reduced ecosystem services such as tourism (e.g. hiking) and recreation
	Failure to implement sustainable harvesting from 'healthy' forest ecosystems • Crops and livestock exposed to extreme climate conditions • Increased biodiversity loss • Existing environmental problems exacerbated by climate change impacts (increased runoff, soil loss, downstream siltation, downstream flooding and reduced water infiltration, soil moisture, soil organic matter, climate regulation and carbon sequestration)	• Reduced provision of food and fodder • Reduced nutrition for local community, negatively affecting community health and increasing the burden on women who are traditionally the primary care-givers in rural households	• Increased economic losses
	Failure to establish and maintain livestock exclusion zones • Decreased above-ground biomass • Increased biodiversity loss • Existing environmental problems exacerbated by climate change impacts (increased runoff, soil loss, downstream siltation, downstream flooding, groundwater river pollution and reduced water infiltration, soil moisture, soil organic matter, climate regulation and carbon sequestration)	• Decreased nonmaterial benefits (e.g. scenic resources, recreation, science and education, spiritual and religious) derived from loss of conservation value of landscape	• Decreased ecosystem services such as tourism (e.g. trekking) and recreation
	Failure to sow palatable and indigenous grass seeds in degraded rangelands and introduce rotational grazing • Decreased above-ground biomass • Decreased biodiversity conservation	• Reduced pasture productivity and carrying capacity •	• Decreased farm income through decreased carrying capacity

Outcome	a) Without the project (baseline)		
	Environmental impacts	**Social impacts**	**Economic impacts**
	• Existing environmental problems exacerbated by climate change impacts (increased runoff, soil loss, downstream siltation, downstream flooding, groundwater river pollution and reduced water infiltration, soil moisture, soil organic matter, climate regulation and carbon sequestration)		
	Failure to convert to energy efficient technologies and practices • Unsustainable practices would persist e.g. using unsustainably harvested fuelwood for cooking using open fires	• Increased labour burden on rural women who would need to cover increasingly large distances to harvest fuelwood for cooking	• Reduced capacity of rural women in particular to pursue and maintain alternative livelihoods as a result of the increased labour burden
3. Existing knowledge management platforms supported for integrated catchment management and EbA.	• Insufficient information on EbA would be available to local communities, resulting in little/no implementation of EbA and the persistence extreme vulnerability to climate change • Local communities would likely fail to engage in developing and implementing adaptation approaches to local problems i.e. low soil fertility resulting from soil erosion.	• Failing to adopt adaptation technologies would increasingly expose community livelihoods to the worsening impacts of climate change • Current limited levels of knowledge of climate change adaptation would persist	• Microfinance for community-led small-scale projects focusing on community-based adaptation would likely remain inaccessible

Outcome	b) With the project (additionality)		
	Environmental benefits	**Social benefits**	**Economic benefits**
1. Catchment management strategy to manage climate risks operationalised at Raion (district) and jamoat (sub-district) levels in Kofirnighan River Basin (KRB).	• Enhanced catchment integrity through better protection	• Increased awareness and technical capacity of policymakers and government institutions regarding climate-resilient adaptation technologies • Increased capacity of professionals to present climate change adaptation information • Increased gender equality at a local and national level – 30% of participants involved will be women	• Increased profit margins will be realised in the long-term as a result of training provided on climate change adaptation technologies and integrated catchment management
2. An integrated approach to building climate resilience of agro-ecological landscapes	**Construction of gabions** • Reduced slope instability and risk of minor mudslides and landslides • Slowed water runoff, increased water infiltration and soil moisture	• Increased production area • Increased land productivity and crop yield	• Increased farm income • Reduced loss of crops and land caused by slope instability

Outcome	b) With the project (additionality)		
	Environmental benefits	**Social benefits**	**Economic benefits**
operationalised at a village level.	• Reduced soil loss (particularly through reduced gully erosion) • Increased soil organic matter • Increased above-ground biomass • Off-site benefits: o reduced downstream siltation o reduced downstream flooding o increased groundwater and river water quality		
	Stone lines and contour bunds • Slowed water runoff, increased water infiltration and soil moisture • Reduced soil loss (particularly through reduced sheet erosion) • Increased soil organic matter • Increased above-ground biomass • Off-site benefits: o reduced downstream siltation o reduced downstream flooding o increased groundwater and river water quality	• Increased production area • Increased land productivity and crop yield	• Reduced agricultural inputs and thus production costs • Increased farm income
	Water-saving irrigation techniques • Reduced evaporation of soil moisture • Increased water infiltration and soil moisture • Delivered constant moisture to root zone (reduced drought-stress) • Reduced soil loss (particularly through reduced rain-splash erosion caused by overhead irrigation) • Increased above-ground biomass of crops, reduces above-ground biomass of weeds • Reduced plant pathogens e.g. fungus	• Reduced water consumption • Increased crop yield	• Reduced agricultural inputs and thus production costs • Increased farm income • Reduced loss of crops to drought or dry spells
	Diversification of crops and use of drought-resilient crops • Increased biodiversity conservation (of genetic resources) **Horticulture in greenhouses**	• Increased diversity of production within farms • Increased nutrition for local community, improving community health and reducing the burden on women who are traditionally	• Increased farm income • Reduced risk of economic failure due to diversification of production

Outcome	b) With the project (additionality)		
	Environmental benefits	**Social benefits**	**Economic benefits**
	• Increases intensity of cultivation through consolidation of production area	the primary care-givers within rural households • Increased crop yield • Reduced crop susceptibility to pests	
	Intercropping, agroforestry and woodlots • Reduced pressure on natural forests • Protected crops and livestock from extreme climatic conditions • Increased biodiversity conservation • Reduced slope instability and risk of minor mudslides and landslides • Slowed water runoff • Increased soil moisture • Reduced soil loss (through reduced sheet and gully erosion) • Increased soil organic matter • Increased above-ground biomass • Increased climate regulation and carbon sequestration Off-site benefits: o reduced downstream siltation o reduced downstream flooding o increased groundwater and river water quality	• Increased diversity of production on and off-farm, with increased opportunities to promote the involvement of rural women e.g. apiculture • Increased provision of food and fodder. • Increased nutrition for the local community, improving community health and reducing the burden on women who are traditionally the primary care-givers within rural households • Increased provision of fuelwood and timber, reducing the burden on rural women in particular who are traditionally responsible for the collection of fuelwood (e.g. an increase in the abundance of fuelwood situated close to households would reduce the time and effort required for harvesting)	• Increased farm income • Reduced risk of economic failure in response to diversification of production • Increased capacity of rural women in particular to pursue and maintain alternative livelihoods as a result of the reduced labour burden
	Rehabilitation/restoration of degraded forest ecosystems • Increased biodiversity conservation • Increased water infiltration • Increased above-ground biomass (increased plant survival) • Protected crops and livestock from extreme climatic conditions • Reduced slope instability and risk of minor mudslides and landslides • Slowed water runoff • Increased soil moisture • Reduced soil loss (through reduced sheet and gully erosion) • Increased soil organic matter • Increased climate regulation and carbon sequestration • Off-site benefits:	• Increased nonmaterial benefits (e.g. scenic resources, recreation, science and education, spiritual and religious) derived from increased conservation value of landscape	• Reduced inputs and thus production costs • Increased farm income • Reduced loss of trees to drought or dry spells • Increased ecosystem services such as tourism (e.g. hiking) and recreation

Outcome	b) With the project (additionality)		
	Environmental benefits	**Social benefits**	**Economic benefits**
	o reduced downstream siltation o reduced downstream flooding o increased groundwater and river water quality		
	Sustainable harvesting from 'healthy' forest ecosystems • Protected crops and livestock from extreme climatic conditions • Increased biodiversity conservation • Reduced slope instability and risk of minor mudslides and landslides • Slowed water runoff • Increased soil moisture • Reduced soil loss (through reduced sheet and gully erosion) • Increased soil organic matter • Increased above-ground biomass • Increased climate regulation and carbon sequestration • Off-site benefits: o reduced downstream siltation o reduced downstream flooding o increased groundwater and river water quality	• Increased provision of food and fodder • Increased nutrition for the local community, improving community health and reducing the burden on women who are traditionally the primary care-givers within rural households	• Increased farm income • Increased capacity of rural women in particular to pursue and maintain alternative livelihoods as a result of the reduced labour and care-giver burden
	Livestock exclusion zones • Increased above-ground biomass • Increased biodiversity conservation • Slowed water runoff • Increased soil moisture • Reduced soil loss (particularly through reduced sheet erosion) • Increased soil organic matter • Increased climate regulation and carbon sequestration • Off-site benefits: o reduced downstream siltation o reduced downstream flooding o reduced groundwater river pollution	• Increased nonmaterial benefits (e.g. scenic resources, recreation, science and education, spiritual and religious) derived from increased conservation value of landscape	• Increased ecosystem services such as tourism (e.g. trekking) and recreation
	Sowing of palatable and indigenous grass seeds in degraded rangelands and introducing rotational grazing	• Increased pasture productivity and carrying capacity	• Increased income from livestock

Outcome	b) With the project (additionality)		
	Environmental benefits	**Social benefits**	**Economic benefits**
	• Increased above-ground biomass • Increased biodiversity conservation • Slowed water runoff • Increased soil moisture • Reduced soil loss (particularly through reduced sheet erosion) • Increased soil organic matter • Increased climate regulation and carbon sequestration • Off-site benefits: o reduced downstream siltation o reduced downstream flooding o reduced groundwater river pollution		
	Conversion to energy efficient technologies and practices • Increased energy-efficiency of practices e.g. using low-energy cookstove • Reduced pressure on forests	• Reduced labour burden on rural women as a result of improved fuel efficiency	• Increased capacity of rural women in particular to pursue and maintain alternative livelihoods as a result of the reduced labour burden
3. Existing knowledge management platforms supported for integrated catchment management and EbA.	• Involving communities in developing the approaches allows more flexible adaptation efforts, i.e. catering specifically for reduced soil nutrients through soil erosion etc.	• Improved livelihoods through adoption of climate-resilient adaptation technologies and innovative climate information technologies within and surrounding vulnerable communities • Increased knowledge through training provided to relevant local-level government and NGO officials • Increased community-uplift in response to developing their own project proposals for on-the-ground implementation within their communities	

C. Cost-effectiveness

Alternatives to the baseline context in Tajikistan include the null alternative, the traditional alternative and the proposed alternative. These three scenarios are presented below.

Scenario 1. 'Do nothing' approach
The first scenario assumes that no interventions will be implemented. This means that the baseline scenario will remain, and the negative impacts of climate change will continue to cause significant losses to the economy. Climate change impacts such as rising temperatures and increases in intense rainfall events will be exacerbated by business-as-usual practices. Rural Tajik communities will continue to lack the required technical capacity to climate-proof their livelihoods and will continue to be impacted disproportionately by the negative impacts of climate change. Predicted declines in the agricultural yield under climate change conditions will further reduce the food security in the country, while an increasing number of climate change migrants will be exposed to hydrometeorological risks.

Scenario 2. Use of a non-EbA approach
Traditional approaches to managing the impacts of climate change may include engineered structures that protect infrastructure, agricultural fields and communities from floods and landslides. Such approaches may also result in an increase of agricultural inputs to offset a loss in soil productivity. These types of approaches are likely to yield adaptation benefits to local communities but have a number of undesirable shortfalls. Firstly, traditional approaches generally do not generate significant co-benefits. These approaches are inflexible in that each intervention generally only serves one purpose. Secondly, traditional approaches are frequently technology-oriented and require technical capacity to implement and maintain. This capacity is often lacking among local communities in Tajikistan. As a result, hard infrastructure such as flood protection dams are frequently not sustainable in the long term. Lastly, traditional approaches are frequently costly, with significant associated capital and operational costs. Neither the GoT or local communities currently have the financial capacity to construct and maintain technological solutions – particularly as maintenance costs are likely to increase with the increasing impacts of climate change.

Scenario 3. Integrated catchment management, including EbA solutions
Under this scenario, the target communities in Tajikistan will be introduced to EbA practices that include CSA and SLM interventions. Community members will be trained on how to adopt these EbA solutions to manage the landscape through an integrated cross-cutting strategy rather than by each sector. This integrated catchment management strategy will be focused on increasing the resilience of small-scale farmers and pastoralists in Tajikistan to the impacts of climate change. Such EbA interventions are inherently multi-use, providing several social, economic and environmental co-benefits. EbA interventions are also frequently cheaper and easier to maintain than their traditional counterparts. As a result, community members are more likely to continue maintaining EbA interventions in the long term.

Table 9. Qualitative indicators for the economic, environmental and social cost-effectiveness of the 3 scenarios

Indicator	Scenario 1	Scenario 2	Scenario 3
Economic	• Expected increase in losses as a result of climate change	• Climate change losses are avoided/reduced • High operations/ maintenance costs	• Climate change losses are avoided/reduced • Low operations/ maintenance costs

			• Economic benefits realised through increased agricultural production and alternative livelihood opportunities
Environmental	• Increasing ecosystem degradation as a result of increased erosion, flooding and landslides • Increasing reliance of local communities on unsustainable extraction of environmental goods such as fuelwood	• Increasing ecosystem degradation as a result of: i)increased fertiliser use; ii) implementation of hard infrastructure; and iii) climate change impacts	• Ecosystems are rehabilitated and maintained • Communities are provided with livelihood opportunities that are decoupled from ecosystem degradation
Social	• Loss in economic opportunities • Impacts on particularly vulnerable groups – e.g. women	• Possible loss of private land for construction and resettlement resulting in negative social consequences	• Increase in economic opportunities • Gender-responsive approach improves the livelihoods of rural Tajik women

Preferred solution

The preferred solution for the proposed project is Scenario 3, which encompasses an integrated approach to catchment management for vulnerable Tajik communities. Although Scenario 2 is a technically viable alternative, the preferred solution has been chosen because: i) EbA is likely to be cost-effective; and ii) EbA interventions are likely to be more sustainable than a traditional approach. The overall objective of the proposed project is cost-effective in that a proactive approach to climate-risk management will be promoted throughout Tajikistan. Climate impacts are predicted to cost the country more than US$132 million annually by 2050. Preventative measures, such as climate-informed planning and development, will avoid some of these costs. Such a preventative approach to climate risks is more cost-effective than reactionary measures.

Project outputs will focus on improving catchment management, including landscape management and planning processes, in rural areas of Tajikistan. In so doing, the project will create an enabling environment for climate change adaptation to occur in vulnerable catchments. These processes are inherently replicable across the country, thereby strengthening the sustainability, reach and impact of the project objectives. The strengthened knowledge management provided through Outcome 3 will further promote adaptive management of EbA and climate risk management in Tajikistan. This will ensure that future activities in the country benefit from a strengthened local knowledge base for EbA and catchment management. Overall, the project will benefit at least 46,000 people living in ~100 villages in the 6 most vulnerable districts throughout the KRB. This represents ~5% of the total KRB population. This number is considered

a conservative estimate, as many project activities are predicted to generate benefits for communities living downstream of project intervention sites. These communities could not be identified during the project development phase. In addition, improved catchment management practices are expected to indirectly benefit: i) the entire population of the 6 most vulnerable districts in the KRB (~828,000); and ii) the entire population of the KRB (~2.8 million).

At a local level, the project will promote the use of EbA interventions, which have been demonstrated to have favourable cost-benefit ratios while providing significant sustainable development co-benefits[255,256]. For example, soil conservation measures have been shown to increase crop productivity by between 15–25%[257]. Project activities will support EbA interventions in target districts and sites[258], providing improved livelihoods and value addition for agricultural and pastoral products. This has been shown to be more cost-effective for increasing income and reducing poverty than support for other sectors[259]. Introducing agrobiodiversity and ecosystem service improvement practices to smallholder farmers ensures that farm-based livelihoods will be resilient to climate change and variability[260]. During the project development phase, a cost-effectiveness analysis of proposed EbA activities was completed for both the northern and southern sub-basins of the KRB was conducted. All the proposed activities are associated with a positive Internal Rate of Return (from 10% to 50%). Benefit-to-cost ratios range from 3:1 to 12:1, and payback periods from 2 years to 8 years. The results of the analysis are displayed in Annex 9.

The cost-effectiveness of the project's on-the-ground adaptation interventions [under Outcome 2] will be greatly enhanced by the EbA approach. A growing scientific literature library highlights that EbA measures result in a greater ratio of cost-benefit compared to the implementation of hard infrastructure. For example, an economic analysis of the restoration and rehabilitation of degraded woodlands[261] estimates internal rates of return of 20–60% and cost-benefit ratios of up to 35:1 for grasslands[262]. An example of the cost-effectiveness of EbA approaches also recently emerged from an economic analysis undertaken in Lami, Fiji[263]. This analysis included assessments of the costs and benefits of three approaches to watershed management, namely: i) EbA measures only; ii) hard infrastructure interventions only; and iii) a hybrid approach applying both EbA measures and hard infrastructure interventions. Results of the analysis demonstrated that EbA options for watershed management are at least twice as cost-effective as hard infrastructure engineering options – i.e. a cost-benefit ratio of US$19.50:1 for EbA compared to US$9:1 for hard infrastructure. The cost-effectiveness of EbA approaches is expected to benefit the project through the implementation of EbA activities in target project sites.

[255] Jones HP, Hole DG & Zavaleta ES. 2012. Harnessing nature to help people adapt to climate change. Nature Climate Change 2:504–509.
[256] UNEP/STREP. 2012. A comparative analysis of ecosystem-based adaptation and engineering options for Lami Town, Fiji: Synthesis Report.
[257] Tesfaye A, Brouwer R, van der Zaag P & Negatu W. 2016. Assessing the costs and benefits of improved land management practices in three watershed areas in Ethiopia. International Soil and Water Conservation Research 4:20–29.
[258] Target sites will be identified during project inception.
[259] Ligon E & Sadoulet E. 2007. Estimating the effects of aggregate agricultural growth on the distribution of expenditures. Background Paper for the World Development Report.
[260] van Noordwijk M, Tata HL, Xu J, Dewi S & Minang PA. 2011. Segregate or integrate for multifunctionality and sustained change through rubber-based agroforestry in Indonesia and China. In Nair PKR & Garrity DP (eds) "Agroforestry: The Future of Global Land Use", Springer, The Netherlands pp 69–104.
[261] from several studies occurring across different sites
[262] De Groot RS, Blignaut J, van der Ploeg S, Aronson J, Elmqvist T & Farley J. 2013. Benefits of investing in ecosystem restoration. *Conservation Biology* 27:1286–1293.
[263] Rao NS, Carruthers TJB, Anderson P, Sivo L, Saxby TA, Durbin T, Jungblut V, Hills T & Chape S. 2013. An economic analysis of ecosystem-based adaptation and engineering options for climate change adaptation in Lami Town, Republic of the Fiji Islands. A technical report by the Secretariat of the Pacific Regional Environment Programme. Apia, Samoa.

D. Consistency with national priorities

As a country, Tajikistan only recently started modifying their national policies and institutional frameworks to integrate the need for adaptation. Although the country has a relatively strong legislative framework regarding environmental protection, very few strategies or policies developed prior to 2010 acknowledge climate change as a cross-sector threat.

While climate change has not previously been acknowledged as a discrete threat, the importance of agriculture and water resources to the economy and to the country as a whole has been recognised. There are, therefore, numerous older policies, strategies and programmes that are synergistic with the outcomes of the project. The most significant of these is the 2003 National Action Plan for Climate Change Mitigation (NAPCC)[264,265]. This is the only strategic framework specifically addressing the implications of climate change and is also strongly aligned to all three project outcomes. Other significant plans that align to project outcomes include the National Environmental Action Plan (NEAP)[266,267] and the National Programme of Actions to Combat Desertification (NPACD)[268].

More recently, policies and strategies have moved to incorporating specific climate change terminology. These include the latest poverty reduction strategy, 'Living Standards Improvement Strategy of Tajikistan for 2013–2015' (LSIS)[269], which links water resource management and agricultural reform to a wider reduction in poverty. The 2011 'Strategic Program for Climate Resilience'[270] is another synergistic programme that includes agriculture and SLM as one of its six focal components. The most recent National Development Strategy (NDS)[271] reiterates the vulnerability of Tajikistan to climate change and advocates for the reduction and mitigation of the negative effects of climate change across multiple sectors. This strategy also identifies the centrality of agricultural productivity, water resources and capacity building to realise the targeted socio-economic growth by 2030.

Several of the more recent national strategies and policies in Tajikistan have already expired without renewal, for example NEAP 2011–2015. Other national strategies have been planned and approved but never implemented because of financial constraints, for example the State Programme on the Protection of River Banks[272].

The GoT has made significant progress within its water sector by developing the Water Sector Reforms Programme for 2016–2025 (Water Reform Programme)[273]. While the programme is likely to modernise water management in Tajikistan, it does not adequately consider the impacts of climate change on the water sector. Furthermore, the focus of the Water Reform Programme is restricted largely to water resources management and does not adequately consider the impacts of multiple hazards at the river basin and watershed level. While flood management will

[264] also referred to as 'The National Action Plan on Climate Resilience'
[265] NAPCC 2003.
[266] also referred to as 'The National Action Plan for Environmental Protection'
[267] National Environmental Action Plan (NEAP). 2006. Government of Tajikistan.
[268] National Program of Actions to Combat Desertification (NPACD). 2001. Government of Tajikistan.
[269] LSIS 2013.
[270] Strategic Program for Climate Resilience (SPCR). 2011. Government of Tajikistan.
[271] NDS 2016.
[272] The State Programme on the Protection of River Banks is detailed in the Intended Nationally Determined Contribution (INDC) towards the achievement of the global goal of the UN Framework Convention on Climate Change (UNFCCC) by the Republic of Tajikistan.
[273] Water Reform Programme 2015.

be the responsibility of the RBOs established under the programme, other climate-linked hazards such as erosion and landslides are not addressed through its implementation[274].

The proposed project aligns with these national priorities by promoting the climate resilience of rural Tajik citizens through the integrated management of climate vulnerable catchments and watersheds by using EbA methods. Watershed restoration using EbA will strengthen the provision of ecosystem services. These ecosystem services support both soil stabilisation as well as water retention and groundwater infiltration. Consequently, activities under the project will support and safeguard the livelihoods of Tajik farmers by reducing the climate change-related impacts of erosion and landslides. The EbA interventions that have been selected will also generate a number of co-benefits that will improve the livelihoods of Tajik farmers. These co-benefits will include improved agricultural productivity and income diversification.

Table 10 outlines the relevant national and sub-national strategies, plans and programmes that relate to project activities. For each, alignment to project outcome level is indicated.

[274] Water Reform Programme 2015.

Table 10. Consistency of project outcomes with national policies, plans, strategies and development goals.

Strategy	Year enforced	Alignment
National strategies		
National Development Strategy 2016–2030 (NDS)[275]	2016	The primary focus of the NDS is on the long-term development of Tajikistan to improve living standards for the population. NDS objectives to achieving this include: i) poverty eradication; ii) sustainable economic growth; iii) promotion of sustainable consumption and production patterns; and iv) sustainable use of natural resources. The vulnerability of the Tajik population to climate change is acknowledged throughout the NDS, with the importance of agriculture and water management to alleviating this highlighted. Outcome 1 and 2 of the project therefore align with achieving the ultimate goal of the NDS in the country.
National Strategy and Action Plan on the Conservation and Sustainable Use of Biodiversity (CBD Strategy)[276]	2003	Several interconnected components contribute to the primary objective of the CBD Strategy. A priority element of the 'geo-system-level approach' outlined in the CBD Strategy is the restoration and reforestation of degraded landscapes to reduce soil erosion, particularly in landslide and already eroded areas. Outcome 2 is aligned with this strategic component through implementing EbA activities that contribute to restoration and reforestation in degraded landscapes.
National Strategy on Disaster Risk Management for 2010–2015 (NDRMS)[277]	2010	The NDRMS identifies the significance of climate change-related disasters in the country such as droughts and high-water events. It is also acknowledged in the strategy that mitigation for these types of events needs to be incorporated into the design phase of new development projects. The project is therefore aligned with the NDRMS under Outcome 1, relating to integrated catchment management which includes the improvement of water monitoring systems.
The National Climate Change Adaptation Strategy (NCCAS)[278]	2016	Within the NCCAS there are guidelines provided for priority adaptation actions to be undertaken in Tajikistan. The proposed project is well-aligned with the NCCAS because they both recognise that climate change effects on the agricultural sector result in significant negative impacts for the population. The NCCAS also recognises the potential of EbA as an effective adaptation approach. The NCCAS is currently in draft format and has not yet been accepted by the government. Notwithstanding this information, the proposed project is aligned with the NCCAS through both Outcome 1 and 2.
Living Standards Improvement Strategy for the Republic of Tajikistan for	2013	LSIS recognises the cross-cutting nature of climate change adaptation in relation to environmental sustainability, economic growth and reducing poverty. The importance of water, soil quality and improving the capacity to collate and disseminate climate change information are also identified as important fields for poverty reduction. In this regard, all three outcomes of the project align with LSIS objectives.

[275] NDS 2016.
[276] CBD Strategy 2003.
[277] National Strategy on Disaster Risk Management for 2010–2015 (NDRMS). 2010. Republic of Tajikistan, Dushanbe.
[278] NCCAS 2016.

Strategy	Year enforced	Alignment
2013–2015 (LSIS)[279]		
National programmes and plans		
National Program of Actions to Combat Desertification (NPACD)[280]	2001	Outcome 2 of the project aligns with the NPACD focus on 'rational land tenure' and 'measure on rational nature using'. These focal points refer to the sustainable use of natural resources, with clear guidelines on reforestation and mitigating the effects of water erosion. Outcome 3 aligns with two further objectives of the NPACD, namely: i) the development of better platforms to disseminate climate change information; and ii) increasing the role of the local population in collecting and collating data.
Strategic Program for Climate Resilience (SPCR)[281]	2011	The SPCR was developed in response to the specific vulnerability of Tajikistan to climate change and the associated economic, environmental and social impacts. It is the strategic overview of the Pilot Programme for Climate Resilience (PPCR), which consists of six core components. One of these core components is 'Agriculture and sustainable land management', which focusses on incorporating climate resilience into all sectors of land management. Outcome 2 of the proposed project has a strong alignment with this component.
National Action Plan for Climate Change Mitigation (NAPCC)[282,283]	2003	The NAPCC is the only strategic framework in the country that specifically addresses the implications of climate change. All outcomes of the project are strongly aligned with the NAPCC.
National Environmental Action Plan (NEAP)[284,285]	2006	The NEAP focusses on a broad spectrum of current environmental concerns, many of which are likely to be exacerbated by climate change. Amongst the most prevalent concerns included in the NEAP include: i) soil erosion; ii) deforestation and land degradation; iii) high water events; and iv) water scarcity. Outcome 1 and 2 of the project align with these concerns. The NEAP also recognises the need to improve environmental knowledge in Tajikistan at both institutional and local levels, which is complemented in Outcome 3 of the project.
Water Sector Reforms Programme of the Republic of Tajikistan for 2016–2025 (Water Reform Programme)[286]	2015	Under the Water Reform Programme, the GoT is initiating a shift towards managing water resources according to hydrographic rather than administrative boundaries. Further to this, the programme aims to promote the implementation of Integrated Water Resources Management (IWRM) at the basin level. IWRM was specifically defined for Tajikistan as being: *"based on the interaction of various sub-sectors with the objective good accessibility to high quality water and sanitation services for the population, ensuring water availability for irrigation, hydropower, environment and other users in river basins defined by hydrographic boundaries. IWRM promotes the protection of water resources from over-exploitation and pollution; provides protection of vulnerable mountain environments including river banks and floodplains from flooding and erosion, and facilitates public participation in decision-*

[279] LSIS 2013.
[280] NPACD 2001.
[281] SPCR 2011.
[282] NAPCC 2003.
[283] also referred to as 'The National Action Plan on Climate Resilience'
[284] NEAP 2006.
[285] also referred to as 'The National Action Plan for Environmental Protection'
[286] Water Reform Programme 2015.

Strategy	Year enforced	Alignment
		making, planning, financing and development of water resources in the interests of economic growth, sustainable development of the society and preservation of the environment." [287] River Basin Organisations (RBOs) and River Basin Councils (RBCs) will be established in each of the six identified basins, as well as in sub-basins as required. RBOs will mainly be responsible for: i) planning the use and protection of water resources annually and in the long-term; and ii) monitoring the distribution of water as well as the state of rivers. RBCs will mainly be responsible for reviewing the plans developed by the RBOs and managing interactions with stakeholders such as water users and Water User Associations (WUAs). RBOs are expected to become operational in 2019, with the GoT being expected to allocate ~US$160,000 annually towards the operation of RBOs and RBCs. Outcome 1 aligns with the Water Reform Programme in involving RBOs and RBCs in developing an integrated catchment management strategy for the KRB.
Agricultural Reform Programme of the Republic of Tajikistan for 2012–2020[288]	2012	The Agricultural Reform Programme includes a direct focus on mitigating the negative impacts of climate change for agricultural production. This includes the primary activity of 'systematic reduction of soil erosion, land degradation and deforestation by improving natural resources management'. The programme includes a focus on EbA strategies with emphasis on soil erosion activities. Both Outcome 1 and 2 of the project align with these focal points of the Agricultural Reform Programme. Another important component of the programme is the 'development and establishment of information management systems that would enable communities, local and national authorities to effectively collect, record and analyse reliable information on the impact of natural disasters and climate change'. Outcome 3 of the project is strongly aligned with this component.
Strategies with a focus on climate change		
Greenhouse Gas Abatement Strategy (GHG Strategy) included in the NAPCC[289]	2003	In order to meet the UNFCCC commitments for Tajikistan, the GHG Strategy was developed with the focus to address the problem of source-based anthropogenic emissions. Outcome 2 of the proposed project aligns with the objective of promoting sustainable forms of agriculture in light of climate change considerations. Additionally, Outcome 2 aligns the priority of enhancing natural sinks of carbon including forests and soils.
Strategy of Adaptation to Climate Change, Prevention and Minimization of its Adverse Effects	2003	In order to meet the UNFCCC commitments for Tajikistan, the Adaptation Strategy was included within the NAPCC to ensure that climate change adaptation remained a focal point for development in the country. Outcome 2 and 3 of the project align with the following components of the strategy: • improvement of systematic observation and monitoring network for ensuring timely adjustment of adaptation measures; and

[287] Water Reform Programme 2015.
[288] Agricultural Reform Programme for 2012–2020 of the Republic of Tajikistan. 2012. Ministry of Agriculture, Government of Tajikistan.
[289] NAPCC 2003, Section 8: Greenhouse Gas Abatement Strategy.

Strategy	Year enforced	Alignment
(Adaptation Strategy) included in the NAPCC[290]		• improvement of the data collection system and analysis, interpretation and dissemination of the results among the end users. Outcome 1 of the project is aligned with two of the priorities relating to water resources: • development of measures in the field of water resources protection, water and energy saving in the conditions of climate change; and • development of new, and improvement of existing technical and economical tools on water use at national and regional levels. In addition, Outcome 2 of the project aligns with four of the five 'measures of adaptation and minimisation of adverse impacts of climate change' relating to land use. These are listed below. • Zoning of territory depending on the extent and type of influence of climatic factors on the condition of lands taking into account its vulnerability to the different forms of erosion. • Setting a selection of soil protection measures for specific landscapes according to the influence of climatic and anthropogenic factors. • Conducting land-reclamation measures, which include crop rotation, soil protection and limiting the ploughing of steep lands that will help to conserve the humus in the soils under the expected conditions of climate change. • Forest rehabilitation measures in the regions prone to drought and wind erosion.
Laws		
Land Code of The Republic of Tajikistan (Land Code)[291]	1996	The Land Code regulates all land relations and is directed at the rational use and protection of land. This focus is targeted to improve the fertility of soil, and to maintain and improve the natural environment. In this way, opportunities for equal development of all forms of economic activity will be promoted in Tajikistan.
Water Code of The Republic of Tajikistan (Water Code)[292]	2000	The Water Code is aimed at regulating water relations to ensure rational use. This is so that there is adequate supply for the needs of the population and the natural environment.
Law of the Republic of Tajikistan on Land Reform (Land Reform Law)[293]	1994	The Land Reform Law includes tasks listed by the GoT specifically for further developing land management. These tasks are all designed with the purpose to increase the agricultural production of the country and include the: i) creation of optimal conditions for equal rights; ii) development of various forms of land management; iii) formation of a multi-structural economy; iv) rational use; and v) the protection of land.
Law of the Republic of Tajikistan on Land Management (Land	2001	The objective of the Land Management Law in Tajikistan is to create conditions for equal development for all sector in the country.

[290] NAPCC 2003, Section 9: Strategy of Adaptation to Climate Change, Prevention and Minimization of its Adverse Effects.
[291] Land Code of the Republic of Tajikistan (Land Code). No. 498 of 1997. Republic of Tajikistan.
[292] Water Code: Law of the Republic of Tajikistan (Water Code). 2001. Government of Tajikistan, Dushanbe.
[293] Republic of Tajikistan Law on Land Reform (Land Reform Law). 1994. Republic of Tajikistan.

Strategy	Year enforced	Alignment
Management Law)[294]		
Law About Environmental Protection	2011	This law provides the legal base for developing the state policy on environmental protection. Further to this, it aims to conserve the natural resources of the country and ensure the environmental sustainability for socio-economic development. Therefore, the law ensures that the human right to a healthy environment is guaranteed.
Law on Ecological Expertise	2012	The law defines principles and norms for environmental experts to adhere to and provides for the prevention of negative impacts on planned economic interventions on environment.
Law on the Republic of Tajikistan on *Dehkan* Farms (*Dehkan* Law)[295]	2016	This law defines the legal base for establishing and maintain the efficient functioning of *dehkan* enterprises. In addition, the law aims to create an enabling environment for the development of farming in the country.

[294] Law of the Republic of Tajikistan "on Land Management" (Land Management Law). 2001. Republic of Tajikistan.
[295] Republic of Tajikistan Law "on *Dehkan* Farms" (*Dehkan* Law). 2002. Republic of Tajikistan.

E. Consistency with national technical standards

The proposed project is aligned with the requirements of the March 2016 Revision of the Environmental and Social Policy (ESP) of the Adaptation Fund (see Part II: K)[296]. Prior to project approval, the Full Proposal will be screened according to the UNDP Social and Environmental Safeguards Procedure[297]. This is to ensure that the necessary safeguards have been addressed and incorporated into the project design.

In addition to complementing the efforts of the CEP and the GoT to improve catchment management in the KRB, project activities will increase rural Tajik resilience to climate change in throughout the country. The Adaptation Fund-accredited Implementing Agency, UNDP, together with CEP and relevant national partners, will ensure that the project follows procedures outlined in the ESP. This includes the requirement that project activities funded by the Adaptation Fund reflect local circumstances and needs and draw upon national actors and capabilities.

The project will also adhere to all relevant national technical standards. At the Full Proposal development stage, the following legislation has been identified with relevance to the proposed activities:

- the 1996 Land Code of The Republic of Tajikistan[298];
- the 2000 Water Code of The Republic of Tajikistan[299];
- the 2001 Law of the Republic of Tajikistan on Land Management[300];
- the 2001 Law About Environmental Protection; and
- the 2012 Law on Ecological Expertise.

The relevance of each legislation to the project activities is detailed in Annex 4, Section 2.

Given the small scale of the project's EbA interventions in the target sites and communities, as well as their focus on environmental protection, Environmental Impact Assessments (EIAs) are not expected to be necessary for any of the planned interventions. In addition, the proposed projects activities are in line with national social norms, including gender equality and equal access.

F. Duplication in project design

There are a number of adaptation projects being implemented in Tajikistan with varying but similar objectives, including livelihood improvement, disaster risk reduction (DRR) and building climate resilience. The proposed project will complement these existing projects. In particular, there are three ongoing initiatives in the country that project activities will complement. These ongoing projects include: i) 'Livelihood Improvement in Tajik-Afghan Cross-border Areas' (LITACA); ii) 'Strengthening Disaster Risk Reduction and Response Capacities'; and iii) 'Facilitating Climate Resilience in Tajikistan'. Brief outlines of these projects are provided below. In addition to an overview of each project, justification is provided for why the project will not be a duplication of the respective projects' efforts.

[296] Refer to Part II: K on the environmental social impacts and risks of the project.
[297] UNDP Social and Environmental Safeguards Procedure.
[298] Land Code 1997.
[299] Water Code 2001.
[300] Land Management Law 2001.

During implementation of project activities, a team will work closely with the project representatives – as well as other relevant initiatives – to identify the best possible opportunities for enhancing complementarity. Table 11 outlines the alignment between ongoing projects and proposed project activities in Tajikistan.

Table 11. Alignment of current and ongoing initiatives in Tajikistan with the proposed project.

Project title	Fund, grant amount(s) and timeline	Objective	Alignment with proposed project	Additionality of the proposed project
Livelihood improvement in Tajik-Afghan cross-border areas, Phase II (LITACA)[301]	**Fund:** Government of Japan (GoJ) **Fund grant:** US$10,559,227 (US$3,600,000 Tajikistan portion) **Timeline:** 2018–2020	The LITACA project is the logical continuation of the successes and lessons of the LITACA Phase I Project which took place between 2014 and 2017. Phase II aims to build on the results of Phase I by further strengthening the living standards of selected rural communities in the bordering areas of Tajikistan and Afghanistan. The project aims to improve living standards, stability and security through: i) reduced poverty, supported economic development; and ii) cross-border collaboration among the communities along the Tajik-Afghan border.	• Activities implemented under LITACA are partially linked to agriculture for example rehabilitation of irrigation facilities and efficient of water management/use. Best practices and lessons learned on agricultural activities and capacity-building of people in rural settings, particularly women, can contribute to knowledge sharing. • The LITACA project is supporting community-based infrastructure in Shaartuz and Kabodiyon. • Activities under the proposed project in the same geographical region as the LITACA project will benefit from: i)improved local infrastructure, particularly for irrigating agroforestry plots, fodder crops and other productive EbA interventions; and ii) capacity building activities with local service providers to manage local infrastructure (e.g. water supply, sanitation, irrigation and agricultural facilities).	The proposed project will expand the best practices and lessons learned on strengthening community livelihoods through the creation of enterprises based on ecologically-sound EbA activities. Additionally, the project will provide a platform for activities similar to those in the LITACA project to be applied at a watershed and catchment-scale to build climate resilience in the KRB.
Strengthening disaster risk reduction and response capacities[302]	**Fund:** Government of Japan (GoJ) **Grant:** US$10,600,000 **Timeline:** 2016–2020	This project will support the Government of Tajikistan (GoT) to undertake a nation-wide risk assessment, establish and implement risk reduction measures and improve early warning. In addition, it will enhance the population's resilience to natural and man-made disasters by improving policy and operational frameworks for environmental protection and sustainable management of natural resources.	• Best practices and lessons learned on climate risk-reduction interventions can contribute to knowledge sharing. • Risk management responses from this GoJ project have informed the selection of EbA measures in the proposed project.	The proposed project will use lessons learned and best practices from this GoJ-funded project for on-site risk management practices. These lessons learned and best practices will be included in watershed and catchment-level planning for building climate resilience. Furthermore, the proposed project will generate additional climate risk transparency by taking a multi-hazard risk identification approach.

[301] UNDP. 2018. Livelihoods Improvement in Tajik-Afghan Cross-Border Areas Phase II Project (LITACA II). Available at: Livelihoods Improvement in Tajik-Afghan Cross-Border Areas Phase II Project (LITACA II)
[302] UNDP. 2018. Strengthening Disaster Risk Reduction and Response Capacities in Tajikistan. Available at: http://www.tj.undp.org/content/tajikistan/en/home/operations/projects/crisis_prevention_and_recovery/strengthening-disaster-risk-reduction-and-response-capacities-in.html

Project title	Fund, grant amount(s) and timeline	Objective	Alignment with proposed project	Additionality of the proposed project
Improved DRR Policy Making Mechanism. Strengthening Disaster Risk Governance in Tajikistan (SDRGT)[303]	**Fund:** Swiss Agency for Development and Cooperation **Grant:** US$820,000 **Timeline:** 2016-2019	The project aims to reduce the negative human and material impact of disasters in Tajikistan by improving the management of governance of these disaster risks through: i) expanding approaches to risk governance at the national level involving the government and the international community; and ii) improving local risk governance using risk assessments, risk information-based land use planning and risk communications targeting land owners and users by selected local governments.	• Efforts applied in this project are linked to increasing awareness of specific river basin organizations (RBOs) on managing water-based risks (e.g., floods and drought) at and below the watershed level and linking local and RBO-level water-based risk management.	Lessons learned and best practices from will be applied by this proposed project for developing multi-hazard climate risk models. In addition, existing RBOs will be capacitated to strengthen coordination and training mechanisms for watershed- and catchment-level planning and management. Further to improving the management of water-based risks, RBOs will be equipped to manage the risks of other climate-linked hazards such as erosion and landslides.
Facilitating climate resilience in Tajikistan[304]	**Fund:** Government of Russian Federation (GoRF) **Grant:** US$950,130 **Timeline:** 2018–2020	Through the effective use of climate and disaster risk information, this project aims to facilitate access to climate finance for communities in disaster-prone mountainous regions of Tajikistan. The climate-resilience of these communities will therefore be enhanced.	• Information from community consultations will contribute to existing understanding of community preferences for risk management options. • Best practices and lessons learned on climate risk-reduction interventions can contribute to knowledge sharing.	The proposed project activities will be informed by lessons learned from the GoRF-funded project and integrate these into catchment-scale climate risk management.
Kofirnighan River Basin Plan and Management Plan (KRBMP)[305]	Unpublished March 2018 draft authorised by the Fergana Valley Water Resources Management	The KRBMP will support the GoT in implementing the Water Sector Reform Programme for 2016–2025 by developing institutional mechanisms to improve water resources management at the basin- and local-level in the KRB. It also aims to develop a long-term basin plan for the use, protection	• Focused information on sustainable water resources management in the KRB can contribute to the development of basin-specific catchment management strategies. • Watershed delineation that is expected to be delivered through the development of the KRBMP will be utilised by the proposed project.	While the KRBMP will introduce a catchment approach to water resources management in the KRB, this plan will not consider the integrated management of land and water resources for climate resilience. The proposed project will expand on the KRBMP by demonstrating an integrated

[303] UNDP. 2018. Strengthening Disaster Risk Governance in Tajikistan . Available at: http://www.tj.undp.org/content/tajikistan/en/home/operations/projects/crisis_prevention_and_recovery/strengthening-disaster-risk-governance-in-tajikistan.html
[304] UNDP. 2018. Facilitating Climate Resilience in Tajikistan . Available at: http://www.tj.undp.org/content/tajikistan/en/home/operations/projects/crisis_prevention_and_recovery/facilitating-climate-resilience-in-tajikistan.html
[305] Fergana Valley WRM 2018 KRBMP Unpublished.

Project title	Fund, grant amount(s) and timeline	Objective	Alignment with proposed project	Additionality of the proposed project
	Timeline: 2018–2019	and development of water resources, as well as annual or seasonal plans for the distribution and management of KRB water resources.		approach to managing climate risks within a catchment through the use of EbA. Such management will take the upstream – downstream linkages of climate change risks into account. The proposed project will also demonstrate how to effectively manage rural watersheds to yield catchment-wide adaptation benefits.
Building climate resilience of vulnerable and food insecure communities through capacity strengthening and livelihood diversification in mountainous regions of Tajikistan[306]	**Fund:** Green Climate Fund (GCF) **Fund grant:** US$9,300,000 **Partner:** World Food Programme (WFP) **Partner grant:** US$346,000 **Timeline:** 2018–2022	This initiative will introduce adaption measures to address climate change effects leading to declines in agricultural yields, increases in food prices and reduced agricultural wages. It will focus on the most vulnerable and food insecure communities in the Rasht valley, Khatlon and Gorno-Badakhshan Autonomous Region (GBAO) regions.	• Possibility for using data, methodologies and practices related to SLM in the proposed project. • Geographical overlap in the south of the KRB.	Many of the activities in the proposed project align with the objectives of the WFP project. The proposed project will provide additionality by promoting a catchment management approach to the implementation of adaptation measures in agriculture. This will ensure that the interventions proposed in the WFP project are implemented strategically, so as to manage climate risks. Such catchment-level risk management measures will also de-risk the investments of the WFP project and increase the WFP project's sustainability and scalability.
Tajikistan: building climate resilience in the Pyanji River Basin[307]	**Fund:** Strategic Climate Fund **Grant:** US$21,550,000	The project aims to increase resilience to climate vulnerability and change of communities in the Pyanj River Basin. The project's impact will be improved livelihoods	• Useful information and practices on diversified livelihoods to contribute to knowledge sharing.	The Strategic Climate Fund project aims to rehabilitate infrastructure in the Pyanji River Basin and does not include any EbA components or components that will strengthen

[306] Green Climate Fund (GCF). 2018. Project FP067: Building climate resilience of vulnerable and food insecure communities through capacity strengthening and livelihood diversification in mountainous regions of Tajikistan. Projects and programmes. Available at: https://www.greenclimate.fund/-/building-climate-resilience-of-vulnerable-and-food-insecure-communities-through-capacity-strengthening-and-livelihood-diversification-in-mountainous-r?inheritRedirect=true&redirect=%2Fwhat-we-do%2Fprojects-programmes%3Fp_p_id%3D122_INSTANCE_VKj2s9qVF7MH%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3D_118_INSTANCE_4ZRnUzRWpEqO__column-2%26p_p_col_count%3D2%26p_r_p_564233524_resetCur%3Dtrue%26p_r_p_564233524_categoryId%3D846529 [accessed 11.07.2018].

[307] Asian Development Bank (ADB). 2018. Tajikistan: Building Climate Resilience in the Pyanj River Basin. Sovereign (Public) Project 45354–002. Available at: https://www.adb.org/projects/45354-002/main#project-pds [accessed 11.07.2018].

Project title	Fund, grant amount(s) and timeline	Objective	Alignment with proposed project	Additionality of the proposed project
	Timeline: 2013–2020	of Pyanj River Basin communities vulnerable to climate variability and change.		planning for climate risk management. Activities under the proposed project will largely focus on introducing an EbA approach to the KRB, as well as introducing and integrated climate risk management approach at a catchment level. The two projects are complementary in that both will achieve climate resilience benefits
Climate adaptation through sustainable forestry in important river catchment areas in Tajikistan (CAFT)[308]	**Fund:** KfW Development Bank **Grant:** US$9,884,880 **Timeline:** 2015–2018	Rehabilitation, conservation and sustainable use of forests contribute to the adaptation of the country to climate change and the conservation of biodiversity, as well as to the improvement of livelihoods of the local population in the project areas.	• Useful information and practices on the use and management of agro-biodiversity conservation. • Information and best practices for conservation and adaptation management for replication in other areas of the country.	Lessons learned and best practices will be used to inform several activities of the proposed project, particularly EbA interventions involving plant establishment (for example forest restoration, sustainable harvesting, forest management, agroforestry, and the establishment of shelterbelts and woodlots). In addition, support for the development of Enterprise Plans (EPs) for community members will be provided by the proposed project to promote the sustainability of ecologically-sound natural resource-based businesses.
Tajikistan: Water Resources Management in Pyanj River Basin Project[309]	**Fund:** ADB **Grant:** US$25,000,000 **Partner:** Japan Fund for Poverty Reduction	The project aims to improve institutional and physical capacities of water resources management (WRM) system in PRB of southern Tajikistan. In particular, it will implement a Pyanji River Basin Management Plan, as well as improving irrigation infrastructure and water management practices.	• The ADB-funded project has a similar outcome to the KRBMP mentioned above. Complementarities between the ADB-funded project and the proposed project will mainly be through knowledge sharing across two river basins.	The proposed project is expected to contribute lessons learned about catchment management that considers both land and water resources management to all river basins in Tajikistan, including the Pyanji River Basin.

[308] GIZ. Adaptation to climate change through sustainable forest management. Available at: https://www.giz.de/en/worldwide/29916.html
[309] ADB. 2018. Tajikistan: Water Resource Management in Pyanj River Basin Project. Sovereign (Public) Project 47181–002. Available at: https://www.adb.org/projects/47181-002/main [accessed 11.07.2018].

Project title	Fund, grant amount(s) and timeline	Objective	Alignment with proposed project	Additionality of the proposed project
	Partner grant: US$5,000,000 **Timeline:** 2016–2022			
Conservation and sustainable use of Pamir Alay and Tein Shan ecosystems for snow leopard protection and sustainable community livelihoods[310]	**Fund:** Global Environment Facility (GEF) **Fund grant:** US$4,181,370 **Partner:** UNDP **Partner grant:** US$6,410,000 **Timeline:** 2016–2021	Improved environmental protection, sustainable natural resource management, and increased access to alternative energy.	• Useful information and practices on the use and management of sustainable natural resource management.	N/A. While the GEF project is expected to provide useful lessons learned for the proposed project, the geographical locations and objectives diverge. The proposed project will be focused on climate adaptation and not on ecosystem conservation.
Strengthening Critical Infrastructure against Natural Hazards[311]	**Fund:** International Development Association (IDA) Grant **Fund grant:** US$25,000,000 **Partner:** IDA **Partner grant:** US$25,000,000 **Timeline:** 2017–2023	The objectives of the Strengthening Critical Infrastructure Against Natural Hazards Project for Tajikistan are to strengthen the recipient's disaster risk management capacities, enhance the resilience of its critical infrastructure against natural hazards, and improve its capacity to respond to disasters.	• Potential for information and best practices to be shared.	The proposed project will provide additional risk management and risk identification approaches. Specifically , the proposed project will introduce multi-hazard risk models and EbA as a risk management approach to the KRB. The IDA-funded project does not consider EbA and focuses largely on irrigation and drainage, as well as road infrastructure.

[310] UNDP. 2016. GEF Project Document: Conservation and sustainable use of Pamir Alay and Tien Shan ecosystems for snow leopard protection and sustainable community livelihoods. National Biodiversity and Biosafety Centre (NBBC). ATLAS Award ID: 00085264; Project ID: 00092973; PIMS: 5437.
[311] The Word Bank. 2018. Available at: http://projects.worldbank.org/P158298?lang=en [accessed 23.07.2018].

Project title	Fund, grant amount(s) and timeline	Objective	Alignment with proposed project	Additionality of the proposed project
Aid for Trade in Central Asia Project, Phase IV[312]	**Fund:** Government of Finland **Grant:** US$2,500,000 (Tajikistan portion) **Timeline:** 2018–2022	The project aims to support Central Asian countries in promoting inclusive and sustainable growth patterns in rural areas and within green productive sectors. The project works on the macro (policy), meso (institutions) and micro (SMEs and producers) levels ensuring that interventions at the three levels are mutually supportive to ensure a focused impact level. The output levels target the following: • Supporting an enabling environment for job-rich sustainable growth; and • Supporting market opportunities for all through more efficient and competitive producers and processors. Two cross-cutting themes are gender equality and environmental sustainability.	• Five of the project's fish farms occur within three districts of the proposed project: Varzob, Gissar/Karatag, Romit/Vahdat. These businesses are highly vulnerbale to climate change impacts and are particularly dependant on water resources in the KRB. • The project is supporting value chains for greening via various project activities including: green loans, energy efficiency introduction at processing/production SMEs, green farming and introduction of International Standards.	The vulnerability of natural resource-based value chains to climate change impacts will be reduced through the implementation of project activities such as EbA interventions designed to increase ecosystem services.
Biodiversity and ecosystem services in agrarian landscapes[313]	**Fund:** GIZ **Grant:** US$4,650,000 **Timeline:** 2016–2020	The project aims to strengthen individual and institutional capacities and knowledge on increasing biodiversity and sustainable use of ecosystem services in agrarian landscapes (two villages in Ayni and three in Rasht Valley).	• Both projects include the use of ecosystem restoration in agrarian landscapes. Consequently, lessons learned on ecosystem interventions are expected to be shared between the two projects.	The proposed project will be implementing EbA strategically at the watershed and river basin scale to reduce the impacts of future climate change. This will provide valuable lessons learned about integrating EbA into climate-resilient catchment management in Tajikistan.

[312] UNDP. 2018. Wider Europe: Aid for Trade in Central Asia: Phase III. Available at: http://www.tj.undp.org/content/tajikistan/en/home/operations/projects/poverty_reduction/aid_for_trade_II.html
[313] GIZ. Biodiversity and ecosystem services in agrarian landscapes. Available at: https://www.giz.de/en/worldwide/52789.html

Project title	Fund, grant amount(s) and timeline	Objective	Alignment with proposed project	Additionality of the proposed project
Central Asia Hydrometeorology Modernization Project (CAHMP)[314]	**Fund:** International Development Association (IDA), and Climate Investment Fund **Grant:** US$27,700,000 **Timeline:** 2018–2021	The project aims to improve the accuracy and timeliness of hydrometeorology services in Central Asia, with particular focus on the Kyrgyz Republic and Republic of Tajikistan.	• Useful information on climate change in Tajikistan for improving hydrometeorology services. • Potential for information and best practices to be shared regarding the development of the National Strategy on climate change adaptation and sectoral action plans on adaptation.	Accurate, basin- and watershed-level data will be generated from rehabilitated or newly-established weather stations within the KRB. Data and information from these weather stations, in additon to that from several other sources, will be collated and disseminated to promote the implementation and adaptive management of climate-resilient integrated catchment management within the KRB.
Climate Adaptation and Mitigation Program for Aral Sea Basin (CAMP4ASB)[315]	**Fund:** GCF and International Development Association **Grant:** US$9,000,000 (Tajikistan portion) **Timeline:** 2016-2021	The project aims to enhance regionally coordinated access to improved climate change knowledge services for key stakeholders in participating Central Asian countries as well as to increase investments and capacity building that, combined, will address climate challenges common to these countries. The portion of the project in Tajikistan is expected to secure financing via sub-loans to rural communities for climate investments, considered by participating Central Asian countries as priority for scaled-up climate action. GCF's engagement (US$68,800,000) will allow support for the adoption of climate-smart rural production and landscape management investments through a regional climate investment facility.	• Useful information to enhance the capacity of rural communities and resource users (through support for implementation of climate investment plans at the community level) as well as joint planning of activities.	In addition to supporting existing knowledge platforms for the dissemination of data and information, the proposed project aims to establish an impact evaluation framework. This framework will enable adaptive management through the quantification of benefits generated by the project's EbA interventions.

[314] The World Bank. 2018. Central Asia Hydrometeorology Modernization Project. Available at: http://projects.worldbank.org/P120788/central-asia-hydrometeorology-modernization-project?lang=en&tab=financial

[315] The World Bank. 2018. Climate Adaptation and Mitigation Program for Aral Sea Basin CAMP4ASB. Available at: http://projects.worldbank.org/P151363?lang=en

Project title	Fund, grant amount(s) and timeline	Objective	Alignment with proposed project	Additionality of the proposed project
Building capacity for climate resilience project[316]	**Fund:** Strategic Climate Fund **Grant:** US$6,000,000 **Timeline:** 2012- 2018	The project aims to enhance planning capacity for climate change adaptation at national and local levels, and within vulnerable sectors and vulnerable population groups in Tajikistan.	• Useful lessons learned and best practices particularly pertaining to climate modelling (Hydromet), training government officials on climate change risks and developing a knowledge management system.	The proposed project will make use of existing downscaled climate predictions to build multi-hazard climate risk models and Watershed Actin Plans (WAPs) for vulnerable watersheds in the KRB. The proposed project will furthermore provide additional training to government and academic staff at existing agencies including Hydromet, CEP, MEWR, ALRI, DoG, RBOs and UCA.
Tajikistan Climate Resilience Financing Facility (CLIMADAPT)[317]	**Fund:** European Bank for Reconstruction and Development **Grant:** US$10,000,000 **Timeline:** 2016-2018	The project provided financial support through credit lines for private sector investment into technologies contributing to the development of climate resilience in Tajikistan. Support aimed to enable Tajik households, businesses and farmers to cope with climate change, supporting the country's transition towards a green economy.	• The project facilitated access to climate resilience technologies improving the use of water, energy and land resources in Tajikistan.	While the financial mechanism of the EBRD project, in the form of credit lines, is not applicable to the proposed project, grant-funded activities of the proposed project (in particular the PES models, Watershed Action Plans (WAPs) and EbA interventions including Enterprise Plans) will facilitate the shift towards a green economy within the KRB.
Transboundary water management in Central Asia[318]	**Fund:** GIZ **Grant:** US$ unknown **Timeline:** 2009–2019	Phase III of the programme (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) focuses primarily on strengthening regional institutions and sustaining the experiences gained in the previous phases. The programme supports the Central Asian institutions regulating matters of water distribution at the regional level. Overall, the programme: i)	• Activities are complemented by a number of pilot projects in selected river basins, which demonstrate the potential benefits of improved water use. • Useful information on irrigated agriculture across the region addresses: i) improved availability and predictability of water; ii) better functioning infrastructure; and iii) better planning for natural hazards.	The proposed project will implement lessons learned and best practices generated by this project. In addition, the proposed project will contribute to improving watershed- and basin-level aspects of water resource management, associated infrastructure (such as weather stations), and multi-hazard climate risk management.

[316] Asian Development Bank. 2018. Tajikistan: Building Capacity for Climate Resilience. Available at: https://www.adb.org/projects/45436-001/main
[317] European Bank for Reconstruction and Development (EBRD). Tajik Climate Resilience Financing Facility. Available at: https://www.ebrd.com/work-with-us/projects/psd/tajik-climate-resilience-financing-facility-.html
[318] GIZ. Transboundary water management in Central Asia. Available at: https://www.giz.de/en/worldwide/15176.html

Project title	Fund, grant amount(s) and timeline	Objective	Alignment with proposed project	Additionality of the proposed project
		strengthens the political position of institutions in the region; ii) advises on the formulation of legal provisions and guidelines; and iii) supports the development of practical measures for integrated water resources management.		
Regional programme for sustainable and climate sensitive land use for economic development in Central Asia[319]	**Fund:** GIZ **Grant:** US$ unknown **Timeline:** 2016–2019	The programme aims to support government agencies and the private sector in Central Asia adopt integrated, economically and ecologically sustainable forms of land use, taking climate change into account. The programme pursues activities in six areas: pasture, forests, environmental economics, climate change adaptation, knowledge management, and environmental education and awareness raising. The project aims to support regionally adapted approaches for the participatory and sustainable management of land resources with a focus on the integration of different forms of land use, such as pasture and forest management, and their economic valuation at both macro and micro levels (nationwide)	• The regional pasture network launched within this project will serve as a platform for information exchange (using the modern and convenient online data management system)	The sustainability of natural resource-based businesses within the KRB (that are ecologically-sound and climate-resilient) will be increased through *inter alia* capacity building, the development of Enterprise Plans (EPs) and the provision of agro-ecological extenson sevices. In addition, through the proposed projects component on knowledge management, the evidence-base generated by the project has the potential to facilitate the upscaling of integrated catchment management approach using EbA to other river basins in Tajikistan and the greater Central Asian region.

[319] GIZ. Sustainable and climate sensitive land use for economic development in Central Asia. Available at: https://www.giz.de/en/worldwide/14210.html

G. Knowledge management

For details on knowledge management within the proposed project, refer to Component 3 outlined in Part II: A. Component 3 includes activity-specific details on how information-sharing and knowledge management are included in the project design.

Specifically, knowledge-sharing and management has been integrated into the project design through three outputs. These are summarised below.

Under Output 3.1, existing knowledge management centres will be supported through project activities. These existing centres have been selected based on their focus on development work and/or adaptation within Tajikistan. The UCA is a regional academic institution that is focusing its efforts in rural Tajik communities to improve their resilience to climate change. All data collected by the UCA is accessible by the Open Centre under the DoG. The Open Centre is a housing platform for data and information and is available to the public for viewing and use. By supporting both UCA and the Open Centre, the project activities will encourage researchers to access previous and ongoing work to inform future developments. In addition, awareness will be raised among both government, private institutions and communities through providing support to the knowledge centres.

Under Output 3.2, an impact evaluation framework will be conducted that will enable management that is adaptive and integrated.

Both Output 3.1 and 3.2 will then contribute towards the strengthened knowledge exchange practices between communities and government under Output 3.3. Awareness will also be raised through the strengthened interactions between communities and government.

H. Consultation process

A wide range of stakeholders were consulted with during the scoping and validation phase of proposed project development. A consolidated mission and stakeholder consultation report is attached as Annex 1.

Importantly, the project's Executing Entity, the CEP, was consulted through the iterative process of refining the project design. As the national organisation responsible for implementing adaptation projects in the country, CEP is comprised of numerous technical experts. Therefore, CEP is well-positioned to ensure that the project design is tailored to local requirements, that it benefits vulnerable groups and includes necessary gender considerations.

A Validation Workshop was held in Dushanbe on 22 June 2018 that included representatives from relevant KRB districts, international organisations, academia and partner projects. Primary stakeholders that will be involved in the implementation of the project are detailed in Table 12, while a complete list of all participants present at the workshop is included in Annex 1.

A complete list of all stakeholders consulted with during the development of the Concept and Full Proposal is included in Table 12.

Table 12. Primary stakeholders to be involved in project implementation.

Stakeholder	Brief description
Committee of Environmental Protection (CEP)	The CEP is the main specialised governmental body responsible for implementation of the state policy on environmental protection in Tajikistan. Responsibilities of the CEP include the following: • developing drafts of governmental policies, strategies and action plans for environmental protection as well as implementation; • drafts laws, by-laws and decisions for the protection of the environment; • performs monitoring of the implementation of laws, by-laws, state policies and measures on environmental protection; • oversees the implementation process of all environmental conventions where Tajikistan is a member; • acts as the GEF Focal Point; • acts as the GCF National Designated Authority; and • acts as the Adaptation Fund Focal Point.
State Agency on Hydrometeorology (Hydromet) of the CEP	The Hydromet is responsible for environment-, climate- and hydro-meteorological-related monitoring. It is the agency responsible to formulate and inform the GoT and local authorities on short-term weather forecasts. The scope of activities of the Hydromet are broad and include: • observation and data collection on hydro-, meteorological- and climate-related regimes in Tajikistan; • observation over the extreme weather events and other hydrometeorological disasters in the country; • archiving historic and present data and analyses of the patterns tendencies; and • serving as a National Focal Point under the UNFCCC and provides technical support and policy advice to the CEP for its implementation process; as well as representing the GoT in UNFCCC negotiations.
Ministry of Energy and Water Resources (MEWR)	The MEWR is tasked with the formulation and implementation of national energy- and water-related policies. Particular climate-related activities of the MEWR include: • the design, revision and regular update of national strategies for energy and water development; • drafting respective legal documents for the improvement and development of energy and water sector-based projects; • monitoring the implementation of National Development Programs and Action Plans on renewable energy sources; and • participating in the strategic development projects on hydropower plants construction.
Open Centre under the Department of Geology (DoG)	The Central Asian Countries Geoportal is an outcome of cooperation between Geological Survey of Finland and the national geo-institutions in Kazakhstan, Kyrgyzstan and Tajikistan. The geo-sector in Tajikistan is managed by the Head Department of Geology under the GoT as a public property to be the central organ of executive power, state policy management and coordination of work. This falls within the sector of: i) mineral exploration; ii) reproduction of mineral resources; and iii) provision of geological information about natural resources of the Republic of Tajikistan.[320,321] Representatives from the Open Centre will be involved in capacity building processes and all training workshops. They will be expected to work together with the UCA in managing all collected information to collate and disseminate it to the public.
University of Central Asia (UCA)	The UCA is an internationally chartered, not-for-profit secular institution. It was formed as a partnership between the governments of Kazakhstan, the Kyrgyz Republic and Tajikistan under the sponsorship of the Aga Khan Development Network (AKDN). Founded in 2000,

[320] The Committee of Geology and Resources Exploitation, Ministry of Industry and New Technology of the Republic of Kazakhstan carries out of special executive and regulatory functions in the area of geological studies, rational and complex usage of natural resources and state administration of subsoil use. The State Agency of Geology and Mineral Resources of the Kyrgyz Republic is a central institution working under the government of Kyrgyzstan for collecting, storing and distributing of geo-scientific information and providing authorized policy to the legal exploitation of mineral resources.
[321] Central Asian Counties: Geoportal. 2018. Available at: http://www.cac-geoportal.org/en/index.php/about-us [accessed 23.07.2018].

	its first campus opened in 2016 in Naryn, Kyrgyzstan, offering five-year undergraduate programmes in Computer Science (BSc) and Communications and Media (BA). In 2017 the Khorog Campus in Tajikistan was opened, offering five-year undergraduate programmes in Earth and Environmental Sciences (BSc) and Economics (BA). The primary role of UCA will be the integration of all information and data made available through the project into education and courses going forward. UCA will also be expected to work with the DoG in collecting, collating and making information publicly accessible and available.

A list of the stakeholders consulted to date and those that will continue to be consulted with during project inception and implementation are listed below.

Table 13. A list of all stakeholders consulted with during development of the proposed project.

Stakeholder	Stakeholder type
Aga Khan Development Foundation	Regional development agency
Agency of Statistics	Government agency
Asian Development Bank	International development agency
ClimAdapt	International organisation
Committee for Emergency and Civil Defence	Government agency
Committee of Environmental Protection (CEP)	Government agency
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	International development agency
European Union	International organisation
Food and Agriculture Organisation of the United Nations (FAO)	International development agency
Forestry Agency	Government agency
KFW Development Bank	International development bank
Ministry of Economic Development and Trade (MEDT)	Government agency
Ministry of Energy and Water Resources (MEWR)	Government agency
Ministry of Transport	Government agency
National Agency on Hydrometeorology (Hydromet)	Government agency
Swiss Agency for Development and Cooperation (SDC)	International development agency
UNDP Disaster Risk Management Programme (DRMP)	UNDP programme
United Nations Children's Fund	International development agency
United States Agency for International Development (USAID)	International development agency
University of Central Asia	Regional academic institution
World Bank	International development bank

I. Funding justification

Component 1. Integrated catchment management to build climate resilience.

Baseline scenario (without AF resources)

The **baseline scenario** is that rural development in Tajikistan is not informed by an integrated catchment management strategy. Agricultural productivity will continue to decline as increasing climate change impacts accelerate erosion at a landscape scale. Local communities will continue to be exposed to climate hazards because climate risks are not accounted for in district and sub-district planning and development. Climate information and advisories will not be

disseminated to local farmers in vulnerable catchments because of a lack of adequate climate information services in Tajikistan.

Additionality (with AF resources)

The **preferred solution** is that a climate-resilient catchment management strategy is developed and operationalised at the district and sub-district level. This strategy will be informed by multi-hazard climate risk models (MHCRMs) and by detailed climate data from automated weather stations. The strategy will detail appropriate risk management approaches for improving resilience to climate risks and identify mechanisms for disseminating advisories tailored to local communities. Local authorities will be capacitated to implement catchment management strategies. The overall climate resilience of rural communities will be increased because of: i) reduced exposure to climate risk as a result of a climate risk management approach to rural development and land management; and ii) increased adaptive capacity as a result of strengthened local government capacity.

Component 2. Ecosystem-based Adaptation, including Climate-smart Agriculture and Sustainable Land Management, in agro-ecological landscapes.

Baseline scenario (without AF resources)

The **baseline scenario** is that ecosystems in rural Tajikistan continue to be degraded as a result of a combined effect of unsustainable land management practices and the impacts of climate change. Ecosystems goods and services will be further compromised by rapid erosion, resulting in declines of agricultural productivity and hydropower generation. Hydrometeorological disasters will continue to increase, as ecosystem services such as soil stabilisation and flood attenuation are further compromised. This will result in increasingly negative impacts on Tajikistan's economy and the health and well-being of its population.

Additionality (with AF resources)

The **preferred solution** is that EbA is implemented by local communities in rural Tajikistan. EbA interventions will provide goods and services that reduce climate change impacts[322] and strengthen rural livelihoods. Agro-ecological extension centres will be supported to ensure they provide relevant technical support to communities on EbA. This support will also ensure that the implementation of interventions will be informed by fine-scale land-use plans.

The sustainability and replicability of EbA interventions will be ensured through the development of a market environment for EbA. Enterprise Plans (EP) will be developed by communities to implement EbA activities that promote climate resilience.

Component 3. Knowledge management on building climate resilience through integrated catchment management and EbA in the KRB.

Baseline scenario (without AF resources)

The **baseline scenario** is that lessons learned and best practices on EbA are not systematically collated. Information on climate risks and EbA will continue to be fragmented. This will hinder the

[322] such as soil stabilisation, flood attenuation and groundwater recharge

effective implementation of EbA interventions as uncertainty around the effectiveness of EbA interventions will remain. Without an appropriate evaluation framework, decision-makers will lack reliable information on the benefits of EbA as well as the effectiveness of different interventions within the local context. Local communities will continue to lack access to comprehensive and reliable information on climate risks and adaptation best practices.

Additionality (with AF resources)

By providing support to existing knowledge management centres, these entities will be responsible for collating, analysing and disseminating information on climate risks and EbA. Providing this support thereby ensures that up-to-date information is accessible in a coherent manner. This information will be disseminated to decision-makers and local communities via appropriate communication channels, to ensure that all stakeholders benefit from information on climate risk and adaptation measures. The knowledge centre(s) will share information with local communities through mass media channels such as mobile applications, websites, brochures and radio broadcasts. They will also engage with existing local knowledge exchange structures. In this way, knowledge on climate risks and EbA will be disseminated broadly and in a locally-appropriate manner.

An impact evaluation framework will be developed under Component 3 that will enable the evaluation of the benefits of EbA interventions. This framework will promote the use of sampling methodologies to ensure the accurate attribution of social, economic and environmental benefits to EbA interventions. The knowledge centre will continue to manage and apply the framework beyond the project lifespan, ensuring that future EbA interventions in Tajikistan are monitored adequately.

J. Sustainability of the project

Project components have been designed to ensure the sustainability and replicability of project benefits in the long term. Specifically, project sustainability will be supported through: i) promoting the active participation of relevant regional[323], national and district level stakeholders in decision-making and implementation of project activities; ii) strengthening institutional and technical capacity at *raion* and *jamoat* levels to ensure that stakeholders have adequate knowledge and skills to maintain the benefits of the project EbA interventions; and iii) raising the awareness of the benefits of integrated catchment management practices, including EbA, CSA and SLM activities, at the village level.

Particular aspects of project sustainability per component are described below.

Component 1 will develop the capacity for catchment management informed by climate risks. Multi-hazard climate risk models (MHCRMs) developed for the KRB in Output 1.1 will inform future planning to develop climate resilience. Such models will then be readily replicable for other catchments across the country. The PES models developed in Output 1.5 will strengthen the sustainability of project interventions by ensuring sustainable financing for climate-resilient management and EbA.

Agro-ecological extensions centres supported and trained under **Component 2** will also contribute to project sustainability. This is because the impacts of the training will continue beyond the lifespan of the project, continuing to provide extension services to local communities. These

[323] such as representatives from international UCA campuses

communities will use these services to inform the implementation and maintenance of EbA interventions, thereby ensuring the sustainability of such interventions. Moreover, EbA interventions are inherently more sustainable than traditional infrastructure, as ecological infrastructure is multi-purpose and flexible. Generally, EbA interventions require less maintenance than non-EbA alternatives and such maintenance can usually be conducted by unskilled labourers. As a result, the proposed interventions will be more likely to be maintained than non-EbA alternatives.

By supporting the knowledge management centre(s) under **Component 3**, it is ensured that's climate information, as well as lessons learned, are accessible for decision-makers and local communities. The impact evaluation framework [under Output 3.2] will enable adaptive management on project interventions and will also allow for accurate attribution of EbA benefits. This will help to demonstrate the cost-effectiveness of EbA, thereby promoting its use to develop climate resilience in communities across Tajikistan.

K. Environmental and social impacts and risks

The proposed project activities were evaluated against the Adaptation Fund (AF) Environmental and Social (E&S) Principles to identify potential negative impacts. Results of the preliminary assessment of the project according to the UNDP Social Environmental Screening Policy (SESP) and the AF E&S Principles are listed below. The completed screening template is available in Annex 6.

- Risk assessment: Moderate.
- Categorisation: B.

The following UNDP Social and Environmental Standards are considered triggered by the project:

Principle 1: Human Rights
Principle 2: Gender Equality and Women's Empowerment
Principle 3: Environmental Sustainability
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management
Standard 2: Climate Change Mitigation and Adaptation
Standard 3: Community Health, Safety and Working Conditions
Standard 5: Displacement and Resettlement
Standard 7: Pollution Prevention and Resource Efficiency

Table 14 below provides an overview of the types of environmental and social risks of the proposed project.

Table 14. Checklist for environmental and social principles for the proposed project.

Principle	If further assessment required for compliance, outline potential impacts and risks	No further assessment required for compliance
Compliance with the Law	*No further assessment required*	Project activities will be undertaken in compliance with the domestic laws of Tajikistan and with all relevant international laws.
Access and Equity	Project activities could restrict availability and/or quality of, and access to, resources or basic services – in particular, to marginalised individuals or groups.	Project activities will be designed to provide fair and equitable access to benefits in a manner that is inclusive. Activities will not exacerbate existing inequities, particularly with respect to marginalised or vulnerable groups. Tajikistan's livestock population continues to increase annually and poses a great stress on degrading pastureland resources with very limited fodder production available nationally and at district levels. Communities have reported that current areas of pasturelands are not sufficient to support the current livestock populations. In addition, reforestation measures supported by the project will limit access to forest resources for local communities. Therefore, the project will support grazing control measures (rotational grazing), establish livestock exclusion zones and reforestation measures sites in consultation with target benefiting communities. Cost-effectiveness analysis with mid- to long-term impacts will be carried out to inform communities of anticipated benefits, but to address short-term limitations concerning access to pasture lands and forests, the project will promote alternative business solutions and community enterprise developments that will help communities generate compensating incomes. To further support sustainability of given measures, the project will address the need to reduce extensive livestock grazing through enhanced fodder production techniques (within exclusion zones, rotational grazing, on-site production, demonstration plots, etc), productive on-site animal husbandry, and establishment of watering sites at mid-stream levels of catchment/watershed areas (saving livestock energy in search of water sources in the upstream). The project will engage widely with relevant stakeholders at regional, sub-regional and community levels to agree on rotational routes for transit of larger herds, and eliminate potential compromising of implemented grazing control measures applied locally by large herd owners from other communities, districts and/or regions. *Jamoat* level monitoring and control mechanisms will be introduced to enforce agreed measures for elimination of land degradation and improving vegetation growth in target pasture lands, and ensure that target communities effectively benefit from project interventions. The project will also introduce energy-efficient stoves into target communities to compensate for limited access to forest resources. While such experience already exists in other regions of Tajikistan applied by partner development agencies/projects, the outcomes vary across projects with different degree of efficiency needs. The project will assess the best practices and lessons learned and apply enhanced techniques in Kofirnighan river basin.
Marginalized and Vulnerable Groups	Marginalised groups could potentially be excluded from fully participating in decisions that may affect them.	Project activities have taken into account marginalised and vulnerable groups – including children, women and girls, the elderly, indigenous people, displaced people, people living with disabilities, and people living with HIV/AIDS. Marginalized groups in project area of Kofirnighan river basin can be considered poor and vulnerable population that potentially include those living in places with increased impacts of climate change, food insecure households, households with limited or no productive assets

		(limited resilience), livestock and/or agricultural land plots. Given the relatively higher rates of labor migration among men (to Russian Federation and elsewhere), households without manpower, female-headed households, and those with small children and elderly people may also be considered vulnerable. Often, as experience shows, such vulnerable groups have limited mobility to participate during key stages of project design and implementation. Prior to project implementation, during inception phase, the project will carry out vulnerability assessment of target communities in a participatory manner holding focused consultations in designing specific tailor-made activities suitable for vulnerable and marginalized groups. Where feasible such groups will be prioritized for concrete adaptation interventions. The Stakeholder Engagement Plan will guide such consultations inclusively during preparation phases, assuring broad representation of existing relevant community-based organizations and groups. These involve, farming associations and cooperatives, women's committees, intervention related initiative groups, pasture development associations, Water User Associations (WUA), forestry cooperatives and communal health promoters. The project will monitor and assess the extent of involvement of vulnerable and marginalized people within such groups and associations. Targeted actions that may be prioritized and suitable for vulnerable groups include on-farm adaptation interventions, household plots productivity measures, selection of demonstration plots with farmer field school support. Certain enterprise development and income generating activities (bee keeping, fodder production, livestock productivity support, etc) may also be suitable for the given groups to ensure benefits are distributed inclusively and in equitable manner.
Human Rights	*No further assessment required*	Project activities will respect and, where applicable, promote international human rights. Tajikistan is the most vulnerable country to climate change in Central Asia. Negative effects of climate change on the Tajik population include glacial and permafrost melt, increased rainfall intensity and longer and more frequent dry spells. Together, these effects have increased the rate of topsoil erosion, threatening the livelihoods, health and wellbeing of the population. Losses from natural hazards currently amount to ~20% of the country's GDP and climate change impacts are predicted to increase the frequency and magnitude of such losses. In the future, loss amounts are expected to rise from ~US$50 million in 2014 to ~US$132 million by 2030. Approximately 33% of all agricultural losses in the country are currently attributable to climate change and variability. Furthermore, it has been projected that crop yields in Tajikistan will decrease by an additional 5–30% by 2050, with the potential for severe negative impacts on the country's economy. Moreover, by 2050, ~77% of the country's population will be living in areas most exposed to the impacts of climate change. Tajikistan's vulnerabilities are attributed to the country's weak social structures, low adaptive capacity, underdeveloped infrastructure, low income insecurity, poor service provision, strong dependence on agriculture and institutional constraints. To address these challenges, the project will support Tajikistan's authorities and target population to enhance the climate resilience amongst small-scale farmers and pastoralists of Kofirnighan River basin. Improving the climate resilience of these communities will involve developing a climate-resilient catchment management strategy to inform the planning and development of rural areas in adapting to the increasing impacts of climate change. Interventions will also promote sustainable management of natural resources through an integrated landscape approach to catchment management. The project will directly benefit an estimated 46,000 individuals who are especially vulnerable to the impacts of climate change, through the

		design and implementation of concrete on-the-ground EbA interventions for more efficient natural resources management. These measures will also provide social and economic benefits to target population in terms of livelihoods, health and wellbeing of the population. In terms of human rights mainstreaming, the impact is multidimensional in nature and addresses the right to food, energy, water, health and etc. In particular, the project's interventions have the following social and economic benefits for target population: (a) increased profit margins and farm income, (b) reduced loss of crops and land caused by slope instability, drought or dry spells and also caused by ineffective agricultural practices and livestock grazing/breeding; (c) reduced agricultural inputs, water consumption and thus production costs; (d) reduced risk of economic failure due to diversification of production on and off-farm; (e) reduced crops susceptibility to pests; (f) increased nutrition and food security for local communities; (g) increased provision of fuelwood and timber and reduced loss of trees to drought or dry spells; and (h) increased pasture productivity, fodder production and carrying capacity. In addition, the project interventions increase nonmaterial benefits such as ecosystem services such as tourism and recreation, derived from increased conservation value of the landscape. Throughout the project implementation period, the project will seek to ensure that benefits of the project are shared broadly in a non-discriminatory and equitable manner. The project will ensure that all relevant stakeholders participate in decision-making processes and consultations, and that such participatory processes are transparent. Necessary strategies, action plans, site selection criteria, lessons learned will be documented and shared regularly through community driven consultation platforms that the project will seek to facilitate. A wide range of stakeholders were consulted with during the scoping and validation phase of proposed project development. Importantly, the project's Executing Entity, the Committee for Environmental Protection (CEP), was consulted through the iterative process of refining the project design. As the national organisation responsible for implementing adaptation projects in the country, the CEP is comprised of numerous technical experts. Therefore, the CEP is well-positioned to ensure that the project design is tailored to local requirements, that it benefits vulnerable groups and includes necessary gender considerations. A Validation Workshop was held in Dushanbe on 22 June 2018 that included representatives from relevant Kofirnighan river basin districts, international organisations, academia and partner projects. For relevant list of stakeholders, validation workshop participants, stakeholders consulted with during the development of the concept and full proposal are included in the project document.
Gender Equity and Women's Empowerment	Women may not be adequately represented with regards to decision-making or participation in the design/implementation of the project's activities. As a result, they may have limited access to resources, opportunities and benefits.	Project activities will be designed and implemented so that all genders are: i) able to participate fully and equitably; ii) receive comparable social and economic benefits; and iii) do not suffer disproportionate adverse effects as per UNDP Gender Mainstreaming Strategy. A gender analysis will be carried out during the Inception Phase of the proposed project to ensure this. Tajikistan has a relatively high Gender Inequality index rating (0.36) with women's labor force participation rate of 58.9 percent, compared to men at 77.1 percent. Despite the nearly equal population ratio of man and women in rural Tajikistan, the relatively higher rates of labor migration among men, leaves rural women typically with triple work burden: employment for income, household and care responsibilities, and growing food for consumptions. Thus the project will ensure that women are active members of community organizations and sub-project stakeholder participation groups members taking part in the decision making processes to ensure that benefits are distributed equitably and fairly among men and women in target zones.

		The project anticipates that at least 50% of beneficiaries will be women. The stakeholder participation mechanisms for sub-project formulation and implementation will include provisions to ensure that women are able to represent their interests effectively, and the social impact indicators and corresponding targets of the project will be gender-sensitive, ensuring that women receive an equitable share of benefits and that their status and interests are not marginalized. A gender analysis will be undertaken in the initial phase of the project to assess divisions of labor and women's role and access to resources and to develop recommendations on how the project will promote women's equality and empowerment, including participation in project decision-making, as outlined in the ESMF. Measures will ensure that women receive an equitable share of benefits and that their status and interests are not marginalized. Participatory processes will include specially designed methodologies that enhance the participation of women and therefore enhance the inclusion of their views into the activities of the project, using existing mechanisms for representing women's views. For monitoring, disaggregated and measurable data related to gender equality and empowerment of women will be incorporated. Furthermore, when possible, measures and techniques that can have a positive impact by closing the gap of inequality between men and women will be promoted.
Core Labour Rights	*No further assessment required*	Project activities will observe the core labour standards of Tajikistan as well as those identified by the International Labour Organisation.
Indigenous Peoples	*No further assessment required*	Project activities will be designed in accordance with the rights and responsibilities set forth in the UN Declaration on the Rights of Indigenous Peoples and other applicable national and international instruments relating to indigenous people.
Involuntary Resettlement	*No further assessment required*	Project activities will not cause any involuntary resettlement of communities.
Protection of Natural Habitats	*No further assessment required*	Project activities will not involve any conversion or degradation of critical natural habitats, including those that are: i) legally protected; ii) officially proposed for protection; iii) recognised by authoritative sources for high conservation value, including as critical habitats; or iv) recognised as protected by traditional or indigenous local communities.
Conservation of Biological Diversity	There is a risk that alien and/or invasive alien species are used in reforestation activities.	The Project will be supporting activities in environmentally sensitive areas, but this work will aim at reducing impacts in these areas with a net positive impacts. Project activities will be designed and implemented in a way that avoids any significant or unjustified reduction or loss of biological diversity or the introduction of known invasive species.
Climate Change	*No further assessment required*	Project activities will not result in any significant or unjustified increase in GHG emissions or other drivers of climate change. The project's designed activities directly support implementation of ecosystem-based adaptation, including climate-smart agriculture and sustainable land management in agro-ecological landscapes. Such actions include rehabilitation and restoration of degraded forest ecosystems, vegetation growth support, water retention measures, establishing *saxaul* plantations, climate-resilient crop seed planting, and others to prevent and mitigate water related adverse climatic events that have typically posed risks to livelihoods and health of target communities. Current and predicted climatic variability has been taken into account during project design. Throughout the inception and implementation phase, any changes in the climate will be taken into account in planning for the implementation of EbA activities. Drought- and flood-resilient species will be used, as well as indigenous species wherever possible. Techniques to assist plant growth particularly in the seedling/sapling phases and to reduce risk of damage from extreme climate events will

		be used. Species will be planted in appropriate seasons to reduce risk of hazard impact. The project also aims to build climate resilience through development of a catchment management strategy to manage and operationalize climate risks at district and *Jamoat* levels in Kofirnighan river basin. The project will develop multi-hazard climate risk models (MHCRM) for vulnerable watersheds in KRB and provide technical support for the modernization of automated weather stations in the most vulnerable districts of KRB. These will help authorities and communities adequately assess risks, climate related projections and incorporate these risks in the Kofirnighan River Basin Management Plans to make informed decisions on EbA activities.
Pollution Prevention and Resource Efficiency	The application of pesticides may have a negative effect on the environment or on human health.	Project activities will be designed and implemented in a way that meets applicable international standards for maximising energy efficiency and minimising material resource use, the production of wastes, and the release of pollutants. Project interventions are not expected to produce any significant amounts of waste or other pollutants. Any potential opportunities identified for improved resource efficiency and pollution reduction during the project development phase will be captured in the project design. The Project will support communities to adopt improved farming techniques (organic agriculture, soil and water conservation, more resilient crop varieties) that would reduce the use of fertilizers and pesticides. Although biological pest control will be preferred, and nor foreseen, potentially harmful pesticides may be needed for specific use. In this particular case, they will be properly managed, stored, used, following national and international standard regulation and procedures.
Public Health	Small-scale construction activities under the proposed project may pose safety risks to community members implementing them.	The Project will follow related environmental impact assessment procedures and ensure compliance with national construction standards and norms, sanitary norms and regulations, and other national laws and regulations (forestry, water, environment, and health). The project will also follow technical guidance and best practices regarding rain-water harvesting systems, drip-irrigation techniques, and micro-reservoirs that are not adequately institutionalized across the country. Other activities may include construction of gabions, terracing, bank enforcement and small dams, the project will assess best practices and lessons learned to address community safety risks from such construction.
Physical and Cultural Heritage	During project implementation, there is a risk that physical or cultural heritage sites are disturbed.	Project activities will be designed and implemented in a way that avoids the alteration, damage or removal of any physical cultural resources, cultural sites, and sites with unique natural values recognized as such at the community, national or international level.
Lands and Soil Conservation	*No further assessment required*	Project activities will be designed and implemented in a way that promotes soil conservation and avoids degradation or conversion of productive lands or land that provides valuable ecosystem services.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Implementation arrangements

Implementing entity

The Committee for Environmental Protection (CEP) under the Government of the Republic of Tajikistan is the government institution responsible for the implementation of the project and will act as the Executing Agency (EA). The Ministry of Agriculture, Ministry of Energy and Water Resources, Agency for Land Reclamation and Irrigation along with other relevant national entities will act as project partners and will become part of Project Steering Committee.

The Committee for Environmental Protection will be responsible for executing this five-year project with the support of the UNDP under UNDP's National Implementation Modality (NIM). At the request of the Government of Tajikistan, UNDP is the Multilateral Implementing Entity (MIE). The project is nationally implemented (NIM), in line with the Standard Basic Assistance Agreement (SBAA, 1993) and the UN Development Assistance Framework (UNDAF) 2016-2020 between the UN and the Government of Tajikistan, as well as Country Programme Document 2016-2020 between UNDP and the Government of Tajikistan.

As a Multilateral Implementing Entity, UNDP is responsible for providing a number of key general management and specialized technical support services. These services are provided through UNDP's global network of country, regional and headquarters offices and units and include assistance in: project formulation and appraisal; determination of execution modality and local capacity assessment; briefing and de-briefing of staff and consultants; general oversight and monitoring, including participation in reviews; receipt, allocation and reporting to the donor of financial resources; thematic and technical backstopping; provision of systems, IT infrastructure, branding, and knowledge transfer; research and development; participation in policy negotiations; policy advisory services; programme identification and development; identifying, accessing, combining and sequencing financing; troubleshooting; identification and consolidation of learning; and training and capacity building.

As outlined in UNDP's application to the Adaptation Fund Board for accreditation as a Multilateral Implementing Entity, UNDP employs a number of execution modalities determined on country demand, the specificities of an intervention, and a country context. Under the national execution modality proposed, UNDP selects a government entity as the Executing Entity based on relevant capacity assessments performed by UNDP. Please note that UNDP uses slightly different terminology to that used by the operational policies and guidelines of the Adaptation Fund. In UNDP terminology, the "executing entity" is referred to as the "Implementing Partner" in countries which have adopted harmonized operational modalities and the "Executing Entity" in countries which have not yet done so. The Executing Entity is the institutional entity entrusted with and fully accountable to UNDP for successfully managing and delivering project outputs. It is responsible to UNDP for activities including: the preparation and implementation of work plans and annual audit plans; preparation and operation of budgets and budget revisions; disbursement and administration of funds; recruitment of national and international consultants and personnel; financial and progress reporting; and monitoring and evaluation. As stated above, however, UNDP retains ultimate accountability for the effective implementation of the project.

The CEP will assume responsibility for the implementation, and the timely and verifiable attainment of project objectives and outcomes. It will provide support to the management unit, and inputs for, the implementation of all activities. The CEP will nominate a high-level official who

will serve as the National Project Director (NPD) for project implementation. The NPD will chair the Project Steering Committee and be responsible for providing government oversight and guidance to the implementation. The NPD will not be paid from project funds but will represent a Government in kind contribution.

UNDP has the technical and administrative capacity to support the Committee for Environmental Protection and assume the responsibility for mobilising and effectively applying the required inputs to reach the expected outputs.

The financial arrangements and procedures for the project are governed by the UNDP rules and regulations for National Implementation Modality (NIM). All procurement and financial transactions will be governed by applicable UNDP regulations under NIM.

UNDP Direct Project Services as requested by Government: The UNDP, as the Multilateral Implementing Entity for this project, will provide project management cycle services for the project as defined by the Adaptation Fund Board. In addition, the Government of Tajikistan may request UNDP direct services for specific projects, according to its policies and convenience. If requested the services would follow the UNDP policies on the recovery of direct costs. These services (and their costs) are specified in the Letter of Agreement (Annex 7). As is determined by the AF Board requirements, these service costs will be assigned as Project Management Cost, duly identified in the project budget as Direct Project Costs.

Comparative advantage

UNDP's comparative advantage in supporting the implementation of development programmes in Tajikistan is its presence both at the policy and operational levels. This set-up enables UNDP to obtain and use the evidence from the ground to influence policy formulation and discussions. Because of the specific nature of most development projects requiring physical presence on the ground, additional comparative advantages of UNDP include, but are not limited to, its: i) physical presence on the ground; and ii) continuous partnerships maintained with the development actors, local authorities and beneficiary communities. Because of this on-the-ground presence and experience with work in different sectors and communities – including the water sector – UNDP is in a prime position to be the IE for the proposed project.

Presence on the ground

UNDP has five Area Offices (Figure 15) located in:

- Gharm in the north-east of Rasht Valley;
- Khujand and Ayni in the north of Soughd Region; and
- Kulyab to the south-east and Shaartuz to the south-west of Khatlon Region.

Kulyab and Shaartuz Area Offices cover all districts of Khatlon Region, including the eight districts bordering Afghanistan, namely Qumsangir, Kabodiyon, Jilikul, Shaartuz, Pyanj, Farkhor, Hamadoni and Shurobod. Figure 15 illustrates the regions covered by each Area Office.

Through these offices, UNDP has implemented over 100 community development, poverty alleviation, disaster risk reduction, energy and environment, conflict management and other development programmes and projects totalling US$52 million. These programmes and projects have benefited over 3,000,000 people living in 46 rural districts, which is ~1,228 rural Tajik communities.

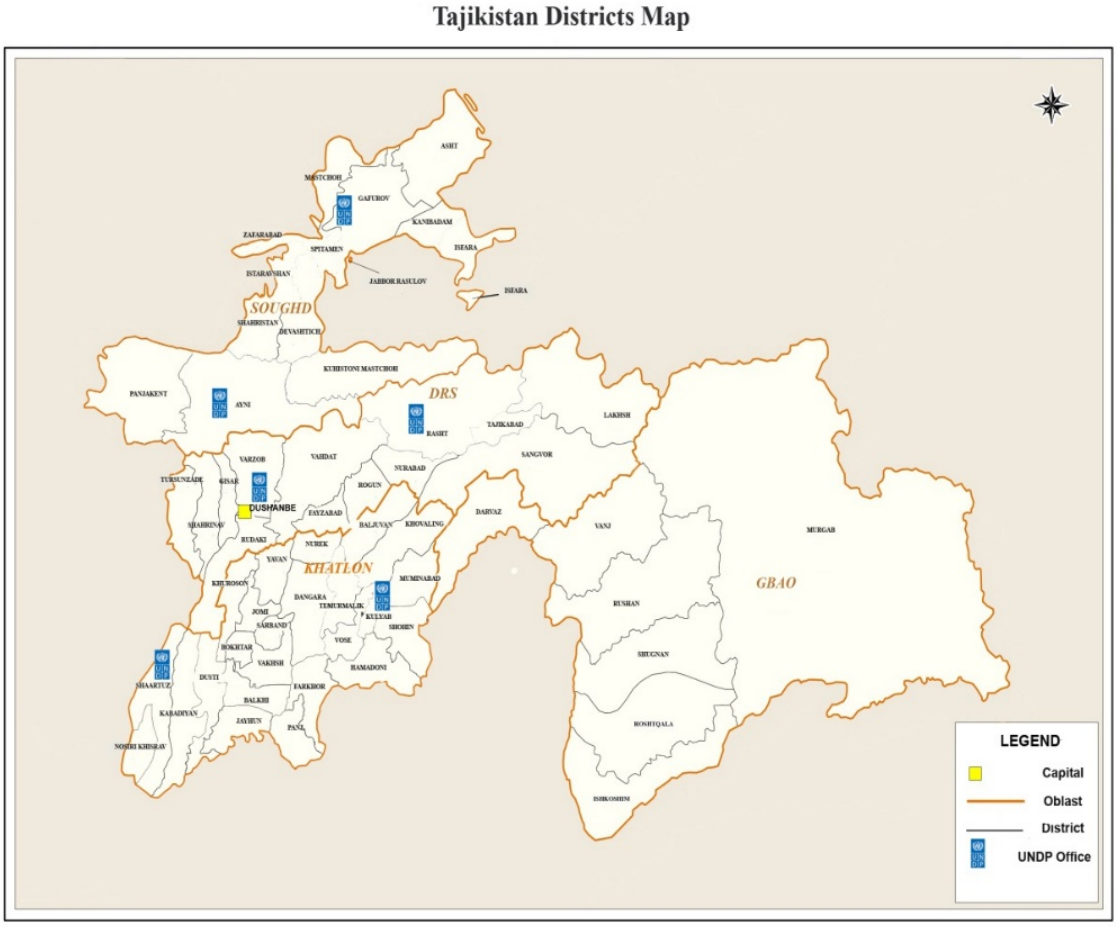


Figure 15. Map of Tajikistan indicating the six UNDP Area Offices.

Experience in the water sector

UNDP and the GoT have effectively collaborated in the past and because of this, GoT has considerable trust in UNDP's capability. This enables UNDP to facilitate the formation and convening of high-level policy dialogue. As a UN coordinating agency, UNDP is also able to ensure synergies and has access to resources from other UN system agencies, including FAO, UNECE and UN-Water.

UNDP's leadership in and support for the water sector over recent years has grown, presently focusing on policy and governance with pilot interventions in the Ferghana Valley[324]. UNDP's support to the Water Sector Reforms Programme of the Republic of Tajikistan for 2016–2025 (Water Reform Programme)[325] is evident through the implementation of several projects:

- EU-funded project titled, 'Promoting integrated water resources management and fostering transboundary dialogue in Central Asia';

[324] particularly with the Isfara Transboundary River Basin
[325] Water Reform Programme 2015.

- UNDP-funded project titled, 'Enabling activities to promote the national consultations on post-Rio agenda and demonstrate IWRM approaches in Tajikistan';
- UNDP/Bureau for Crisis Prevention and Recovery (BCPR) project titled, 'Strengthening conflict management capacities (including transparent resource allocation and sound water management principles) for dialogue in conflict-prone areas of Tajikistan';
- Eurasian Development Bank (EDB) project titled, 'Feasibility study to construct and operate small hydro-power stations on irrigation facilities in Tajikistan', Phases I and II;
- Swiss Development Cooperation (SDC) funded project titled, 'Tajikistan Water Supply and Sanitation'; and
- Swedish International Development Cooperation Agency (SIDA) project funded through the Stockholm International Water Institute (SIWI) titled, 'Applying human rights-based approach to water governance in Tajikistan'.

The above projects were included under the umbrella of Integrated Water Resources Management (IWRM) which is a central principle of the GoT-adopted Water Reform Programme. In doing so, UNDP adopted a strategic approach of linking policy work at the national level with practice in the field, ensuring top-down and bottom-up feedback informing both policy-makers and practitioners on effective mechanisms for reform implementation. The UNDP IWRM programming is principally aimed at developing and implementing national IWRM and water efficiency strategies at national and basin level. Because of this, the intervention strategy is supported by both IWRM governance and institutional reform, as well as concrete projects implemented to improve: i) irrigated agriculture; ii) rural water supply and sanitation; and iii) small-scale hydropower service delivery. At the regional level, UNDP contributes to transboundary trust building and conflict prevention through strengthening water cooperation mechanisms in the Fergana Valley.

UNDP has been involved in most policy initiatives for the water sector. Involvement at the national level was aimed towards developing an enabling environment for coordination and establishing a unified approach to policy development. This involvement has resulted in a harmonised reform process towards developing improved water cooperation and conflict mitigation at a regional level. A list of UNDP's actions, roles and responsibilities under the umbrella of IWRM programming is included below.

- UNDP played an active role in elaborating policy proposals for water sector reform, specifically providing designs to principal resolution and introducing IWRM principles into the Water Code[326].
- The development of an analytical review, titled 'Current conditions and perspectives on integrated water resources management in the RT', provided reflections on existing challenges and recommendations in the water resource management field. This review described the legal, institutional, technical and financial (economic) aspects of IWRM as well as detailed perspectives for the country's transition to basin management approach.
- UNDP supported GoT institutions in improving the legal and institutional framework for the country, developing by-laws and implementation mechanisms for the Water Code[327] and the Law on Drinking Water[328].
- UNDP was responsible for facilitating the establishment and support of the Inter-Ministerial Coordination Group (IMCG) on drinking water supply[329]. The IMCG was primarily formed to

[326] Water Code 2001.
[327] Ibid.
[328] Law of the Republic of Tajikistan on Drinking Water and Water Supply (Law on Drinking Water). 2010. Government of Tajikistan, Dushanbe.
[329] Swiss Agency for Development and Cooperation (SDC). 2012. The Fourth Meeting of the Inter-Ministerial Coordination Council on drinking water supply discussed realization of human right to water and sanitation in Tajikistan (IMCC). SDC, UNDP and Oxfam.

assist in design and implementation of the state policy on development of the drinking water and water supply sector.

- Because of UNDPs support to the IMCC, significant progress was made on policy proposals and implementation mechanisms for the drinking water and supply sector. The following issues were focused on through UNDPs support:
  - practising ownership and operational management rights;
  - modelling institutional structures at the district and sub-district levels;
  - simplifying procedures for obtaining permits for project implementation;
  - modelling effective tariff scheme and scheme implementation; and
  - improving governance, transparency, accountability and consumer participation in water systems management.
- UNDP's contribution to transboundary water cooperation has been significant over recent years. Specifically, UNDP assisted with improving water management in the transboundary basin of Syr Darya in the Fergana Valley[330]. This programme benefited border communities of Tajikistan and Kyrgyzstan. UNDP conducted a review, titled 'Consolidated review of water resources management in transboundary Isfara River Basin', for both countries to identify main barriers to water distribution. The review identified the challenges for overcoming the barriers to water distribution between border communities. In addition, the review included recommendations for efficient water management, conflict management and the development of proposals for further interventions to improve transboundary water cooperation between the two countries.
- UNDP has also undertaken a series of ground-level interventions to implement specific elements of the IWRM approach. The range of these interventions are listed below.
  - Rehabilitation of hydrological posts in Matpari, Tangi, Vorukh and Rabot to ensure more accurate and transparent record of hydrological events. The rehabilitation process also included monitoring water resource flows in the Isfara River Basin. Results of this monitoring had an effect on fair regional water distribution between Kyrgyzstan and Tajikistan at both upstream and midstream levels, and between Tajikistan and Uzbekistan at the downstream level.
  - Rehabilitation of water supply facilities project, titled 'Inter-state irrigation canal 'Druzhba' and drinking water supply system in cross-border Chorku Jamoat'. The rehabilitation was accompanied by the application of good governance and sound water management principles. These principles highlighted the importance of transparency for water distribution as a main criterion for sustainability.
  - Providing support for water management through a project titled 'Support to inter-stream water cooperation in Isfara River Basin'. The outcomes of this project ensured sound water management and distribution at the basin level among farming communities at upstream, midstream and downstream levels. This resulted in the reducing the risk of conflicts over resource distribution. Reducing water demand through a demand-driven approach at all stream levels by providing improved maintenance of irrigation canals and management support based on transparency and participation have been central in achieving this result. This is being implemented by providing significant support to previously established Water User Associations and their federation in Isfara River Basin.

Project Steering Committee (PSC) will be convened by CEP and will serve as the project's coordination and decision-making body. The PSC meetings will be chaired by the NPD. It will meet according to necessity, but not less than once in 6 months, to review progress, approve work plans and approve major deliverables. The PSC is responsible for ensuring that the project remains on course to deliver products of the required quality to meet the outcomes defined. The

[330] Soughd Region, Isfara River Basin

PSC's role will include: (i) overseeing project implementation; (ii) approving all work plans and budgets, at the proposal of the Project Manager (PM), for submission to Istanbul Regional Hub; (iii) approving any major changes in plans or programmes; (iv) providing technical input and advice; (v) arbitrating any conflicts within the project and/or negotiating solutions between the project and any other stakeholders and (vi) overall evaluation.

Project Assurance: UNDP Tajikistan will support project implementation by assisting in monitoring project budgets and expenditures, recruiting and contracting project personnel and consultant services, subcontracting and procuring equipment. UNDP Tajikistan will also monitor the project implementation and achievement of the project outcomes/outputs and ensure the efficient use of donor funds through an assigned UNDP Team Leader. UNDP will act as the Senior Supplier and Project Assurance. In this role, UNDP will also monitor project performance in relation to UNDP's Social and Environmental Safeguards Policy (SESP) as well as the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

National Project Director (NPD): The NPD will be a member of CEP, assigned to the project for its period of duration. The NPD's prime responsibility is to ensure that the project produces the results specified in the project document to the required standard of quality and within the specified constraints of time and cost.

Mechanisms for local participation: the project will use the existing locally established mechanisms for local consultation and participation.

An organogram of the project organisation structure is illustrated in Figure 16.

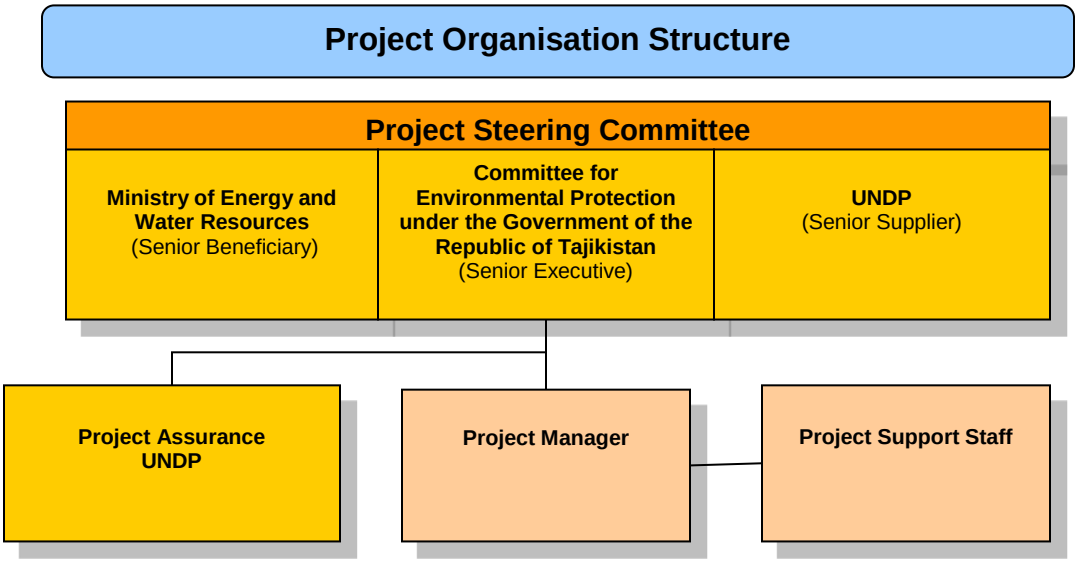


Figure 16. Organogram of project organisation structure.

A specially formed **Project Steering Committee** (PSC) will be responsible for the implementation of the project. The PSC will include representative of UNDP in Tajikistan, as well as representatives from relevant stakeholders including CEP and MEWR. In addition, the PSC will be responsible for ensuring the effective coordination of this project with other relevant initiatives in Tajikistan.

In addition, consultative committees will be formed, consisting of representatives from local government in the project areas, community representatives, and individuals with technical expertise. The consultative committees will provide technical guidance and feedback to the PSC.

The day-to-day administration will be carried out by a Project Manager (PM), Project Analyst (PA), Admin. Finance Assistant (AFA), and Project Assistant (PA), who will be located at UNDP premises. As per Government requests, the staff will be recruited using standard UNDP recruitment procedures. The PM will, with the support of the AFA and PA, manage the implementation of all activities, including: preparation/updates of work and budget plans, record keeping, accounting and reporting; drafting of terms of reference, technical specifications and other documents as necessary; identification, proposal of consultants, coordination and supervision of consultants and suppliers; organization of duty travel, seminars, public outreach activities and other events; and maintaining working contacts with partners at the central and local levels. The Project Manager will liaise and work closely with all partner institutions to link the project with complementary national programmes and initiatives.

The PM is accountable to UNDP for the quality, timeliness and effectiveness of the activities carried out, as well as for the use of funds. The PM will produce Annual Work and Procurement Plans (AWP&PP) The PM will further produce quarterly operational reports and Project Performance Reports (PPR). These reports will summarize the progress made versus the expected results, explain any significant variances, detail the necessary adjustments and be the main reporting mechanism for monitoring activities. The PM will be technically supported by contracted national and international service providers, based on need as determined by the PM and approved by the PSC, as needed. Recruitment of specialist services will be done by the PM, in accordance with UNDP's rules and regulations.

B. Financial risk management

Financial and project management has been conducted according to UNDP's Programme and Operations Policies and Procedures to ensure that financial and project risks are mitigated against. Detailed financial and project risks as well as the associated mitigation strategies identified have been outlined in Table 14.

Table 15. Financial and project risk management measures for the proposed project, including risk ratings.

Risk no.	Identified risk	Risk rating	Mitigation measure
1.	Disagreement amongst stakeholders regarding demonstration of site selection.	Low	• Intervention sites will be selected using an agreed upon list of criteria and the developed shortlist of EbA interventions to ensure the selection is transparent and equitable. • There will be a participatory approach to project activities, particularly with intervention site selection.
2.	High turnover of staff members in executing and implementing agencies may negatively impact on project deliverables.	Low–medium	• Proposed project will build partnerships between government and non-government agencies to ensure continuity.
3.	Loss of government support may result in lack of prioritisation of proposed project activities.	Low	• Regular stakeholder consultation and involvement will be undertaken to ensure that government maintains its commitment and considers the project as a support mechanism to its existing climate change adaptation programmes.
4.	Institutional capacities and relationships are not sufficient to provide	Medium	• The project design has a focus on building institutional capacity. This will ultimately lead to the development of an appropriate institutional framework for analysing climate change impacts on

	effective solutions to climate problems that are complex and multi-sectoral.		the management of *inter alia* water, land use, natural resources and pastures.
5.	Capacity constraints of local institutions may limit the ability to undertake the interventions implementation.	Medium	• Human resource capacity will be developed in all targeted regions and villages. • Collaboration and exchange between local institutions and regional/international research institutes will be initiated. • An Integrated Catchment Management Specialist will work closely with the Programme Manager to ensure timely delivery of project outputs.
6.	Priority interventions implemented are not found to be cost-effective.	Low	• Cost-effectiveness is a core principle in the implementation of adaptation measures. Detailed information will be recorded regarding cost-effectiveness. This will be disseminated through the knowledge centres supported by the project and will be of use to future adaptation initiatives for the Kofirnighan River Basin and Tajikistan as a whole. • Interventions to be selected for the EbA shortlist will be chosen based on their previous success and results in the country.
7.	Lack of commitment/buy-in from local communities may result in failure of intervention sites.	Medium	• A stakeholder engagement plan will be developed during the inception phase. • Community stakeholders will continue to be consulted with throughout the project inception and implementation phase.
8.	Current and predicted climate variability and/or extreme climate events result in poor results for EbA interventions.	Medium	• Current and predicted climatic variability has been taken into account in project design. Throughout the inception and implementation phase, any changes in the climate will be considered in planning for the implementation of EbA activities. • Drought- and flood-resilient species will be used, as well as indigenous species wherever possible. • Techniques to assist plant growth particularly in the seedling/sapling phases and to reduce risk of damage from extreme climate events will be used. • Species will be planted in appropriate seasons to reduce risk of hazard impact. • Ensuring diversity in selected seeds and crops will reduce this risk.
9.	Trees and other species planted by the project are cut down by the communities for fuelwood.	Medium	• Community involvement and awareness raising will be undertaken to avoid this risk. • Species chosen for planting will be beneficial as fruiting trees rather than as fuelwood.

C. Environmental and social risk management

As outlined in Part II: K on the environmental and social principles included in project design, the proposed project activities are unlikely to result in significant negative social and environmental impacts. Most impacts are likely to occur during the construction phase of EbA interventions. These impacts are likely to be minor and without long-term adverse effects.

Despite the positive impacts that project activities will bring into effect for communities and ecosystems within the KRB, some environmental and social risks could be triggered according to the AF E&S and the UNDP SESP. An evaluation of the project against each of the AF principles was conducted in preparation of the SESP Report and is illustrated in Table 13 under Part II: K[331].

The SESP Report will serve to guide all aspects of project implementation. It will be the responsibility of the PSC to ensure that the appropriate risk mitigation measures are implemented during project implementation. Based on the results of the SESP, risk mitigation strategies for the

[331] Part II: K includes a checklist for environmental and social principles for project design.

relevant AF E&S Principles have been developed. These are detailed below. For details on the grievance mechanism outlined for the project, refer to Annex 4.

Principle 1. Compliance with the Law.
During the development of the Full Proposal, all relevant stakeholders were consulted to ensure that the all legal requirements were met. The project is therefore well-aligned and complies with national and sub-national policies, laws, plans and priorities for sustainable development and climate change adaptation in the KRB. See Part II: D and E for a full description of this alignment and compliance.

Principle 2. Access and Equity.
To ensure full implementation and adherence to this principle, project activities are designed to provide equal and accessible benefits to communities in the most vulnerable areas of the KRB. The identification of vulnerable districts was done through a fair and transparent process using the ongoing studies and assessments being conducted across the country as well as in the KRB.

During the implementation of EbA interventions under Component 2, local government authorities at each selected site will ensure that all project activities will not reduce or prevent communities from accessing basic rights. These rights include health services, clean water and sanitation, energy, education, housing, safe and decent working conditions and land rights. All community institutions and individuals will be sensitised towards the approach of prioritising support to most vulnerable communities while ensuring benefits reach further communities. This will mitigate any inter-community conflicts that might arise as a result of focusing on the most vulnerable villages.

Principle 3. Marginalised and Vulnerable Groups.
To avoid social exclusion of marginalised communities, orientation/sensitisation will be conducted at both the *jamoat* and village level to ensure equal participation within project activities. Additional social impacts that may be realised will therefore not unjustly impact on marginalised and vulnerable groups.

However, a small risk remains that vulnerable and marginalised groups will have insufficient access to project activities, particularly the climate-smart agricultural techniques and EbA interventions under Component 2.

Principle 4. Human Rights.
Project preparation and implementation phases will follow a human-rights based approach. No activities are included in project design that are not in line with established international human rights. Moreover, the project will promote the basic human rights of access to food, water and information.

The project seeks to ensure that benefits of all activities are shared broadly in a non-discriminatory, equitable manner through participatory processes and transparent selection criteria. Extensive stakeholder consultations were held during project preparation[332]. These consultations will continue throughout project implementation. Potential project-related concerns and/or grievances of local communities will be addressed through a grievance mechanism[333].

Principle 5. Gender Equality and Women's Empowerment.

[332] See Annex 1 for a consolidated mission and stakeholder consultation report.
[333] See Annex 5 which details the grievance mechanism outlined for the project.

The project recognises the importance of gender equality, particularly equal rights, responsibilities, opportunities and access of women and youth in the climate change adaptation. Project activities include 50% proportionate gender consideration in all project interventions, with a specific focus on on-the-ground activities under Component 2. Therefore, the project is designed to promote gender equity.

Gender equality and women empowerment civil society organisations will be involved to support the project. This will ensure adherence of all project activities to the gender equality and women empowerment. Despite the inclusion of gender considerations in the design of the project, there remains the low risk that project interventions will not benefit men and women equally.

Principle 6. Core Labour Rights.
The Government of Tajikistan (GoT) has ratified the eight core International Labour Organisation (ILO) Conventions. National and regional stakeholders were involved during the design stage of the project to ensure core labour rights have been respected and considered during the design stage. Compliance with all labour rights will be ensured in all project activities through the involvement of labour officers in target villages.

Component 2 will involve labour for the implementation of EbA interventions, where community members will provide the labour. All of the labour involved will be on daily wages where the wages will be determined according to tasks. Wage rate will be calculated on the basis of prevailing minimum wage rate for the assigned task. The record of work done for labour engaged will have to be maintained and the wages paid accordingly. Hours of work and the timing of the hours will be determined in consultation with the labour provided and the prevailing practices in the area.

Positive discrimination in favour of women may be used to provide fair and equal opportunity to women to seek employment as labour. All forms of negative discrimination in respect of employment and occupation will be eliminated. The project will not engage in child labour in any of its activities or interventions. All forms of forced or compulsory labour will be eliminated.

Under Component 2, local community members may be exposed to the risk of accidents while implementing EbA interventions. In addition, there is a low risk of child labour outside the limits of the law.

Principle 7. Indigenous Peoples.
There risks of inequitable access of indigenous peoples to the project's resources are not foreseen at this stage of project proposal. Project activities have been designed in accordance with the rights and responsibilities set forth in the UN Declaration on the Rights of Indigenous Peoples. In addition, activities are aligned with all other applicable national and international instruments relating to indigenous people in Tajikistan.

Principle 8. Involuntary Resettlement.
The project design does not include voluntary or involuntary resettlement.

Principle 9. Protection of Natural Habitats.
By implementing EbA activities, the project promotes the improved management of natural landscapes. The project is therefore likely to result in the improved protection of natural habitats rather than having any negative effect. Moreover, the project will consult and involve responsible officers and community representatives at district and village level to ensure this principle is adhered.

Despite this focus on improving ecosystem goods and services, there is a low risk that the construction of EbA interventions could result in the destruction of small areas of natural habitat.

Principle 10. Conservation of Biological Diversity.
By implementing EbA activities, the project promotes the improved management of natural habitats. Therefore, the project is likely to result in the improved protection of natural habitats and biodiversity.

Despite this focus on improving ecosystem goods and services, there is a low risk that the construction of EbA interventions could result in negative impacts on biodiversity.

Principle 11. Climate Change.
The project will contribute to climate change adaptation efforts in Tajikistan. Through Component 2, the project is designed to improve the delivery of climate information to all government-level decision-makers. Through this improved delivery of information and the enhanced governance coordination included under Component 1, the project addresses climate change adaptation planning.

The project is designed to: i) transfer technology to promote climate change adaptation to local communities to reduce their vulnerability to climate change; and ii) promote the development of innovative, community-based projects to increase resilience to climate change. Therefore, the project will enhance the local-level capacity of local communities to adapt to climate change. The project's climate change interventions focus on EbA activities and none of these interventions are likely to result in an increase in greenhouse gas emissions.

Principle 12. Pollution prevention and Resource Efficiency.
The project will not require (during or after implementation) significant amounts of water, energy, materials or other natural resources. It is also highly unlikely that project activities will result in the production of significant quantities of wastes, especially of hazardous or toxic wastes. The project will not produce significant volumes of effluents or air pollutants, including greenhouse gases. All applicable international standards will be met for maximising material resource use and minimising the production of wastes and the release of pollutants.

Principle 13. Public Health.
None of the project activities are envisioned to impact negatively on public health. Instead, the project will have positive impacts on health. In particular, through activities in Component 2, reduced nutrient runoff into KRB rivers and its tributaries will increase water quality and improve public health.

Principle 14. Physical and Cultural Heritage.
The EbA interventions to be implemented by the project are relatively small-scale and unlikely to result in the alteration, damage or removal of any physical or cultural heritage.

Principle 15. Lands and Soil Conservation.
The project will promote the conservation of soil and land resources. Specifically, through the implementation of EbA activities in Component 2 – including agroforestry – soil stability will be increased, the runoff of nutrients from topsoil will be reduced, and the fertility of soil at target sites will be increased.

Table 16. Potential impacts, risks and mitigation measures for environmental and social risk management for the project.

Checklist of Environmental and Social Principles	Potential impacts and risks	Mitigation measures
Compliance with the Law	N/A	Project activities will be undertaken in full compliance with the domestic laws of Tajikistan, as well as with all relevant international laws.
Access and Equity	Project activities could restrict availability and/or quality of, and access to, resources or basic services. Particularly for marginalised individuals or groups.	To address the potential limitations regarding gaining access to pasture lands and forests, activities under the project will promote alternative business solutions and community enterprise developments that will help communities to generate alternative incomes. The project will also address the need to reduce extensive livestock grazing through: i) enhanced fodder production techniques (within exclusion zones, rotational grazing, on-site production and demonstration plots); ii) productive on-site animal husbandry; and iii) the establishment of watering sites at mid-stream levels of watershed areas (saving livestock energy in search of water sources in the upstream). There will be widespread engagement with relevant stakeholders at regional, sub-regional and community levels to agree on rotational routes for the transit of larger herds. Such engagement will also facilitate monitoring of grazing control measures applied locally by large herd owners from other communities, districts and/or regions. *Jamoat*-level monitoring and control mechanisms will be introduced to enforce agreed-upon measures for the mitigation of land degradation and to improve vegetation growth in target pasture lands, as well as to ensure that target communities effectively benefit from project interventions. Energy-efficient stoves will also be introduced into target communities to compensate for the limited access to forest resources for energy. Best practices and lessons learned from similar past projects in Tajikistan will be adapted and applied to the Kofirnighan River Basin (KRB) context. The project will also support the implementation of long-term financing of an integrated catchment management strategy through Payment for Ecosystem Services (PES) models that will be developed for each target district. These models will further enable communities to access the finance required to undertake initiatives that strengthen and increase access to ecosystem services, as well as build climate resilience within each target district. The PES models will be designed based on a combination of regional, international and local best practices. PES model design will also be informed by the results of existing PES models used in Tajikistan.
Marginalised and Vulnerable Groups	Marginalised groups could potentially be excluded from fully participating in decisions that may affect them.	Marginalised groups in the KRB include those: i) living in areas exposed to increasing impacts of climate change; ii) food-insecure households; and iii) households with limited or no productive assets, livestock and/or agricultural land plots. Single female-headed households, and those with small children and/or elderly members may also be considered vulnerable. Such vulnerable groups have a limited ability to participate during critical stages of project design and implementation. During project inception phase, a vulnerability assessment of target communities will be carried out in a participatory manner, through focused consultations. Where feasible, vulnerable and marginalised

		groups will be prioritised for adaptation interventions. The Stakeholder Engagement Plan will guide consultations during preparation phases, ensuring the broad representation of relevant community-based organisations and groups. These organisations and groups include farming associations and cooperatives, women's committees, intervention-related initiative groups, pasture development associations, Water User Associations (WUAs), forestry cooperatives and communal health promoters. Throughout the project, the extent of involvement of vulnerable and marginalised people within such groups and associations will be monitored and assessed. Targeted actions that may be prioritised for vulnerable groups may include on-farm adaptation interventions, household plots, improved productivity measures and the selection of demonstration plots with support from farmer field schools (FFSs). Certain enterprise developments and income-generating activities (such as beekeeping, fodder production and livestock productivity support) may also be suitable for the given groups to ensure that benefits are distributed inclusively and in an equitable manner.
Human Rights	N/A	Project activities will adhere to and, where applicable, promote international human rights. The project will directly benefit an estimated 46,000 individuals who are especially vulnerable to the impacts of climate change, through the design and implementation of on-the-ground EbA interventions for more efficient natural resources management. These measures will also provide social and economic benefits to the target population in terms of livelihoods, health and wellbeing. In particular, the project's interventions will: i) increase profit margins and income from farming activities; ii) reduce crop losses as a result of slope instability, drought and dry spells, ineffective agricultural practices and overgrazing of livestock; iii) reduce agricultural inputs and water consumption; iv) reduce the risk of economic failure by diversifying on- and off-farm production; v) reduce the susceptibility of crops to pests; vi) increase food security; vii) increase availability of fuelwood and timber; and viii) increase pasture productivity and fodder production. In addition, project interventions will increase non-material benefits such as ecosystem services, tourism, recreation and the conservation value of the natural Tajikistan landscape. Throughout the implementation period, the project will seek to ensure that benefits are shared broadly, and in a non-discriminatory and equitable manner. The project will ensure that all relevant stakeholders participate in decision-making processes and consultations, and that such participatory processes are transparent. Necessary strategies, action plans, site selection criteria and lessons learned will be documented and shared regularly through community-driven consultation platforms facilitated by those implementing the project.
Gender Equity and Women's Empowerment	Women may not be adequately represented with regard to decision-making or participation in the design and implementation of the project activities. As a result, women may have limited access to resources, opportunities and benefits.	Tajikistan has a relatively large Gender Inequality Index rating of 0.36, with women's labour force participation representing ~59% of the female population, as opposed to men participation representing ~77% of the male population in the country. In rural Tajikistan, the relatively larger rates of labour migration among men typically leave women with large workloads, including formal employment to earn income, household and care responsibilities, and growing of food for household consumption. Project interventions will therefore ensure that women are actively included in stakeholder participation and take part in all decision-making processes. This will ensure that benefits are distributed equitably and fairly among men and women in target zones. In particular, project activities will be designed and implemented so that all genders are: i) able to participate fully and equitably; ii) receive comparable social and economic benefits; and iii) do not suffer disproportionate adverse effects as per the UNDP Gender Mainstreaming Strategy.

		A gender analysis will be undertaken in the initial phase of the project to develop recommendations on how project activities will promote women's equality and empowerment, including participation in decision-making processes, as outlined in the ESMF. It is anticipated that at least 50% of project beneficiaries will be women. Appropriate measures will ensure that women receive an equitable share of benefits and that their status and interests are not marginalised. Participatory processes will include methodologies that enhance the participation of women and promote the inclusion of their views into the activities of the project. Monitoring of project outputs will include disaggregated and measurable data related to gender equality and empowerment of women. Furthermore, measures and techniques that contribute to closing the inequality gap between men and women will be promoted, where possible.
Core Labour Rights	N/A	Project activities will adhere to the core labour standards of Tajikistan, as well as those identified by the International Labour Organisation.
Indigenous Peoples	N/A	Project activities will be designed in accordance with the rights and responsibilities set forth in the UN Declaration on the Rights of Indigenous Peoples, as well as with all other applicable national and international instruments relating to indigenous people.
Involuntary Resettlement	N/A	Project activities will not lead to any involuntary resettlement of local communities.
Protection of Natural Habitats	N/A	Project activities will not involve any conversion or degradation of critical natural habitats, including those that are: i) legally protected; ii) officially proposed for protection; iii) recognised by authoritative sources to be of high conservation value; and iv) recognised as protected by traditional or indigenous local communities.
Conservation of Biological Diversity	There is a risk that alien and/or invasive alien species are used in reforestation activities.	The project's activities will promote the rehabilitation/restoration of abandoned and overexploited forests and degraded forest ecosystems, as well as reforestation of areas adversely affected by extreme climate events. The use of native and climate-resilient varieties will be promoted, but alien species may be introduced if necessary. Certain alien species may be used for complementary planting (climate-resilient crops seed varieties) in areas being reforested to increase biological biodiversity and enhance climate resilience. Prior to such introduction, relevant experts at the Committee for Environmental Protection (CEP) and among development partner agencies will be consulted on successful examples across the regions. National environmental norms, standards and procedures for the introduction of alien species will be followed in each case.
Climate Change	N/A	Project activities will not result in a significant increase in GHG emissions or any other drivers of climate change. In contrast, project interventions directly support the implementation of climate change adaptation and mitigation measures, including climate-smart agriculture and sustainable land management in agro-ecological landscapes. Such interventions include: i) the rehabilitation and restoration of degraded forest ecosystems; ii) vegetation growth support; iii) water retention measures; and iv) climate-resilient crop seed planting. All of these interventions prevent and mitigate water-related extreme climate events that have typically threatened the livelihoods and health of target communities.
Pollution Prevention and Resource Efficiency	The application of pesticides may have a negative effect on the environment or on human health.	Local communities will be supported to adopt improved farming techniques, including organic agriculture, and soil and water conservation. These techniques would reduce the use of fertilisers and harmful pesticides. Although biological pest control is preferred, pesticides may be needed for specific use. In this case, they will be properly managed and stored, following national and international standards, regulations and procedures.

		Project activities will be designed and implemented in a way that meets applicable international standards for maximising energy efficiency while minimising material resource use, waste production and the release of pollutants. Interventions included in project design are not expected to produce any significant amounts of waste or other pollutants. Any potential opportunities identified for improved resource efficiency and pollution reduction during the project development phase will be captured in the project design.
Public Health	Small-scale construction activities under the proposed project may pose safety risks to community members implementing them.	All construction activities will follow the relevant environmental impact assessment procedures and will ensure compliance with: i) national construction standards and norms; ii) sanitary norms and regulations; and iii) all relevant national laws and regulations related to forestry, water, environment, and health. Activities will also follow technical guidance and best practices regarding rainwater-harvesting systems, drip-irrigation techniques, and micro-reservoirs. Other project activities may include the construction of gabions, terracing, bank enforcement and small dams. Best practices and lessons learned from other previous and ongoing projects in Tajikistan will be used to address community safety risks from such construction.
Physical and Cultural Heritage	During project implementation, there is a risk that physical or cultural heritage sites are disturbed.	Project activities will be designed and implemented in a way that avoids the alteration, damage or removal of any physical cultural resources and sites, as well as any sites recognised as having unique value at the community, national or international level. Regional experts will be consulted to ensure compliance with national heritage legislation and that project design adheres to best-practice guidelines.
Lands and Soil Conservation	N/A	Activities under the project will promote soil conservation, while avoiding the degradation and conversion of productive land or land that provides valuable ecosystem services. Specifically, through the implementation of EbA measures under Component 2, soil stability will be increased, runoff of nutrients from topsoil will be reduced and soil horizons at project sites with sheet and/or gulley erosion will be restored.

D. Monitoring and evaluation

Monitoring and evaluation (M&E) will be applied in accordance with the established UNDP procedures throughout the project lifetime and will be developed in detail in the Full Proposal. The executing entity, together with the UNDP Country Office, will ensure the timeliness and quality delivery of the project implementation.

Audit: The project will be audited according to UNDP Financial Regulations and Rules and applicable audit policies on NIM implemented projects.

Project start
A project Inception Workshop (IW) will be held within the first three months of the project start date with those stakeholders with assigned roles in the project management, namely representatives from the Adaptation Fund (AF), UNDP Country Office and other stakeholders where appropriate. The IW is crucial to building ownership for the project results and to plan the first-year annual work plan (AWP).

Mid-term Review
The project will undergo an independent Midterm Review (MTR) at the mid-point of implementation. The evaluation will focus on the effectiveness, efficiency and timeliness of the implementation of project activities. Furthermore, the MTR will highlight issues requiring decisions and actions and will present initial lessons learned about project design, implementation and management.

Project closure
An independent Final Evaluation will be undertaken three months prior to the final PSC meeting. The final evaluation will focus on the delivery of the project's results as initially planned and as corrected after the MTR.

Monitoring procedure

UNDP Tajikistan and CEP will be responsible for monitoring and evaluation (M&E) of the proposed project and for project output monitoring in line with the M&E policies and procedures. The M&E system will be governed by the following outlined principles.

- **Accountability**: ability of UNDP to be answerable to donors and to the beneficiaries through availability of specific, timely and relevant data.
- **Evidence-base**: readily available information to support the development of more appropriate and improved programmes in future.
- **Learning**: use of simplified and frequent reporting to support reflection, learning and sharing of good practices and solutions.
- **Transparency**: sharing of information with all of UNDP's stakeholders, including strategies, plans, budgets and reports to promote openness.

The project management team will produce the following deliverables for M&E throughout project implementation.

- An Issue Log shall be activated in ATLAS and updated by the PM to facilitate tracking and resolution of potential problems or requests for change.

- Based on the initial risk analysis submitted (see Annex 4[334]), a risk log shall be activated in ATLAS and regularly updated by reviewing the external environment that may affect project implementation.
- Based on information recorded in ATLAS, a Project Progress Report (PPR) shall be submitted by the PM to the PSC, using the standard report format.
- A project lesson learned log shall be activated and regularly updated to ensure ongoing learning and adaptation within the organisation, and to facilitate the preparation of the lessons learned report at the end of the project.
- A Monitoring Schedule Plan shall be activated in ATLAS and updated to track key management actions and events.
- **Annual Review Report**. An Annual Review Report shall be prepared by the Project Manager and shared with the PSC. As a minimum requirement, the Annual Review Report shall consist of the Atlas standard format for the PR covering the whole year with updated information for each above element of the PR as well as a summary of results achieved against pre-defined annual targets at the output level.
- **Annual Project Review**. Based on the above report, an annual project review shall be conducted during the fourth quarter of the year or soon after, to assess the performance of the project and appraise the Annual Work Plan (AWP) for the following year. In the last year, this review will be a final assessment. This review is driven by the PSC and may involve other stakeholders as required. It shall focus on the extent to which progress is being made towards outputs, and that these remain aligned to appropriate outcomes.

Together with UNDP, the PSC will carry out two independent external evaluations as follows.

- **Mid-Term Evaluation (MTE)**. The MTE will be carried out in the 6th quarter of the programme implementation and will be independent and external. The evaluation will engage all programme stakeholders and will assess the extent to which progress is being made towards the outputs and their alignment with outcomes. The evaluation may propose mid-course corrective measures and may reassess the objectives and revise implementation strategy.
- **Terminal Review (TR)**. The TR will be conducted at the conclusion of the programme. UNDP will commission a full external evaluation assessing the accomplishment of objectives.

Table 17 and 18 outlined the monitoring and evaluation plan, respectively. These outlines include the purpose of each M&E activity and the respective complementary actions.

Table 17. Monitoring plan for the proposed project including frequency and expected action(s).

Monitoring activity	Purpose	Frequency	Expected action(s)
Track results progress	Progress data against the results indicators in the RRF will be collected and analysed to assess the progress of the project in achieving the agreed outputs.	Quarterly, or in the frequency required for each indicator.	Slower than expected progress will be addressed by project management.
Monitor and Manage Risk	Identify specific risks that may threaten achievement of intended results. Identify and monitor risk management actions using a risk log. This includes monitoring measures and plans that may have been required as per UNDP's Social and Environmental Standards. Audits will be conducted in accordance with UNDP's audit policy to manage financial risk.	Quarterly	Risks are identified by project management and actions are taken to manage risk. The risk log is actively maintained to keep track of identified risks and actions taken.

[334] Annex 4 includes the detailed Environmental and Social Management Framework (ESMF) for the project.

Monitoring activity	Purpose	Frequency	Expected action(s)
Learn	Knowledge, good practices and lessons will be captured regularly, as well as actively sourced from other projects and partners and integrated back into the project.	At least annually	Relevant lessons are captured by the project team and used to inform management decisions.
Annual Project Quality Assurance	The quality of the project will be assessed against UNDP's quality standards to identify project strengths and weaknesses and to inform management decision making to improve the project.	Annually	Areas of strength and weakness will be reviewed by project management and used to inform decisions to improve project performance.
Review and Make Course Corrections	Internal review of data and evidence from all monitoring actions to inform decision making.	At least annually	Performance data, risks, lessons and quality will be discussed by the PSC and used to make course corrections.
Project Report	A progress report will be presented to the PSC and key stakeholders, consisting of progress data showing the results achieved against pre-defined annual targets at the output level, the annual project quality rating summary, an updated risk long with mitigation measures, and any evaluation or review reports prepared over the period.	Semi-annually, and at the end of the project (final report)	
Project Review/ Project Steering Committee (PSC)	The project's governance mechanism (i.e., the PSC) will hold regular project reviews to assess the performance of the project and review the Multi-Year Work Plan to ensure realistic budgeting over the life of the project. In the project's final year, the PSC shall hold an end-of project review to capture lessons learned and discuss opportunities for scaling up and to socialize project results and lessons learned with relevant audiences.	Semi-annually	Any quality concerns or slower than expected progress should be discussed by the PSC and management actions agreed to address the issues identified.

Table 18. Evaluation plan for the proposed project including stakeholders and planned date of completion.

Evaluation activity	Planned completion date	Stakeholders
Mid-term Review (MTR)	August 2022	CEP; MEWR
Terminal Review (TR)	March 2023	CEP; MEWR

The respective costs for M&E are outlined in Table 19 according to the type of M&E activity.

Table 19. Monitoring and evaluation costs of the proposed project.

Type of M&E activity	Responsible parties	Budget (147,160 US$)	Timeframe
Direct Project Monitoring and Quality Assurance including progress and financial reporting, project revisions, technical assistance and risk management	• Project Manager • Project team • UNDP • External consultants – i.e. evaluation team	(supported from staff costs included in Project execution, and from MIE fee)	Quarterly, half-yearly and annually, as needed
Evaluations (Mid-term Evaluation and Terminal Review)	• Project Manager • Project team • UNDP	56,000	At midpoint and at end of project implementation
Audit	• Project Manager • Project team • UNDP	5,000	Annually, at year end

Type of M&E activity	Responsible parties	Budget (147,160 US$)	Timeframe
Inception meeting, field visits and steering committee meetings	• Project Manager • Project team • UNDP	86,160	Inception meeting within first two months and bi-annual PSC meetings (and sub-committee meetings)
TOTAL indicative cost		**147,160**	

Note: Above costs do not cover UNDP staff time. All UNDP staff costs associated with M&E are covered by the MIE Fee.

E. Results framework

Table 20. Results framework for the proposed project outlining the indicators, targets, assumptions and sources of verification of the outcomes and outputs against the baseline.

Expected outcome/ outputs	Outcome/ output indicator	Baseline	Target	Sources of verification	Assumptions
Outcome 1. Catchment management strategy to manage climate risks operationalised at *raion* (district) and *jamoat* (sub-district) levels in Kofirnighan River Basin (KRB).	Number of staff trained to respond to impacts of climate-related events (gender disaggregated).	0	By the end of the project, at least 30 staff (of which at least 30% are women) trained on integrated catchment management. By the end of the project, at least 100 staff (of which at least 30% are women) trained on integrated catchment management.	• Attendance registers from training workshops • Workshop reports • Interviews with selected staff members of relevant ministries	Training workshops provide staff with the capacity to integrate climate resilience into integrated catchment management.
Output 1.1. Multi-hazard climate risk models (MHCRMs) developed for target watersheds in the KRB.	Number of risk models developed.	0	Gap analysis conducted for KRB that details climate risks for all watersheds. By the end of the project, at least one MHCRM developed for each watershed in the KRB (and each target district).	• Gap analysis • MHCRMs that detail climate risks for each watershed and target district • Results of studies including data and GIS information	Gap analysis and MHCRMs will inform the selection of vulnerable sites in the target districts as well as the identification of appropriate EbA interventions.
Output 1.2. Providing support for establishing automated weather stations in KRB sub-catchments to provide data for refining the multi-hazard climate models [developed under Output 1.1].	Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis.	Currently, weather stations do not provide up-to-date and relevant information in a timely manner to inform climate risks. There is limited delivery of climate information to local communities.	Policy- and decision-makers in KRB receive forecasts from Hydromet. By the end of the project, policy- and decision-makers in KRB receive forecasts and downscaled national climate information every quarter from Hydromet. By the end of the project, local communities in the project interventions sites receive tailored climate information packages.	• Climate information packages • Interviews with government and local communities	Existing climate information producers are committed to participating in the development and implementation of forecasts and area-specific advisories.

Expected outcome/ outputs	Outcome/ output indicator	Baseline	Target	Sources of verification	Assumptions
Output 1.3. Integrated catchment management strategy developed for the KRB.	Integrated catchment management strategy developed. Number of staff trained (gender disaggregated). Number of community members trained (gender disaggregated).	0	By year 3 of the project, at least 30 staff (of which at least 30% are women) trained on integrated catchment management across all target departments. By the end of the project, at least 100 staff (of which at least 30% are women) trained on integrated catchment management across all target departments. At least 100 community members in each district (of which 30% are women) trained on identification of suitable EbA interventions (600 people in total).	• Project reports • Monitoring and evaluation reports per intervention site • Reports on community consultations, trainings and surveys • Reports on site/field visits	Training workshops provide staff with the capacity to integrate climate resilience into integrated catchment management. All communities surrounding project intervention sites are committed to participating in project activities, taking up/adopting climate resilient techniques and practices and providing training to other officers/community members.
Output 1.4. Strengthened coordination and training mechanisms for integrated climate-resilient catchment management.	Number of interactions between relevant stakeholders	0	By the end of the project, at least 2 meetings are held per year between different government sectors, RBOs, district authorities etc.	• Meeting reports • Monitoring and evaluation reports • Annual workplans • Meeting minutes and reports	Institutions, government ministries and agencies are committed to participating in and addressing climate risks, with integrated catchment management central to the adaptation pathway for KRB.
Output 1.5. Payment for Ecosystem Services (PES) models to support the long-term financing of integrated catchment management strategy implementation.	Number of PES models developed for the KRB	0	By the end of the project, at least 1 PES model developed and at least one policy brief submitted to government detailing the model.	• Policy brief on PES model • Meeting reports • Monitoring and evaluation reports	Institutions, government ministries and agencies are committed to participating in and addressing climate risks, with integrated catchment management central to the adaptation pathway for KRB.

Expected outcome/ outputs	Outcome/ output indicator	Baseline	Target	Sources of verification	Assumptions
Outcome 2. An integrated approach to building climate resilience of agro-ecological landscapes operationalised at a village level.	Number of people practising climate change adaptation technologies (gender disaggregated). Total number of men and women benefitting from reduced vulnerability to climate change	0	At least 600 people (100 per district), of which at least 30% will be women, are implementing EbA interventions for climate risk management. At least 46,000 people in ~100 villages across 6 districts benefitting from reduced vulnerability to climate change	• Registers of project beneficiaries at each site • Site visits • Community surveys.	Community members continue to practice adaptation technologies once they have been trained and provided with the necessary equipment.
Output 2.1. Agro-ecological extension services supported at the *jamoat* level to provide technical support for EbA implementation.	Number of extension service providers trained.	0	At least 1 private extension service provider in each target KRB district supported	• Annual workplans • Workshop reports • Monitoring and evaluation reports	All communities surrounding project intervention sites are committed to participating in project activities, taking up/adopting climate-resilient EbA techniques and practices and providing training to other community members.
Output 2.2. Watershed Action Plans (WAPs) developed that promote climate resilience and enhance economic productivity for target communities.	Number of WAPs developed.	0	By the end of the project, at least 1 WAP developed in each of the 14 target *jamoats*.	• Annual workplans developed for the WAPs • Monitoring and evaluation reports	None of the *jamoats* have overlapping watersheds in the project area.
	Number of hectares of land with EbA activities implemented at project sites in each district	0	At least 250 ha of land in each district undergoing EbA implementation (1,500 ha in total).	• Monitoring and evaluation reports per intervention site • Reports on community consultations/trainings and field visits • GIS	All communities surrounding project intervention sites are committed to participating in project activities and taking up/adopting climate-resilient techniques and practices.

Expected outcome/ outputs	Outcome/ output indicator	Baseline	Target	Sources of verification	Assumptions
Outcome 3. Existing knowledge management platforms supported for integrated catchment management and EbA.	Knowledge management centre strengthened through the support of project activities	0	By the end of the project at least 1 knowledge centre has been strengthened.	• Reports and training materials • Monitoring and evaluation reports	Strengthening existing knowledge management centres promotes local knowledge sharing and raises awareness among communities.
Output 3.1. Existing knowledge management platforms supported for collating information on the planning, implementation and financing of EbA interventions.	Existing knowledge centre/ platforms/ hubs in Tajikistan are supported and include information and data on KRB and specifically climate risk information.	Climate change research is not coordinated within the KRB and across Tajikistan. Knowledge generated through projects is not collated, shared or disseminated.	By the end of the project at least 1 knowledge centre has been strengthened.	• Meeting/workshop reports • Minutes from forum meetings	All representatives involved in the knowledge centres (public institutions, NGOs and resource users etc.) are dedicated to developing, adopting and implementing interdisciplinary approaches to climate resilient EbA techniques and practices for integrated catchment management in the KRB specifically.
Output 3.2. An impact evaluation framework (IEF) to enable effective adaptive management of EbA activities.	Evaluation of EbA interventions in target sites conducted.	Several projects have undertaken activities on climate change adaptation within Tajikistan. However, none of these activities have been evaluated according to their impacts for communities.	By the end of the project, an IEF will be developed that details the process of evaluating the impact of implemented EbA measures on communities.	• Site visits • Data collection • Community consultation • Data analysis of EbA impacts	Community members will be more aware of EbA interventions in and surrounding their communities. By conducting the IEF, awareness on the benefits of EbA interventions will be raised.

F. Alignment with Adaptation Fund Results Framework

Proposed project alignment with the Adaptation Fund Results Framework is detailed in Table 21.

Table 21. Project alignment with the Adaptation Fund Results Framework including Outcome and Output Indicators.

Project Objective(s)[335]	**Project Objective Indicator**(s)	**Fund Outcome**	**Fund Outcome Indicator**	**Grant Amount** (US$)
Reduce vulnerability and enhance climate-resilience of small-scale farmers and pastoralists in Tajikistan to respond to the impacts of climate change.	Total number of men and women benefitting from reduced vulnerability to climate change Percentage population of the KRB benefitting from project interventions. Expected: ~5%	**Outcome 2.** Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	**2.1.** No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks **2.2.** Number of people with reduced risk to extreme weather events	**9,996,441**
		Outcome 3. Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	**3.2.** Modification of behaviour in targeted population	
		Outcome 5. Increased ecosystem resilience in response to climate change and variability-induced stress	**5.** Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress	
		Outcome 6. Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	**6.1.** Percentage of households and communities having more secure (increased) access to livelihood assets **6.2.** Percentage of targeted population with sustained climate-resilient livelihoods	

[335] The AF utilised OECD/DAC terminology for its results framework. Project proponents may use different terminology, but the overall principle should still apply.

Project Outcome(s)	**Project Outcome Indicator**(s)	**Fund Output**	**Fund Output Indicator**	**Grant Amount** (US$)
Outcome 1. Catchment management strategy to manage climate risks operationalised at *raion* (district) and *jamoat* (sub-district) levels in Kofirnighan River Basin (KRB).	Number of staff trained to respond to impacts of climate-related events (gender disaggregated)	**Output 2.2.** Targeted population groups covered by adequate risk reduction systems	**2.1.2.** Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased **2.2.1.** Percentage of population covered by adequate risk reduction systems	**1,012,000**
Outcome 2. An integrated approach to building climate resilience of agro-ecological landscapes operationalised at a village level.	Number of people practising climate change adaptation technologies (gender disaggregated). Number of hectares of land with EbA activities implemented at project sites in each district	**Output 5.** Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability	**5.1.** No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	**7,282,810**
		Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	**6.1.1.** No. and type of adaptation assets (physical as well as knowledge) created in support of individual or community-livelihood strategies	
Outcome 3. Existing knowledge management platforms supported for integrated catchment management and EbA.	Knowledge management centre strengthened through the support of project activities	**Output 3.** Targeted population groups participating in adaptation and risk reduction awareness activities	**3.1.1.** No. and type of risk reduction actions or strategies introduced at local level	**142,500**

Table 22. Adaptation Fund Core Indicators: i) number of beneficiaries; ii) increased income, or avoided decrease in income; and iii) natural assets protected or rehabilitated.

Adaptation Fund Core Impact Indicators	
Date of Report	3 September 2018
Project Title	An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan

Country	Tajikistan			
Implementing Agency	UNDP			
Project Duration	5 years			
Adaptation Fund Core Impact Indicator "Number of Beneficiaries"				
	Baseline *(absolute number)*	Target at project approval *(absolute number)*	Adjusted target first year of implementation *(absolute number)*	Actual at completion[336] *(absolute number)*
Direct beneficiaries supported by the project	**0**	**46,000**		
Female direct beneficiaries	0	25,000		
Youth direct beneficiaries	0	Unknown		
Indirect beneficiaries supported by the project	**0**	**828,000**		
Female indirect beneficiaries	0	409,612 [337,338]		
Youth indirect beneficiaries	0	Unknown		
Adaptation Fund Impact Indicator "Increased income, or avoided decrease in income"				
	Baseline	Target at project approval	Adjusted target first year of implementation	Actual at completion
Income Source[339] *(name)*	**Livestock, crops (fodder, food), fuelwood**	**Livestock, crops (fodder, food), fuelwood**		
Income Source				
Income level *(USD)*	unknown	unknown		
Number of households *(total number in the project area)* *(report for each project component)*	unknown	600 (component 2.0)		
Adaptation Fund Core Impact Indicator "Natural Assets Protected or Rehabilitated"				

[336] At project completion, the proponent could report on % targeted population reached or successfully supported (the absolute numbers could then be deduced from that figure).
[337] In 2016, 49.76% of Tajikistan's total population was female
[338] Trading Economics. Tajikistan - Population, female (% of total). Accessed 31 August 2018.
[339] When the numbers of livelihoods go through significant changes, such as when sources of income are diversified, it may be useful to illustrate the changes by primary livelihoods.

	Baseline	Target at project approval	Adjusted target first year of implementation	Actual at completion[340]
Natural Asset or Ecosystem *(type)*	Degraded ecosystems (forest, rangeland, river and drainage line)	Conserved or rehabilitated ecosystems (forest, rangeland, river and drainage line)		
Change in state *Ha or km Protected/rehabilitated, or Effectiveness of protection/rehabilitation - Scale (1-5)*	0 ha Scale 1 (not improved)	At least 1,500 ha Scale 3 (moderately improved)		
Total number of natural assets or ecosystems protected/rehabilitated	0 ha	At least 1,500 ha		

[340] At project completion, the proponent could report on % targeted population reached or successfully supported (the absolute numbers could then be deduced from that figure).

G. Budget

Award ID	00113350			Project ID	00111538						
Project Title	An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan										
Business Unit	TJK10										
PIMS No.	PIMS 6219										
Implementing Partner	Committee for Environmental Protection (CEP)										
Outcome/ Atlas Activity	**Responsible Party/ Implementing Agent**	**Fund ID**	**Donor Name**	**Atlas Budgetary Account Code**	**ATLAS Budget Description**	**Amount Year 1 (USD)**	**Amount Year 2 (USD)**	**Amount Year 3 (USD)**	**Amount Year 4 (USD)**	**Amount Year 5 (USD)**	**Total (USD)**	**Budget Notes**
Component 1. Integrated catchment management to build climate resilience.	UNDP/ CEP	62040	AF	71200	International consultant	83,500	69,000	-	-	-	152,500	1
				71300	Local consultant	81,000	74,000	30,000	-	-	185,000	2
				71600	Travel	10,000	10,000	10,000	10,000	-	40,000	3
				72100	Contractual Services-Companies	40,000	-	10,000	10,000	10,000	70,000	5
				72300	Materials & Goods	70,000	70,000	70,000	-	-	210,000	7
				72400	Audio Visual&Print Prod Costs	-	15,000	5,000	5,000	5,000	30,000	6
				74500	Miscellaneous Expenses	20,000	10,000	10,000	10,000	10,500	60,500	8
				75700	Training, Workshops and Confer	98,000	88,000	63,000	15,000	-	264,000	4
					Total Outcome 1	**402,500**	**336,000**	**198,000**	**50,000**	**25,500**	**1,012,000**	
Component 2. Ecosystem-	UNDP/ CEP			71300	Local consultant	-	100,000	-	-	-	100,000	2

based Adaptation, including Climate smart Agriculture and Sustainable Land Management, in agro-ecological landscapes.				71400	Contractual Services - Individ	36,000	36,000	36,000	36,000	36,000	180,000	10
				71600	Travel	15,000	15,000	15,000	14,000	15,000	74,000	3
				72100	Contractual Services-Companies	-	3,358,000	2,123,500	1,123,500	123,500	6,728,500	5
				74200	Audio Visual&Print Prod Costs	-	24,310	-	-	-	24,310	9
				75700	Training, Workshops and Confer	20,000	75,000	48,000	18,000	15,000	176,000	4
					Total Outcome 2	**71,000**	**3,608,310**	**2,222,500**	**1,191,500**	**189,500**	**7,282,810**	
Component 3. Knowledge management on building climate resilience through integrated catchment management and EbA in the KRB.	UNDP/ CEP	62040	AF	71200	International consultant	36,500	-	-	-	-	36,500	1
				71600	Travel	1,000	1,000	1,000	1,000	1,000	5,000	3
				72100	Contractual Services-Companies	20,000	20,000	12,000	19,000	20,000	91,000	5
				74500	Miscellaneous Expenses	10,000	-	-	-	-	10,000	8
					Total Outcome 3	**67,500**	**21,000**	**13,000**	**20,000**	**21,000**	**142,500**	
Project Execution Cost	**UNDP**	62040	**AF**	71400	Contractual Services - Individ	85,000	85,000	85,000	85,000	85,000	425,000	10
				71600	Travel	7,000	7,000	7,000	7,000	7,000	35,000	3
				72200	Equipment and Furniture	60,000	-	-	-	-	60,000	14
				72400	Communic & Audio Visual Equip	2,500	2,500	2,500	2,500	2,500	12,500	11
				73100	Rental & Maintenance-Premises	5,000	5,000	5,000	5,000	5,000	25,000	12
				73400	Rental & Maint of Other Equip	5,000	5,000	5,000	5,000	2,500	22,500	15

				74100	Professional Services	1,000	1,000	29,000	1,000	29,000	61,000	13
				74596	Direct project cost	17,000	36,000	43,000	26,000	10,000	132,000	16
				75700	Training, Workshops and Confer	3,000	-	-	-	-	3,000	4
					Total project execution cost	**185,500**	**141,500**	**176,500**	**131,500**	**141,000**	**776,000**	
Total Project Costs						**726,500**	**4,106,810**	**2,610,000**	**1,393,000**	**377,000**	**9,213,310**	

Budget note number	Budget Notes
1	International consultant (daily fee of US$650 * 50 days + US$4,000 air fare) for Multi-Hazard Climate Risk Modeling; International consultant (IT expert - daily fee of US$650 * 30 days + US$4,000 air fare) for collecting and collating data; International Consultant (Catchment management expert - daily fee of US650 for 100 days + US$4,000 air fare) on climate strategy; International Consultant (Training expert on integrated catchment management, daily fee of US$ 650 for 30 days + US$ 4,000 air fare) to develop a Training programme on integrated catchment management; International consultant (US$650 * 50 days + US$4,000 air fare) for development of an evaluation framework
2	National consultant to conduct gap analyses (US$200*125 days) National consultants to support development of Multi-Hazard Climate Risk Models (US$200*100 days) National consultants to support data collection and collation (US$200*50 days) National consultants to support trainings of local community members to receive advisories (US$200*150 days) National consultants to support the development of the climate strategy (2pers* US$200*100 days) National consultants to assist international consultants in conducting training programme on integrated catchment management and to continue training workshops in Year 2 (US$200*100 days) National Environmental Economist and National Policy Expert, for development of PES models (2 pers.*US$200*100 days) National Watershed Expert for participatory mapping (US$200 for 150 days) National Communications Expert for participatory mapping (US$200 for 150 days) National consultants on WAPs development (2pers.*US$200*100days)
3	Travel to target districts

4	Workshops (10 district-level workshops and 3 national-level workshops) on climate strategy; - $25,000 Training workshops (6 3-day workshops @US$5,000 per workshop) on integrated catchment management + training materials - $50,000; Training materials, trainings (assume US$10,000 for training materials, 2 trainings per year per jamoat at US$1,000 per training); - $94,000 Workshops for RBOs, RBCs, districts and jamoats. Assume 1 workshop in each district + 2 workshops in Dushanbe on strengthening the coordination systems - $50,000 Workshops for CEP and other relevant government staff on integrating EbA in catchment management - $20,000 Workshops at district and national level (12 district-level workshop, 3 national-level workshops) on PES model development - $55,000 Training for EbA and FFS service providers - $91,000 Community meetings (Meetings to be held across multiple villages; assume 3 meetings per jamoat, US$500 per meeting) on participatory mapping - $21,000 Workshop per jamoat on developing community monitoring plans - $20,000 + Inception workshop - $3,000 Training for Nursery staff - $14,000
5	Contractual Services for GIS multihazard climate risk data modeling for first year - $40,000. Contract for disseminating regular advisories via SMS - $30,000 Contactual services for civil works / Contract for knowledge management centre - database maintenance, knowledge dissemination - $91,000 EbA demonstration plots for villages – 100 villages, US$3,000 per plot to be established, plus US$200 for upkeep for each EbA plot per annum * 3 years - $360,000 14 nurseries, US$10,000 to establish each nursery and US$973.22 upkeep for each nursery per annum * 4 years - $194,500 Inputs for 100 villages to implement EbA - estimated US$58,140 per village - $5,814,000 Farmer field schools - 100 villages, assume US$900 per field school per annum - $360,000
6	Basic phones + airtime for 100 community representatives;
7	Materials and inputs for 3 AWS Stations (US$70,000 per station * 3 stations) - $210,000
8	Miscellaneous Expenses (including bank charges, insurance);
9	Printing of mapping materials ($2,310) + printing & miscellaneous ($10,000) + translation services ($12,000)
10	All project personnel fees (Project Manager, Administrative/Finance Assistant, Field staff (3 @ US7,000 p.a.) Programme Assistant, Project Analyst, Project Engineer)
11	Communication cost (internet, mobile and landline phones);
12	Office rent
13	Mid-term review of the project by team of consultants (28,000 USD); Final review of the project by team of consultants (28,000 USD); Audit Fees (5,000 USD)
14	Procurement of vehicle for visits to target districts for implementation of project activities;
15	All cost associated with vehicle running, like regular maintenance, etc.;
16	Expenditures for the services on HR, procurement, IT, security provided by CO.

H. Disbursement schedule

A disbursement schedule including budget distributed per year of project implementation is detailed in 22.

Table 22. Disbursement schedule including milestones.

	Upon agreement & signature (US$)	**After Year 1** (US$)	**After Year 2** (US$)	**After Year 3** (US$)	**After Year 4** (US$)	**Total disbursed** (over 5 years)
Scheduled date (tentative)	March 2020	March 2021	March 2022	March 2023	March 2024	
Project funds	541,000	3,965,310	2,433,500	1,261,500	236,000	8,437,310
Project Execution Fee	185,500	141,500	176,500	131,500	141,000	776,000
Implementing Entity fee (8.5%)	61,753	349,079	221,850	118,405	32,045	783,131
					Total	**9,996,441**

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[341]

A list of all endorsements for the project is provided in Table 22. See Annex 2 for all endorsement letters[342].

Table 23. List of endorsements provided for the proposed project.

Khayrullo Ibodzoda – Chairman of the Committee for the Environmental Protection (CEP) under the Government of the Republic of Tajikistan	Date*:* January, 19, 2018

B. Implementing Entity certification

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project contact person's name, telephone number and email address.

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project.	
 Director, Sustainable Development (Environment) a.i. Executive Coordinator, Global Environmental Finance Bureau for Policy and Programme Support United Nations Development Programme	
Date: October 3rd, *2018*	Tel. and e-mail:+1 (212) 906 5143
Project Contact Person: Ms. Keti Chachibaia	
Tel. And Email: keti.chachibaia@undp.org	

[341] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.
[342] Annex 2 includes endorsement letters from

LIST OF ANNEXURES

All annexures have been included as a separate attachment to the Full Proposal.

Annex 1. Consolidated mission and stakeholder consultation report
Annex 2. Endorsement letter
Annex 3. Justification for selection of the Kofirnighan River Basin
Annex 4. Environmental and Social Management Framework (ESMF)
Annex 5. Hydromet list of needs for the repair and rehabilitation of weather stations
Annex 6. UNDP Social and Environmental Screening Procedure (SESP)
Annex 7. Letter of Agreement between UNDP and Government for the provision of Support Services
Annex 8. UNDP Fees for Support to Adaptation Fund Project
Annex 9. Cost-benefit analyses of proposed community-level interventions
Annex 10. Workplan

End of Full Proposal

ADAPTATION FUND

ANNEXURES TO THE FULL PROPOSAL TITLED:

"An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan"

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Annex 6. UNDP Social and Environmental Screening Procedure (SESP)
Annex 7. Letter of Agreement between UNDP and Government for the provision of Support Services
Annex 8: UNDP Fees for Support to Adaptation Fund Project
Annex 9: Cost-benefit analysis of proposed community-level adaptation measures
Annex 10: Workplan

ANNEXURES TO THE FULL PROPOSAL

ANNEX 1. CONSOLIDATED STAKEHOLDER CONSULTATION AND MISSION REPORT

Stakeholder Consultation and Mission Report

Development of a Full Proposal to be submitted to Adaptation Fund by UNDP

'An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan

Courtney Hill & René Schieritz

June 2018

C4 EcoSolutions

CARBON I CONSERVATION I CLIMATE I COMMUNITY

List of acronyms and abbreviations

ACTED	Agency for Technical Cooperation and Development
ADB	Asian Development Bank
AF	Adaptation Fund
AKDN	Aga Khan Development Foundation
CEP	Committee for Environmental Protection
CoES	Committee of Emergency Services and Civil Defence
CP	Concept Proposal
DoG	Department of Geology
DRMP	UNDP Disaster Risk Management Programme
EbA	Ecosystem-based Adaptation
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FP	Full Proposal
GIZ	*Deutsche Gesellschaft für Internationale Zusammenarbeit*
Hydromet	National Agency on Hydrometeorology
MEDT	Ministry of Economic Development and Trade
MEWR	Ministry of Energy and Water Resources
PUU	Pasture User Union
RTA	Regional Techniacl Advisor
SDC	Swiss Agency for Development and Cooperation
UCA	University of Central Asia
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development

Brief introduction to proposal

Proposal description

A project proposal was requested by the United Nations Development Programme (UNDP) with the objective to achieve rural community resilience in the most vulnerable regions of Tajikistan. Community vulnerability is increasing in the country in response to the shifting climate and an increasing number of extreme climate events. The original concept brief has been included as Annex 1.

Information collection and project design

Scoping mission

A Scoping Mission was undertaken from 1–7 March 2018 to support UNDP in developing a proposal for submission to the Adaptation Fund (AF). Following the mission, a Concept Proposal (CP) was developed and submitted for comment to the UNDP Country Office and the UNDP Regional Technical Advisor (RTA). The design of the project outlined in the CP focused on climate change adaptation through implementing Ecosystem-based Adaptation (EbA) in an integrated approach in specific catchments where vulnerable Tajik communities reside, titled 'An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan'.

The primary objectives of the mission were to: i) identify baseline projects and existing gaps; ii) identify an overarching project objective based on the original concept; iii) gather suitable information to develop a CP. These objectives were addressed through conducting meetings with

inter alia priority stakeholders in government, international agencies and academia. A list of the stakeholders consulted during the Inception Mission are detailed in Table 1.

Table 1. List of all stakeholders consulted during the Inception Mission to Dushanbe, Tajikistan.

Stakeholder	Stakeholder type
Aga Khan Development Foundation (AKDN)	Regional development agency
Agency of Statistics	Government agency
Asian Development Bank (ADB)	International development agency
ClimAdapt	International organisation
Committee of Environmental Protection (CEP)	Government agency
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	International development agency
European Union (EU)	International organisation
Food and Agriculture Organisation of the United Nations (FAO)	International development agency
Forestry Agency	Government agency
KFW	International development bank
Ministry of Economic Development and Trade (MEDT)	Government agency
Ministry of Energy and Water Resources (MEWR)	Government agency
Ministry of Transport	Government agency
National Agency on Hydrometeorology (Hydromet)	Government agency
Swiss Agency for Development and Cooperation (SDC)	International development agency
UNDP Disaster Risk Management Programme (DRMP)	UNDP programme
United Nations Children's Fund (UNICEF)	International development agency
United States Agency for International Development (USAID)	International development agency
University of Central Asia (UCA)	Regional academic institution
World Bank	International development bank

Validation mission

A Validation Mission was undertaken from 11–22 June 2018 to support UNDP in further developing a Full Proposal (FP) for submission to the AF. The mission followed feedback received on the CP and information gathered during the Inception Mission. Keti Chachibaia, the UNDP RTA, joined the first week of the mission from 11–14 June 2018 to partake in stakeholder engagement meetings.

The objectives of the mission were to: i) identify the river basin – and relevant catchment(s) for the project to be focused on; ii) identify districts and sites for activity implementation; iii) confirm baseline projects and co-financing; iv) collect information by visiting demonstration plots of integrated catchment management approaches; v) update the outcomes, outputs and activities designed from the CP stage; and vi) develop indicative financing/budget for proposed project activities – including AF grant funding, co-financing amounts from baseline projects and any additional local funding that may be available. Additional objectives of the mission were to:

- detail and refine proposed project activities (ensuring that they are not replicating activities implemented by other projects but rather complementing them);
- meet with a variety of stakeholders in government, civil society organisations (CSOs), academia and other institutions to check relevancy of proposed project activities and ensure that they are beneficial;
- align proposed activities with the ongoing goals of government as well as other projects and programmes;
- ensure that regional administration support is – and will be made – available to endorse the proposed activities;
- identify potential risks and barriers to the proposed project and ways to overcome them;
- identify stakeholders to partake in project activities;
- identify areas for project interventions; and
- collect relevant on-the-ground information for the design of the project.

A list of all stakeholders consulted during the Validation Mission are included in Table 2.

Table 2. List of stakeholders consulted during the Validation Mission to Dushanbe, during site visits to demonstration plots as well as during field trips to potential sites in the Kofirnighan River Basin.

Stakeholder	Stakeholder type
Agency for Technical Cooperation and Development (ACTED)	International development agency
AKDN	Regional development agency
Agency of Forestry	Government agency
CARITAS, Muminibad	International development agency
Committee of Emergency Services and Civil Defence (CoES)	Government
CEP	Government agency
Faizabad Region Chairman	Government
Kabodyon Region Chairman	Government
MEWR	Government agency
Nosiri Khisrav Region Chairman	Government
Open Centre, Department of Geology (DoG)	Government
Pasture User Union (PUU) Representative, Faizabad	Community organisation
UCA	Academic institution
Vahdat Region Chairman	Government
World Bank	International development bank

Site visits

Field trips were undertaken to showcase the results of demonstration plots that have successfully implemented integrated catchment management interventions. In addition, field visits were conducted to potential sites within:

- Faizabad area in the north of the Kofirnighan River Basin;
- Vahdat area in the north of the Kofirnighan River Basin;
- Kabodyon area in the south of the Kofirnighan River Basin;
- Shaartuz area in the south of the Kofirnighan River Basin; and
- Nosiri Khisrav area in the south of the Kofirnighan River Basin.

The sites visited had evidence of drought, flood and erosion damage as a result of a mixture of climate change-induced events and unsustainable catchment management practices. Consultations were held with district-level authorities both in the north and south of the Kofirnighan River Basin to discuss potential sites and adaptation measures that could be implemented through the proposed project. A list of the site visits conducted is included in Table 3.

Table 3. List of site visits conducted during the Validation Mission.

Date	District	Details of site(s)
Sunday 17 June 2018	Muminibad	• Not located within Kofirnighan River Basin. • SDC-implemented project in Muminibad to the east of Dushanbe, with CARITAS. • Project is currently in its third phase, having been implemented for eight years. • Sites included intercropping, establishment of bee hives, exclusion zones, rehabilitation of slopes, constructing gabions along rivers and the diversion of river pathways. • 'Espacett' ('*alpha alpha*') grown extremely well as fodder crops and is attractive to bees for apiary.
Monday 18 June 2018	Faizabad	• North (upstream) within Kofirnighan River Basin. • To the north-east of Dushanbe to visit a WB, SDC and AKDN-implemented project. • Met with chairman who took us to sites along the river that require dams because of flood damage.

Date	District	Details of site(s)
Tuesday 19 June 2018	Kabodyon	• South (downstream) within Kofirnighan River Basin. • South of Dushanbe, between ~10–25 km north of the Afghanistan border, within the Kofirnighan River Basin. • Potential sites along the Kofirnighan River that were highlighted all require river bank reinforcement. • Demonstration site of the concrete tetrahedrons used to reinforce the river bank to enable trees be planted for stabilisation. • Met with chairman of the district, as well as representatives from Water Department – Representative from the water department took us to sites.
Tuesday 19 June 2018	Shaartuz	• South (downstream) within Kofirnighan River Basin. • *Saxaul* trees/shrubs have been grown there for 11 years for dust capture. • Located close to the borders of Afghanistan and Uzbekistan – mountain ranges in both countries are visible from this plateau. Wind travels from across the borders across this plateau. • Considered the hottest area in Tajikistan.
Wednesday 20 June 2018	Nosiri Khisrav	• South (downstream) within Kofirnighan River Basin. • ~1,000 cultivated land that cannot be used because of saline groundwater. • Pumps constructed in 1972 (Soviet era) to pump groundwater into the river. Five pumps constructed, only one is operational. If that one stops working, the entire pumphouse floods. • Tried planting rice in the region but there is not enough water for it, but there is too much water for other crops
Thursday 21 June 2018	Vahdat	• North (upstream) within Kofirnighan River Basin. • Met with chairman and four other department representatives. • Visited a site where the bank is eroding into the river from a distance up the mountain and silting up the canal to the communities.

Validation Workshop

On Friday 22 June 2018, a Validation Workshop was held in the Lotus Conference Room, UNDP DRMP Project Office, Dushanbe. The workshop was attended by 50 people, including representatives from international agencies, government ministries and local stakeholders, namely: i) CEP; ii) CoES; iii) HydroMet; iv) World Bank; and v) GIZ. A full list of workshop attendees is attached as Annex 2. The purpose of the Validation Workshop was to:

- provide information to priority stakeholders on the proposed project, the current proposal development process and the work carried out on mission;
- obtain stakeholder contributions/inputs; and
- facilitate integration of stakeholder inputs into the final stage of development process.

During the workshop, group work was conducted whereby the participants were asked to identify areas within the Kofirnighan River Basin where climate resilience should be improved through the proposed project. Participants were expected to use their local knowledge of the region as well as their on-the-ground experience to list what activities would be beneficial in which regions. Full minutes of the workshop, group work and Q&A have been included as Annex 3.

The Validation Workshop was a successful event with positive feedback from all participants. Feedback on the concept and design was constructive with all participants willing to be a part of the process and activities going forward.

List of appendices to the Consolidated Mission Report

The following annexures are attached as separate documents to this report:

- Appendix 1. Original conceptual brief for project;
- Appendix 2. List of Validation Workshop attendees; and
- Appendix 3. Minutes of Validation Workshop.

Appendix 1. Original conceptual brief for project

CONCEPT NOTE
Increasing Climate Resilience of Rural Communities in Tajikistan

Background

Tajikistan is a small landlocked country in the heart of Central Asia, bordered by Afghanistan, China, the Kyrgyz Republic, and Uzbekistan. Roughly one-tenth of its 7 million total population lives in Dushanbe, the capital city. The country has abundant water resources, contributing to its specialization in cotton production and a considerable hydropower generation potential. Only 7 percent of its total land area of 143,000 square kilometers is arable. High mountain ranges across its territory make communication between different parts of the country difficult, especially in winter. Tajikistan is highly susceptible to natural disasters, and is regularly affected by floods, landslides, and droughts. Up to 40 percent of the country's national workforce is employed abroad (mostly in Russia) and sends home remittances equal to more than one-third of its gross domestic product. However, with global financial crisis and economic downfall in Russia associated with sanctions the remittance incomes are already adversely affected. Preliminary forecasts from IMF and the World Bank suggest that remittance income will fall by more than the 31% fall in remittance income. Lastly, low agricultural productivity and rudimentary safety nets still leave those below the poverty line vulnerable to shocks and stresses, including women who have experienced lowered rates of poverty reduction than men. The above factors combine to make Tajikistan one of the poorest and most vulnerable economies in the world.

The agricultural sector in Tajikistan accounts for 64% of employment and is generally characterized by low productivity. Environmental degradation and unsustainable use of natural resources are important constraints, and the country's predominantly mountainous terrain makes it particularly vulnerable to natural disasters. Mono-cropping and improper land use practices, such as wasteful irrigation methods and inadequate drainage, continue to contribute to soil degradation and stagnating yields, especially in lowland areas. Pasture degradation, due in part to overgrazing and poor stocking practices, is an important threat. In upland areas, the conversion of steep slopes to cereal production has contributed to land degradation. Chronic energy shortages have also resulted in increased burning of organic matter and vegetation that would otherwise be available as fertilizer or ground/tree cover.

Climate variability and change are likely to pose additional and significant risks, and only reinforce the need to follow sound land resource management principles. In the Europe and Central Asia region, Tajikistan is ranked the most vulnerable to the adverse impacts of climate change due to: a) dependence on natural resources, e.g., agriculture and hydropower; b) inadequacies of climate resilience of key economic sectors; and c) low adaptive capacity to respond to on-going and projected changes. Even under the most conservative scenarios, climate change is projected to lead to higher temperatures, more rapid glacier melt, increased incidence of flooding, and also more severe and prolonged droughts. These climate change-related shocks to agricultural systems can result in dramatic development challenges and poverty impacts. While the population is vulnerable as a whole, those pursuing subsistence agriculture and pastoralism will be particularly affected as they depend more directly on vulnerable land and water resources. Sustainable adaptation solution will require significant investments in land and water management at watershed / landscape level that is climate risk informed and addresses

Project Objective and Components

The overall **project objective** is to achieve rural community resilience in particularly vulnerable mountainous regions through the climate risk-informed landscape management.
Proposed activities include:

Outcome 1. Climate resilient food systems: field and horticultural crop productivity and diversification, livestock production efficiency, agro-processing and market access.

The work under this outcome will support to vulnerable farmers to promote climate resilient food systems. This will include climate resilient practices for land preparation and management; water management to secure water inputs to farms, research and multiplication systems of climate resistant crop and livestock breed varieties; integrated and diversified systems of farming to achieve greater resilience to intensified climate variability; post-harvest storage and bulking management strategies to minimize the post-harvest losses; and strengthening community groups and associations for local adaptation services (water management groups, community systems for management and maintenance of community infrastructure, marketing and processing strategies for local produce, and local funding mechanisms to support value chain for climate resilient food production).

Outcome 2. Catchment management practices to increase landscape stability and resilience: The work under this outcome will include, land and water management at catchment level, including pasture management, water retention and drainage control with pond systems created through landscaping methods at natural land depressions. Sustainable sloping lands cultivation (including orchards, woodlots, shelter-belts), including bio-engineering schemes, community forest management, and on-farm and off-farm agroforestry. Landscape level work will be informed and supported by hydrological models and impact scenarios across all key receptors (population, land assets, local infrastructure etc) to prioritize the areas of intervention and land treatment. Landscape planning methods will be introduced to underpin the suite of preferred nature-based solutions. Catchment / sub-catchment areas will be used as units of local land use planning and management.

Estimated project budget: US$ 8 mln.

Appendix 2. List of Validation Workshop attendees

Барномаи Рушди Созмони Милали Муттаҳид
United Nations Development Programme

СЕМИНАР
по Адаптации к Изменению Климата
VALIDATION WORKSHOP
on Climate Change Adaptation
22 июня 2018 г/22 June 2018

Списокучастников/Registration List:

№	Ф.И.О/Name	Место работы/Organization	Должность/Position	Контакты/Contacts	Подпись/Sign-re
1.	Courtney Hill	C4ECOSOLUTIONS	International Consultant	courtney.hill@c4es.co.za	
2.	René Schieritz	C4ECOSOLUTIONS	International Consultant	Rene.Schieritz@c4es.co.za	
3.	Nailia Mustaeva	UNDP	International Consultant	nmustaeva@gmail.com	
4.	Shuhrat Igamberdiev	UNDP	National Consultant	sbahrom80@gmail.com	
5.	Firuz Saidov	UNDP	National Consultant	fsaidov@mail.ru, 918667002	
6.	Kamoliddin Abdullaev	UNDP	National Consultant	938887024	
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8.	Malika Khakimova	UNDP	Programme Associate	Malika.khakimova@undp.org	
9.	Firdavs Faizulloev	UNDP	Programme Manager	firdavs.faizulloev@undp.org	
10.	Khurshed Kholov	UNDP	EEP Manager	khurshed.kholov@undp.org	

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Барномаи Рушди Созмони Милали Муттаҳид
United Nations Development Programme

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12.	Khamza Khafizov	UN WFP	Programme Policy Officer	khamza.abdurakhimov@wfp.org 939999400	
13.	Daler Domullajanov	UN FAO	National Technical Officer		
14.	Marhabo Yodalieva	GIZ	Advisor of the Regional Project Ecosystem-based Adaptation to Climate Change	marhabo.yodalieva@giz.de	
15.	Zaro Kurbanbekova	Deutsche Welthungerhilfe (GAA)	Head of Project/ Partner Support Officer	zaro.kurbanbekova@welthungerhilfe.de +992 935678670	
16.	Kairat Shalabay	Climadapt	Team Leader	+992 92 608 9001	
17.	Aziz Gulamadshoev	Department of Geology	Coordinator of the Open Source Centre AKAH	Aziz.gulamadshoev@gmail.com	
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19.	Jorn Kockitz	Caritas Switzerland	Team Leader	jkoeckritz@caritas.ch +992 901661142	
20.	Ilhom Gulomjanov	ACTED	Sughd Area Coordinator	ilhom.gulomjanov@acted.org	
21.	Parvina Nazirova	Red Crescent Society of Tajikistan	DRR Project Coordinator	restjdp@mail.ru	
22.	Ganjali Shafiev	Department of Geology under RT	Supervisor of Geology Unit		

2

№	Ф.И.О/Name	Место работы/Organization	Должность/Position	Контакты/Contacts	Подпись/Sign-re
23.	Zarrina Nazarzoda	Committee of Environmental Protection under the Government of the Republic of Tajikistan (CoEP)	Deputy Chairman		
24.	Farahnoz Khamidova	(CoEP)	Project Assistant	93-508-52-23	
25.	Kurbonov Shodibek [illegible]	~~Forestry Agency~~ under the Government of RT [illegible]	Head of the State Forestry and Hunting Inspection	904-56-56-66.	
26.	Abduqudus Abdualimov	Forestry Agency under the Government of RT	Deputy head of the monitoring, science and propaganda department	909809988	
27.	Azizbek Nazarov	Forestry Agency under the Government of RT	Head of International Relations and Information Department	919053298	
28.	Kamolov Jamshed	Committee for Emergency Situations and Civil Defense under the Government of the Republic of Tajikistan (CoES)	Head of Department of population protection	938802810	
29.	Aminov R.	Committee for Emergency Situations and Civil Defense under the Government of the Republic of Tajikistan (CoES)	Head of CDD	938808944	
30.	Daler Kholmatov	Ministry of Energy and Water Resources (MEWR)			
31.					

3

Барномаи Рушди Созмони Милали Муттаҳид
United Nations Development Programme

№	Ф.И.О/Name	Место работы/Organization	Должность/Position	Контакты/Contacts	Подпись/Sign-re
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36.	Urunov A	Oblvodhoz	Director	900190900	[signature]
37.	Davlatov Sh	WUA Nosir Kh	Head engin.	937128827	[signature]
38.	Saidmurodov M	WUA Farobod	Director	938869000	[signature]
39.	Kholmirzoev Sh	VATKHOZ KABODIYON	Director	937806364	[signature]
40.	Turaev J.	WUA Shahrtuz	Director	93-507-4944	[signature]
41.	Abdurahimov N	Expert.		900027211	[signature]
42.	Turaev J.	Agronomy		934690077	[signature]
43.	Olfiev J.	JAMOAT Shahrtuz		93 456-8210	[signature]
44.	Hojaev Z	Agency of Statistic	leading spec	93-861-11-11	[signature]
45.	Makhmudov Z	CoEP	Head, PIU	93-888-70-30	[signature]

4

46.	Urokov Burhon	Agrarian University	Docent.	917405421	[signature]
47.	Sarafroz Mavlyanov	German Red Cross	Specialist DRR	935610203	[signature]
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49.	Nozirov Sobir	UDБ30B	Vahdat	937070170	[signature]
50.	Sadulloev Zii	Лесхоз Район	Vahdat	988882493	[signature]
51.	[illegible]	ООО, [illegible]	[illegible]	93[illegible]	[signature]
52.					
53.					
54.					
55.					

Представитель ПРООН ПУРСБ/Representative of UNDP DRMP ______________________

Дата/Date______________

Appendix 3. Minutes of Validation Workshop

Minutes of Validation Workshop

Welcoming remarks from Nargiza

Introduction of participants

Welcoming remarks from Zarrina Nazarzoda, Deputy Chairman of CoEP
Importance of climate change adaptation measures in the development process of Tajikistan, where all national and international stakeholders should assist the country to address climate vulnerabilities and increase communities' resilience.

Overview of the Presentations

Questions from Participants

Marhabo, GIZ
You have been talking about climate risk information to be used and which data will be used in the projects, climatic projections?
Criteria for the selection of the target communities?
C4: CRI will be used to develop multi-hazard mapping. We will be using available data and also increasing the density of Hydromet in information management in the selected districts.
Selection will be based on the vulnerability, EbA suitability to a selected area.

Nargiza: Firuz please explain the difference between catchment and basin.
Firuz: In TJ we have 5 basins. Kofirnighan basin is divided into 3 watersheds.

Jamshed Kamolov, CoES: Want to know about this project, will you consider climate change impact on flora and fauna? This year we had ES in Panj and during flood some specifies have been moved to inhabited areas, some of them have are currently at the Red book list.
C4: EbA is targeted to help people rather than species. However, some activities envisage that and we can do some conservation of eco and biodiversity. The focus will be on people and how they interact with eco-systems.

Zafar Mahmudov, CoEP: When you are expecting to launch the project of course considering approval procedure.
What about cooperation with other state and IOs or establishing a WG to address issues not related to CoEP. For instance, some issues might raise which other ministries or agencies can address.
C4: Implementation arrangements have not been finalized. Tentative launch of the project is envisaged in 2020. We can identify certain WG to assist in the project implementation and Working Steering Committee, which will regularly meet and discuss the progress, targets and guide national priorities alignment with our project.
Kairat, Climadapt Project: On-ground activities on EbA interventions?
Rene: Later during the group work we will provide a comprehensive explanation on types on interventions. Our main activities will be focused on reducing erosion and protection activities.

GIZ: How selected communities will handle the process and project management at the grassroots, it's very essential to deliver a proper understanding of EbA.
C4: capacity building component will assist communities. We will be also utilizing best practices and knowledge management and sharing with national and international stakeholders.

CoES: In component one natural hazards are mainly considered, will be consider any protection measures for avalanches or other hazards?
C4: we will develop a multi-hazard approach, but some risks require hard interventions, whereas, the project will be working in EbA component and some reduction measures.

Nargiza: This project aims to address ICM and EbA, while other projects funded by the GoJ will be focused on hard interventions.

Wish from district representatives: Include demographic component and enlightment of people on these matters in the framework of the project.

Group Presentations

Group 1: all general questions apply to all regions, strategy on population density is not reflected and should be applied in the project implementation. How to implement these measures? What type of irrigation will be used?

Group 2: first we identified ecological and irrigation problems. It was proposed to apply IWRM, create WUAs, measures for pasture crop rotation. To improve WRM we should support existing WUAs and some infrastructure projects. Gender aspect also should be considered, introduce innovative technologies (drip irrigation).
Question: representatives of your group was from upstream and downstream?
Answer: Representative of Water Management Department noted that water from hills and floods should be managed. Storage of water can be introduced in Kabodien (upstream districts).
Firuz Saidov: now at all basins there are RBO financed by raion vodhozes. We need to differentiate activities of the project and these institutions in order to avoid repetition.
Region representative: create reservoirs for irrigation in south parts.
Khurshed Kholov, UNDP: indicate waste management component in the project

Group 3: assessed downstream of the basin and did a comprehensive analysis on soil, water usage and irrigation. Measures to be taken: reduce land degradation, change legislation in land ownership, air pollution, clean of drainage systems, create medium stations, improve pasture management, create field schools on agriculture knowledge, give local subsidies to farmers.
Firuz Saidov: downstream zones are prone to floods and erosion.

Group 4: Kofirnighan is divided into 4 watersheds. Water intensity in the lower part of Kofarnogan decline in summer time and risk of natural hazards increase every year.

Group 5: highlighted the most important activities for local communities of the basin, which are gabions, drip irrigation, pasture rotation, restore degraded land, sustainable crop management. In downstream all activities can be implemented except gabions, energy saving stoves.
Firuz Saidov: While applying a certain activity downstream we should consider its impact on upstream and vice versa. Panj river neighboring villages are affected by floods a lot.

Oxfam: also use negative experience of other organizations (for instance energy saving stoves). In south this approach was not useful from CCA approach.
Forestry specialist: more than 680 ha of forest are cut or land degraded due to improper pasture management. Therefore, we should focus on tree planting and agroforestry. We can share these methods with other districts.
Region representative: each region has own ecological system which needs restoration and different approach taking into account geographical peculiarities of each region.

Group 5: closely cooperate with local authorities, apply experience of other country and show economic/social impact and numbers. Local and transit pastures, in long term perspective we should apply it on local communities not district level. We should rely on the local interest in drafting a project. Upstream and downstream inhabitants should inherit a certain mindset on resource management in both catchments and its impact.

Closing remarks:

- Existing projects
- Field sites
- We will integrate today's suggestions in the project
- Fully covered CC situation in the region
- Narrow down geographical interventions

Nargiza thanks participants for time, contribution as well as local consultants for the productive work!

End of Consolidated Mission Report

ANNEX 2. ENDORSEMENT LETTER

КУМИТАИ
ҲИФЗИ МУҲИТИ ЗИСТИ НАЗДИ
ҲУКУМАТИ ҶУМҲУРИИ
ТОҶИКИСТОН
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КОМИТЕТ
ОХРАНЫ ОКРУЖАЮШЕЙ СРЕДЫ
ПРИ ПРАВИТЕЛЬСТВЕ
РЕСПУБЛИКИ ТАДЖИКИСТАН
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COMMITTEE OF ENVIRONMENTAL PROTECTION
UNDER THE GOVERNMENT OF THE REPUBLIC OF TAJIKISTAN
5/1 Shamsi str., 734003, Dushanbe city, tel./fax: (992 37)236-40-59, 236-13-53 web-site: : www.hifzitabiat.tj, e-mail: muhit@hifzitabiat.tj

№ 1/26-03-98 аз «19» Jan. соли 2018.
Ба № _____ аз «____» _____ соли 2017

19 January 2018

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for the project "Increasing Climate Resilience of Rural Communities in Tajikistan"

In my capacity as designated authority for the Adaptation Fund in Tajikistan, I confirm that the project proposal "Increasing Climate Resilience of Rural Communities in Tajikistan" is in accordance with national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the Tajikistan.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project will be implemented by UNDP in Tajikistan.

Sincerely,

Khayrullo Ibodzoda
Chairman of the Committee
for Environmental Protection
under the Government of the Republic of Tajikistan

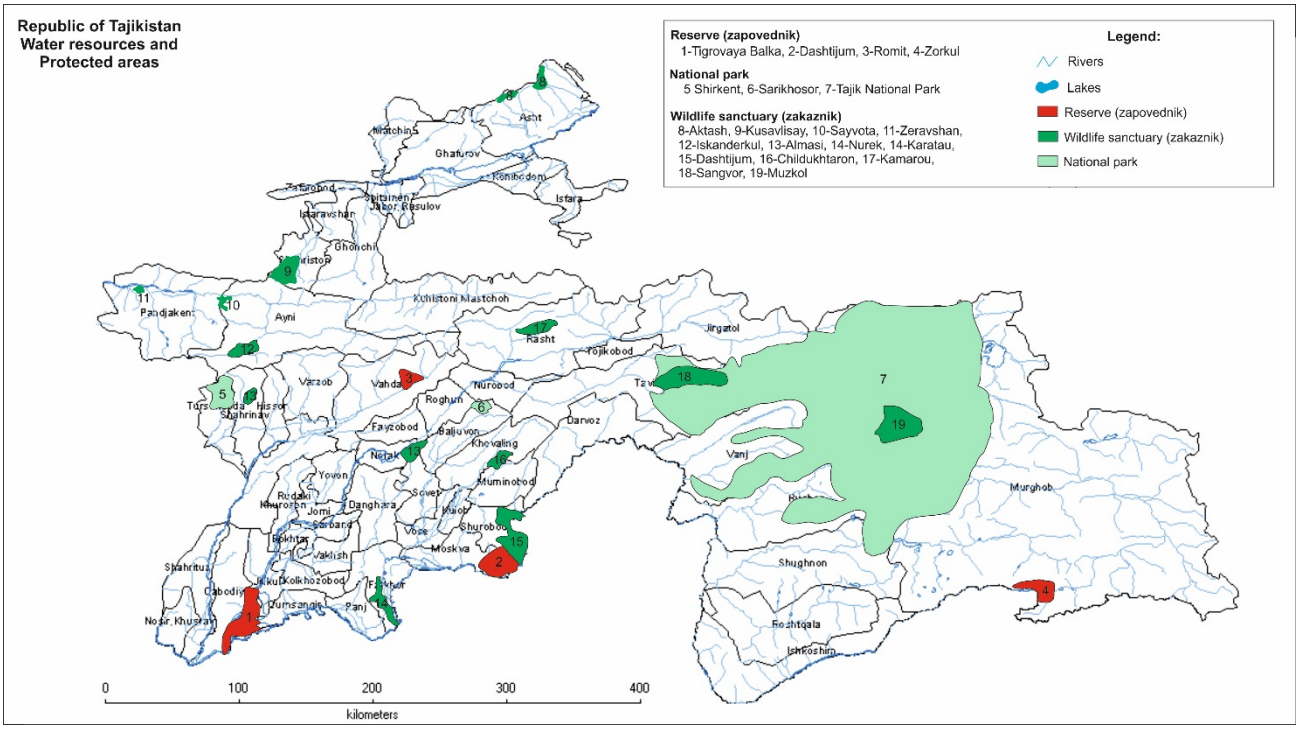
ANNEX 3. JUSTIFICATION FOR SELECTION OF THE KOFIRNIGHAN RIVER BASIN

ADAPTATION FUND

SUPPLEMENTARY INFORMATION TO PROJECT PROPOSAL:

JUSTIFICATION FOR PROJECT TARGET AREA SELECTION

"An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan"



River Basins in Tajikistan

Overview

The terrain of Tajikistan has been eroded to form a diverse range of mountains and steep valleys. Tajikistan's mountain ranges create several hydrographic areas, which in turn form numerous river basins. The country's Water Sector Reform Programme for 2016–2025 (Water Reform Programme)[1] delineates four river basins according to hydrological boundaries. These four basins are listed below with brief summaries for each[2].

- A section of the **Syr Darya River** that is located in Tajikistan. The Tajik part of Syr-Darya River Basin consists of the Syr-Darya River and its tributaries within Tajik borders. As a management unit, Syr-Darya includes the Zarafshan sub-river basin. Both are of inter-state importance, and the management of their water resources is part of the Interstate Commission for Water Coordination in Central Asia (ICWC).
- A section of the **Pyanj River** that is located in Tajikistan. The Tajik part of the Panj River Basin includes the area of the Panj River and its tributaries within Tajik borders. The boundaries of the basin to the North and West are the boundaries of the Vakhsh River basin, while the boundary to the South is the channel of the Panj River, which also forms the border with Afghanistan.
- **Vakhsh River Basin**. The Vakhsh River Basin includes the whole basin of the Vakhsh River and its tributaries, except for the extreme upstream part, which is located in Kyrgyzstan.
- **Kofirnighan River Basin.** The Kofirnighan River Basin (KRB) consists of the Kofirnighan River and its tributaries, namely Elok, Sarvo, Varzob. Further details on the KRB are provided below.

Kofirnighan River Basin

Situated in the south-western and western parts of the country, the KRB occupies a total area of ~11,600 km^2, with the mountain catchment making up 8,070 km^2 of this – equating to ~70% of the total basin area[3]. The basin is divided into two regions, namely the north and the central/south regions[4]. The Gissar Valley encompasses the north region, which includes the city of Dushanbe, while the Kofirnighan and Beshkent valley depressions make up the south region. The Gissar Ridge forms the highland areas, extending for 250 km to elevations of ~4,500 masl and is home to 343 glaciers, covering a total area of 115 km^2.[5] The river of Kofirnighan, at ~387 km long, is one of the major contributing inflows of Tajikistan's largest river, the Amu Darya River[6]. It flows through different mountain ranges and zones within the basin including high mountains, intermediate foothills and low and flat zones. The basin's groundwater reserves are economically important and are used to irrigate crops (~98,000 ha) and pastures (~56,000 ha). Most of the irrigated land is in the arid southern sub-basin, while cultivated land in the northern sub-basin is largely rain-fed.

Surface water and groundwater in the Kofirnighan River Basin

[1] Water Sector Reforms Programme of the Republic of Tajikistan for 2016–2025 (Water Reform Programme). 2015. Resolution of the Government of the Republic of Tajikistan. Unofficial translation.
[2] Water Reform Programme 2015.
[3] Tahirov IG & Kupayi GD. 1994. Water resources of Tajikistan of the Republic of Tajikistan. Dushanbe 1:181.
[4] Fergana Valley WRM 2018 KRBMP Unpublished.
[5] Ibid.
[6] Tahirov & Kupayi 1994 Water resources of Tajikistan.

The average annual flow of surface water in Kofirnighan is approximately 5.2 km^3. Given that more than 90% of the river runoff floods each year, the prevalence of mudflows in the KRB is high. The greatest mudflow activity occurs at the headwaters of Kofirnighan, where destructive mudstone and water-stone flows are formed. Such activity is particularly problematic because the population living in this basin has already been facing extreme events associated with natural and anthropogenic climate change.

Operational reserves of groundwater in the KRB constitute 0.53 km^3/year and are also subject to negative anthropogenic influences. Potential reserves of hydropower resources of the KRB are estimated to make 2.883 million kW, only 1.07% of which is currently being realised. In addition to energy generation, groundwater reserves are also being used for irrigation, whereby there are also approximately 56,000 ha of watered pastures[7]. For example, the large Hissar channel irrigates approximately 38 thousand hectares of land. Further development of irrigation in the downstream of the basin will depend on the construction of the Lower (Nijny) Kofirnighan water reservoir.

Population and its effects on water resources

In terms of political divisions, the KRB is made up of 10 administrative districts, 4 cities including Dushanbe, 10 villages and 77 *jamoats* (rural self-governance bodies) (Table 1). As of January 2017, the total KRB population was 2.8 million people, with ~62% living in rural areas and ~38% in towns. Over the past 13 years, the KRB population has increased by 712,000 people (representing a ~34% total increase and an annual growth rate of 2.5%). The KRB, unlike other basins in the country, is characterized by high population density (205 people per km^2)[8] and developed economic activities. Indeed, 32% of the Tajikistan's total population resides in the KRB, which makes up only 11% of the country's territory. Both this high population density and degree of economic activity has affected water resources in the basin. Due to rapid population growth and economic development, the volume of water withdrawal in the KRB is high, constituting 3.6 km^3/year, 410 million m^3 of which comes from groundwater. Water supply is also seasonal, whereby the inflows to Kofirnighan – from Varzob, Khanaka, and Ilyak – only run during flood seasons, resulting in downstream areas suffering from seasonal water shortages.

Table 1. Population data for cities and districts of Kofirnighan River Basin[9].

#	Cities and districts	Population data as of 1.01.2017 in thousands			Population density for 1 km^2	Number of cities	Number of urban-type villages	Number of *jamoats*
		Total	%					
			Urban	Rural				
1	Dushanbe city	816,2	100	0	8162	1	-	-
2	Varzob	76,9	3,3	96,7	45,2	-	1	6
3	Vahdat	324	16,8	83,2	87,6	1	1	10
4	Hissar	287,4	14,4	85,6	287,4	1	1	11
5	Fayzabad	96,9	10,0	90,0	107,7	-	1	7
6	Tursunzade	280	18,9	81,1	233,3	1	-	9
7	Shahrinav	114,4	6,4	93,6	114,4	-	1	6
8	Rudaki	476,5	10,9	89,1	264,7	-	3	13

[7] Tahirov I & Kupai G. 1998. Water resources of Tajikistan. Dushanbe.
[8] Agency for Statistics under the President of the Republic of Tajikistan. 2017. Districts of the Republic of Tajikistan.
[9] Agency for Statistics under the President of the Republic of Tajikistan. 2017. Regions of the Republic of Tajikistan.

#	Cities and districts	Population data as of 1.01.2017 in thousands			Population density for 1 km²	Number of cities	Number of urban-type villages	Number of *jamoats*
		Total	%					
			Urban	Rural				
9	Nosiri Khisrav	35,9	0	35,9	44,9	-	-	3
10	Qabodiyon	173,8	6,6	93,4	96,6	-	1	7
11	Shahrituz	120,5	13,5	86,5	80,3	-	1	5
Total		**2802,5**	**37,9**	**62,1**	**180,8**	**4**	**10**	**77**

To improve water supply to areas in the basin, it is necessary to reconstruct several reservoirs in the KRB, particularly the Zidin, Lower (Nijny) Kofirnighan and Shirkent reservoirs. It will also be necessary to work on marking the boundaries of the KRB as a management unit.

Selection criteria for project target areas

The selection of target areas is based on three main criteria:

- relevance of a chosen site to Integrated Water Resources Management (IWRM), River Basin Management (RBM) and the Water Sector Reform Programme under implementation by the Government of the Republic of Tajikistan;
- degree of climate-related vulnerabilities, including a population's climate resilience and adaptive capacity at a chosen site; and
- distribution of donor development support at a chosen site.

Based on the criteria above, as well as discussions with national authorities and donor development partners, it is suggested that the target area for project interventions is the KRB. Indeed, preliminary analyses of relevant interventions in various regions of Tajikistan indicate that project objectives will be most effective in the KRB. A detailed justification for the site selection is provided in the sections that follow.

Analysis

While vulnerabilities are significant in each river basin of Tajikistan, the KRB is particularly vulnerable, based primarily on the area's: i) population number and density; ii) having received limited support for the implementation of IWRM; iii) markedly high exposure to mudflows. In addition, the KRB fulfils all the selection criteria for project target areas, as described below.

Criterion 1: Integrated Water Resources Management (IWRM)

Water Reform Programme and the river basin management approach

In 2016, the Government of Tajikistan endorsed the Water Sector Reform Programme, focussing primarily on transitioning to **Integrated Water Resources Management (IWRM)** and **River Basin Management (RBM)**. The proposed water reforms are based on common regulatory principles of IWRM and focus on considering social, economic and environmental interests through the sustainable and balanced management water resources. Given the importance of water to the agriculture sector – that employs approximately two thirds of Tajikistan's population – the water reform is inextricably linked to the agricultural reform that was approved in 2012.

Despite the many different definitions for IWRM, almost all of them employ the same principles. In the context of Tajikistan, the definition of IWRM is proposed as:

> *"Integrated Water Resources Management is based on the interaction of various sub-sectors with the objective of good accessibility to high quality water and sanitation services for the population, ensuring water availability for Irrigation, hydropower, environment and other users within river basins defined by* ***hydrographic boundaries****. IWRM promotes protection of water resources from over-exploitation and pollution, provides* ***protection of vulnerable mountain environments*** *and of* ***river banks*** *and* ***floodplains from flooding and erosion****, and facilitates* ***public participation*** *in decision-making, planning, financing and development of water resources in the interests of economic growth, sustainable development of the society and* ***preservation of the environment****."*

Proper water resource planning is only possible within the natural flow area of the water resources, because all actions upstream have an immediate effect on the downstream water availability and quality. Therefore, the river basin is the best management area for water resource management. A basin can be defined as an area that is drained by one river outlet and bordered by the water source upstream and the outflow body (sea or lake) downstream. In this regard, the introduction of the basin management approach to water resources management, which is an integral part of IWRM, is considered an important principle of the water sector reform.

In addition to promoting IWRM and river basin management, the water sector reform foresees the establishment of National Water Council (NWC), which will be the highest authority in the development of policy in the water sector. In line with the principles and objectives of the reform, the NWC will have the following tasks and objectives:

- adoption and development of public policy and legislation in the field of **IWRM** and effective use and protection of water resources;
- request to develop policy on management of water resources and **protection of the environment**;
- development of policy for control of the **rational use** of water resources;
- recommendation of limitation of water use;
- elaboration of an **investment policy** for the development, use and protection of water resources;
- drafting and management of international agreements in the use and **protection of water resources**; and
- development of policies to cope with the **impacts from climate change** in the use and protection of water resources.

IWRM and climate change

Climate variability and change have significant impacts on the water resources of Tajikistan. According to the available data, during the last decades average temperature in Tajikistan increased by 0.7–1.9ºC and ~1,000 small glaciers have melted. Over the short term, glacial melt has resulted in hydroclimatic disasters such as floods, droughts, landslides and mudslides (Figure 1). Considering that the main source of water of the Tajikistan's rivers are glaciers, glacial melt over the medium and long terms reduce water flow in the country's rivers.

To address the above climate change threats, the IWRM has made provisions for assisting communities to cope with climate variability. This role is characterised by three focal points,

namely: i) water resources management at adequate level; ii) the organization of participatory management practices; and iii) policy development. Each of the above-described focal points carefully considers the country's various vulnerable groups. Hence, IWRM aims to address climate change within Tajikistan's water governance in the context of reducing vulnerability of poor people, specifically by maintaining livelihoods and supporting sustainable development.

Critical management functions of IWRM that may assist communities adapt to changing climate in the context of Tajikistan consider the following water allocation, pollution control, monitoring, financial management, flood and drought management, information management, river basin planning and stakeholder participation. Such functions of IWRM are instrumental in coping with climate variability in the following ways[10]:

- monitoring water quantity and quality allows management to proactively take action towards adaptation;
- management of floods and droughts allows for direct intervention in cases of extreme events; and
- river basin planning, risk assessment and adaptation measures can ensure rapid response and build climate resilience.

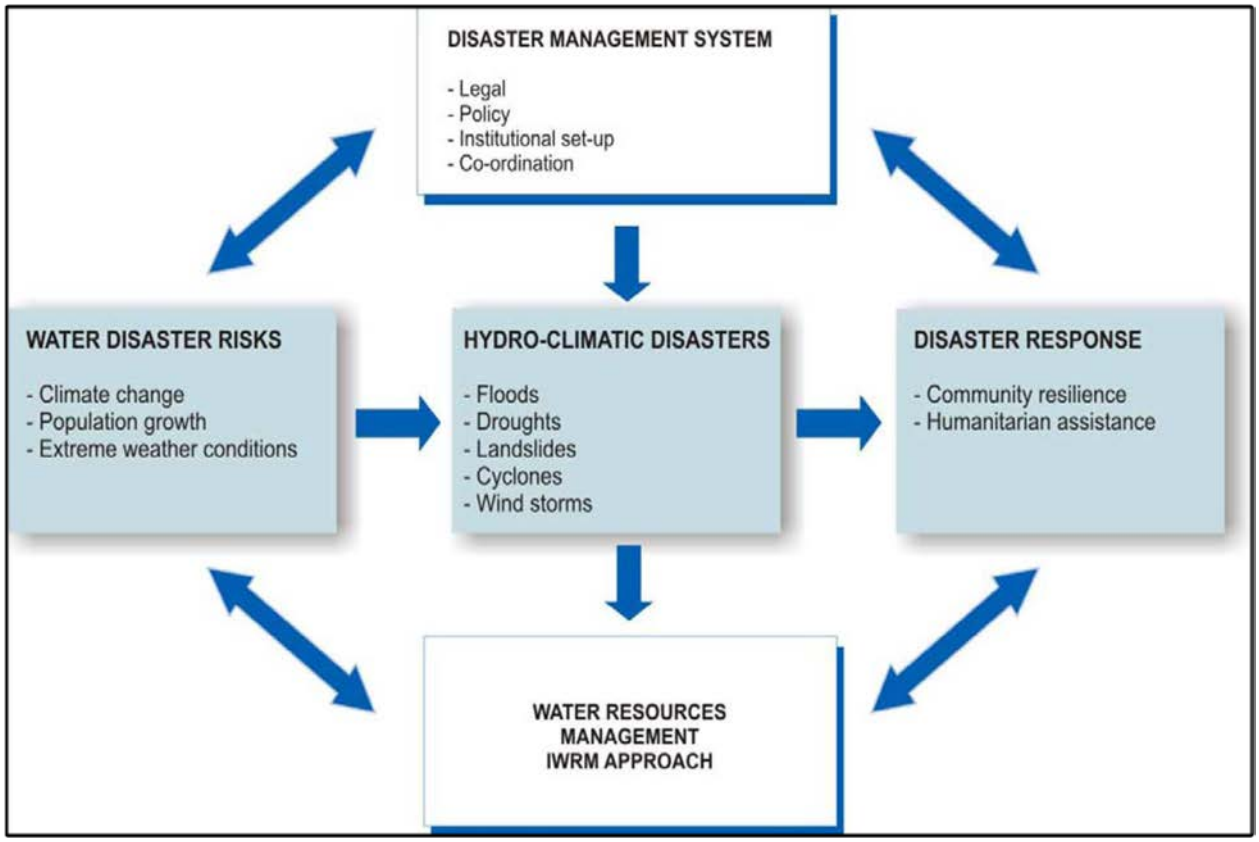


Figure 1. Schematic presentation of the linkages of IWRM to water related disasters[11].

[10] International Network for Capacity Building on IWRM (CAPNET). 2009. IWRM as a Tool for Adaptation to Climate Change. UNDP.
[11] CAPNET 2009 IWRM as a Tool.

Of the four river basins identified by Tajikistan's Water Reform Programme, the Kofirnighan River Basin (KRB) is one that currently does not have focused efforts being made towards IWRM[12]. Compared to the other three basins, KRB has received the fewest interventions from government and donors to date. The KRB is topographically and climatically very variable and is highly vulnerable to extreme climate events such as GLOFs, floods, mudflows and landslides[13,14]. It is also the smallest of the country's four basins and is fully encompassed within Tajikistan – i.e. is not transboundary. A Kofirnighan River Basin Management Plan (KRBMP) has been developed for the basin. Although this plan includes water management, it does not integrate land and natural resources into that management.

It is the view of all national ministries and agencies (MoEWR, CEP, ALRI) involved in water resources management that the KRB is the most suitable basin for the project. The MoEWR, CEP and ALDI have also agreed that the project is relevant to Tajikistan's water sector reform and would contribute to implementing of IWRM in the country, as well as linking it to building climate resilience.

Criterion 2: Climate vulnerability

The KRB has been identified as a region within Tajikistan that is particularly vulnerable to the impacts of extreme climate events, with almost 200 communities living in the basin experiencing severe negative impacts[15,16]. All four of Tajikistan's agro-ecological zones are represented within the KRB as a result of the considerable altitudinal variation from south to north[17]. This altitudinal variation also results in the KRB being vulnerable to a wide range of climatic hazards, including both sudden-onset and slow-onset climate events, such as GLOFs and droughts, respectively (Table 2). Communities in the KRB are frequently exposed to such extreme climate events. Flooding and landslides pose the greatest threats to these communities, with flooding seasons differing between upper, middle and lower reaches of the KRB. Upstream reaches experience floods from April to June, the middle reaches from March to May, and the downstream reaches from February to May. Because of the longer season in the downstream areas, the risk of flooding and landslides is much greater for these communities[18].

Six districts within the KRB have been identified as the most vulnerable to the impacts of climate change. These are the: i) Vakhdat, Faizobod and Varzob districts in the north; and ii) Nosiri Khusrav, Kabodiyon and Shaartuz districts in the south.[19] Many of the households in these districts are located in hazardous areas and experience a number of climate-related threats and disaster events including: i) floods; ii) mudflows; iii) landslides; iv) rockfalls; and v) avalanches[20].

In addition to increased exposure to climate-related threats, these are all rural communities with limited adaptive capacity because of their dependence on agriculture for livelihoods, and limited

[12] Fergana Valley WRM 2018 KRBMP Unpublished.
[13] State Agency for Hydrometeorology (Hydromet). 2018. Assessment of Kofirnighan River Basin (KRB), natural disasters and needs. Unofficial document.
[14] see sub-section on KRB below
[15] Hydromet 2018 Assessment of KRB, Unofficial document.
[16] Further information concerning the KRB's vulnerability to extreme climate events is presented under 'Climate change context'.
[17] Tajikistan's agro-ecological zone are classified according to elevation, with the lower zones (1 and 2) primarily being used to grow irrigated crops such as cotton and sub-tropical fruit. Zones of higher elevation (3 and 4) are primarily rain-fed agriculture and used primarily for pasture land and for growing wheat, barley and lucerne.
[18] Hydromet 2018 Assessment of Kofirnighan River Basin.
[19] Fergana Valley WRM 2018 KRBMP Unpublished.
[20] Further information concerning district-specific vulnerability to extreme climate events is presented under district descriptions.

opportunities for alternative income. About one-third of the agricultural losses in Tajikistan are currently attributable to climate change and variability[21], meaning that communities in the KRB who rely on agriculture for income are extremely vulnerable to the current and future impacts of climate change.

The impacts of climate change are likely to be different in the northern sub-basin of the KRB to those in the southern sub-basin. Rural communities in the Vakhdat, Faizobod and Varzob districts are expected to become increasingly exposed to hydrometeorological hazards such as increased flooding, mudflows, landslides and GLOFs. In particular, the steep terrain in these areas increase the likelihood of sudden onset multi-hazard risks, such as landslides occurring directly after a GLOF or similar flooding event. Concomitantly, watersheds in the northern sub-basin are frequently degraded as a result of unsustainable land-use practices that increase the likelihood and impact of the above-mentioned risks. Such unsustainable practices also increase the rate of erosion and soil loss, which compromises agricultural productivity in these regions and increases flood risk in downstream areas.

Communities in the Nosiri Khusrav, Kabodiyon and Shaartuz districts, conversely, are increasingly exposed to slow onset hazards such as drought and river bank erosion. In these areas, water availability is the greatest threat to livelihoods. Water availability is limited by poorly functioning irrigation supply infrastructure. This infrastructure is being damaged by: i) high levels of sedimentation from water-borne and wind-borne sediment; and ii) floods in the Kofirnighan River that damage irrigation dams and canals. Floods in the Kofirnighan River also cause riverbank erosion that results in the loss of arable land.

[21] NHDR 2012 Tajikistan: Poverty in the Context of Climate Change.

Table 2. Environmental disaster events for the period 1997–2010[22].

#	Districts of KRB	Frosts and cold spells	Wind storms	Hails	Thunderstorms	Rains	Rainfall	Drought	Land-slides	Crumbling	Rock-falls	Soil sedimentation	Avalanches	Mudflows	Floods	Waterlogging	Water run-off	Total
1	Varzob	0	1	4	0	17	1	1	8	0	0	0	3	8	4	0	0	47
2	Vahdat	0	7	9	0	19	2	0	1	1	0	0	0	11	15	0	0	65
3	Hissar	0	2	6	1	13	3	2	3	2	1	0	0	10	7	0	0	50
4	Qabodiyon	0	4	3	0	13	1	1	0	0	0	0	0	8	12	0	0	42
5	N. Khisrav	1	19	0	0	6	1	1	0	0	0	0	0	2	1	0	0	31
6	Rudaki	0	8	6	0	34	6	0	5	0	0	1	0	36	8	0	0	104
7	Tursunzade	0	0	2	0	7	0	0	2	0	0	0	0	7	3	0	1	22
8	Fayzabad	0	9	8	0	11	3	0	2	0	0	0	0	7	8	0	0	48
9	Shahrinav	0	1	4	0	14	2	0	1	0	0	0	1	10	3	0	0	36
10	Shahrituz	0	3	1	0	13	0	1	0	0	0	0	0	7	7	1	0	33
11	Total	1	54	43	1	147	19	6	22	3	1	1	4	106	68	1	1	478

[22] **Source:** Committee for Emergency Situations and Civil Defence.

A population's ability to conduct meteorological and hydrological monitoring plays an important role in the early detection of flooding and mudflow events. The most optimal average number of stations for monitoring must comprise 1 station per 1000km/sq (Table 3). In the KRB, there is an average of 11 meteorological stations and 13 hydrological stations (equating to 1.55 units per 1000km^2). This indicates that there is sufficient means for monitoring in the basin. Nevertheless, specialized agencies and units require significant improvements in functional reliability with regards to analysis, prognosis, zoning and monitoring of water related hazards.

Table 3. List of meteorological stations (hydroposts) in the Kofirnighan River Basin[23].

#	Stations	Index	Latitude		Longitude		Height, meters above sea level	Work period
			Degrees	*Minutes*	*Degrees*	*Minutes*		
1	Ayvadj	38930	36	58	68	2	318	2014-2018
2	Anzob	38719	39	5	68	52	3373	1939-2018
3	Bustonobod	38842	38	40	69	38	1964	1948-2018
4	Hissar	38837	38	30	68	39	768	1968-2018
5	Dushanbe	38836	38	35	68	44	800	1946-2018
6	Isambay	38838	38	3	68	21	563	1949-2018
7	Fayzabad	38845	38	32	69	19	1215	1943-2018
8	Hushyori	38833	38	53	68	50	1361	1945-2018
9	Chormagzak	38841	38	28	69	12	1730	1963-2018
10	Shahrituz	38937	37	19	68	9	378	1929-2014
11	Maykhura	38717	39	1	68	47	1922	1963-2018

Criterion 3: Distribution of development support

Following the endorsement of the Water Sector Reform Programme by the Government of Tajikistan, the lead agency (MoEWR) has agreed with key donor development partners on a plan to equitably distribute technical assistance and development projects in each river basin. This equitable distribution was decided in the context of upcoming multi-million projects being channelled in support of water sector reforms by the World Bank, Asian Development Bank, Swiss Development Agency and Cooperation, Japan International Cooperation Agency, and the European Union (Table 4). In more recent months, other organizations and international NGOs have joined existing projects through consultations with the MoEWR and the Donor Development Council (DDC).

In each river basin that has secured support, donor organisations are required to provide technical assistance to the MoEWR with regards to the following activities:

- establishment of the River Basin Organisations and Sub-river Basin Organisations;
- establishment of River Basin Councils;

[23] National Agency for Hydrometeorology.

- development of long-term basin plans for the use, protection and development of water resources, as well as annual and seasonal plans for the distribution and management of water resources; and
- development of capacity-building workshops for River Basin Organisations and Sub-river Basin Organisations.

Table 4. River basins, key donor agencies and the status of interventions per river basin in Tajikistan.

#	River basins	Key donor agencies	Status
1	Syr-Darya river basin	World Bank, Swiss Agency for Development and Cooperation, HELVETAS Swiss Inter-cooperation	Ongoing since 2016
2	Zeravshan sub-river basin	World Bank, European Union, German Cooperation Agency	Ongoing since 2016
3	Vakhs River Basin	World Bank	Ongoing since 2016
4	Pyanj River basin	World Bank, Asian Development Bank, Japan International Cooperation Agency	Ongoing since 2016
5	Kofirnighan River Basin	World Bank	Preparation phase since 2018

The KRB was the last of Tajikistan's river basins to receive donor support – i.e. from the World Bank in 2018. Yet, having secured this support, the KRB fulfils the third criteria of site selection, which makes it eligible as a target site in the proposed project.

Preliminary target districts in the Kofirnighan River Basin

Based on the preliminary analysis above, as well as an analysis of climate-related vulnerability information from District Development Plans of the KRB, it is suggested that the following six districts within the KRB are target sites for the project (Table 5). The target districts Vahdat, Fayzabad and Varzob are located upstream of the KRB, while Nosiri Khistrav, Kabodiyon and Shaartuz are located downstream of the KRB. The specific number of *jamoats*, *raions* and villages are also selected based on a preliminary assessment of vulnerability data (including *inter alia* climate change observations and projections, climate related disaster events, upstream-downstream linkages) as well as the adaptive capacities of local authorities and target populations.

Table 5. Target districts, total number of *jamoats* and villages and the target number of *jamoats* and villages for respective funding options in the KRB.

#	Target Districts	Total number of units		Target number of *jamoats* and villages for respective funding option					
				US$6 million		US$8 million		US$10 million	
		Jamoats	*Villages*	*Jamoats*	*Villages*	*Jamoats*	*Villages*	*Jamoats*	*Villages*
1	Fayzabad	8	71	2	16	3	22	4	30
2	Varzob	6	70	2	24	3	30	4	35
3	Vahdat	10	178	4	45	5	55	6	65
4	N. Khisrav	2	15	1	2	1	4	2	6
5	Shaartuz	5	35	2	7	3	9	4	12
6	Kabodiyon	7	43	3	7	4	11	5	15
Total		**38**	**412**	**14**	**101**	**19**	**131**	**25**	**163**

A more specific breakdown of selection indicators for each district is outlined in Table 6 below.

Table 6. District, indicators and sources regarding selection indicators for each district in the KRB.

#	District	Indicators	Sources
1	Fayzabad	(a) number of population and households living in hazardous zones	Programme for socio-economic development of Fayzabad district for the

		(b) types of disaster events typical in target Jamoats and villages: *mud-flows, floods, landslides*.	period 2016-2020, p.60 (also referred to as DDP)
2	Varzob	(a) number of villages located in hazardous zones; (b) types of disaster events: *landslides, mudflows, rockfalls*.	Programme for socio-economic development of Varzob district for the period 2016-2020, p.80 (also referred to as DDP)
3	Vahdat	(a) number of villages located in hazardous zones; (b) types of disaster events: *landslides, mudflows, rockfalls*.	Programme for socio-economic development of Vahdat district for the period 2016-2020, p.53 (also referred to as DDP)
4	Nosiri Khisrav	(a) number of population and households living in hazardous zones; (b) types of disaster events: *strong winds, droughts, mudflows*.	Programme for socio-economic development of Nosiri Khisrav district for the period 2016-2020, p.60 (also referred to as DDP)
5	Shaartuz	(a) number of villages located in hazardous zones; (b) types of disaster events: *flooding, mudflows, sand storms*.	Programme for socio-economic development of Shaartuz district for the period 2016-2020, p.66 (also referred to as DDP)
6	Kabodiyon	(a) number of villages, households and population in hazardous climatic zones; (b) types of disaster events: *flooding, mudflows*.	Programme for socio-economic development of Kabodiyon district for the period 2016-2020, p.67 (also referred to as DDP)

Figure 2, 3 and 4 illustrate the average annual temperature and precipitation in the KRB.

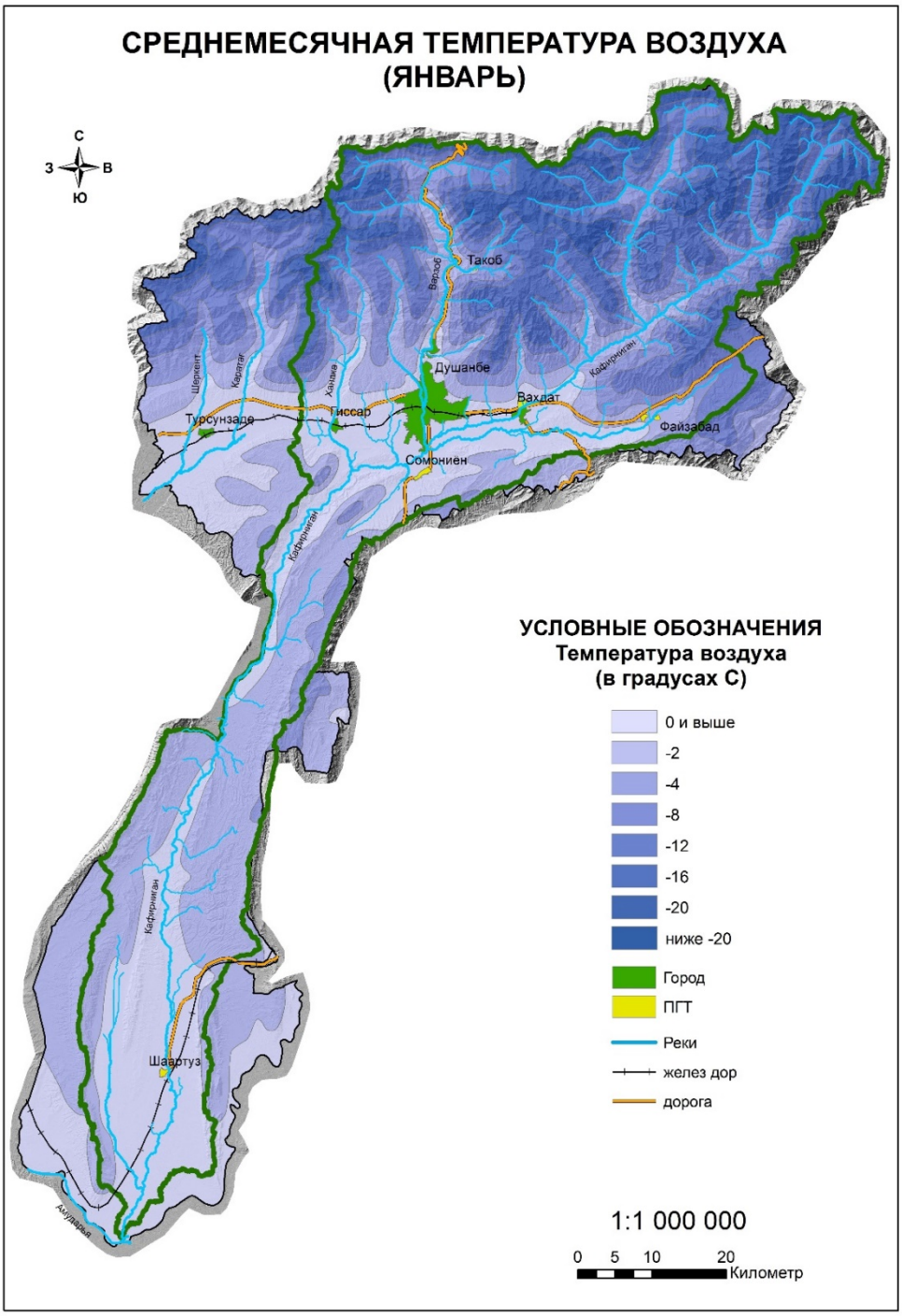


Figure 2. Average atmospheric temperature (January) in the KRB.

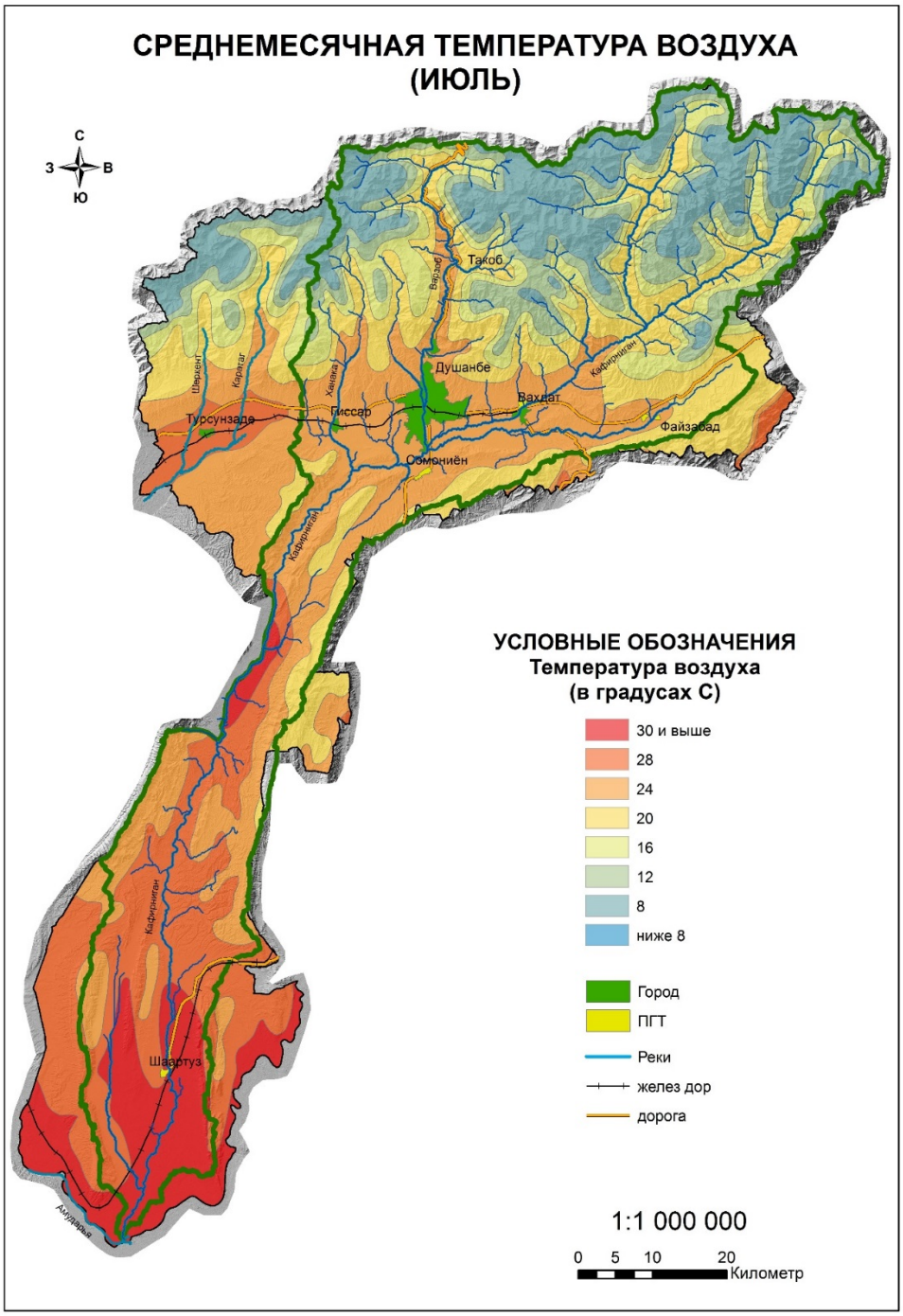


Figure 3. Average atmospheric temperature (July) in the KRB.

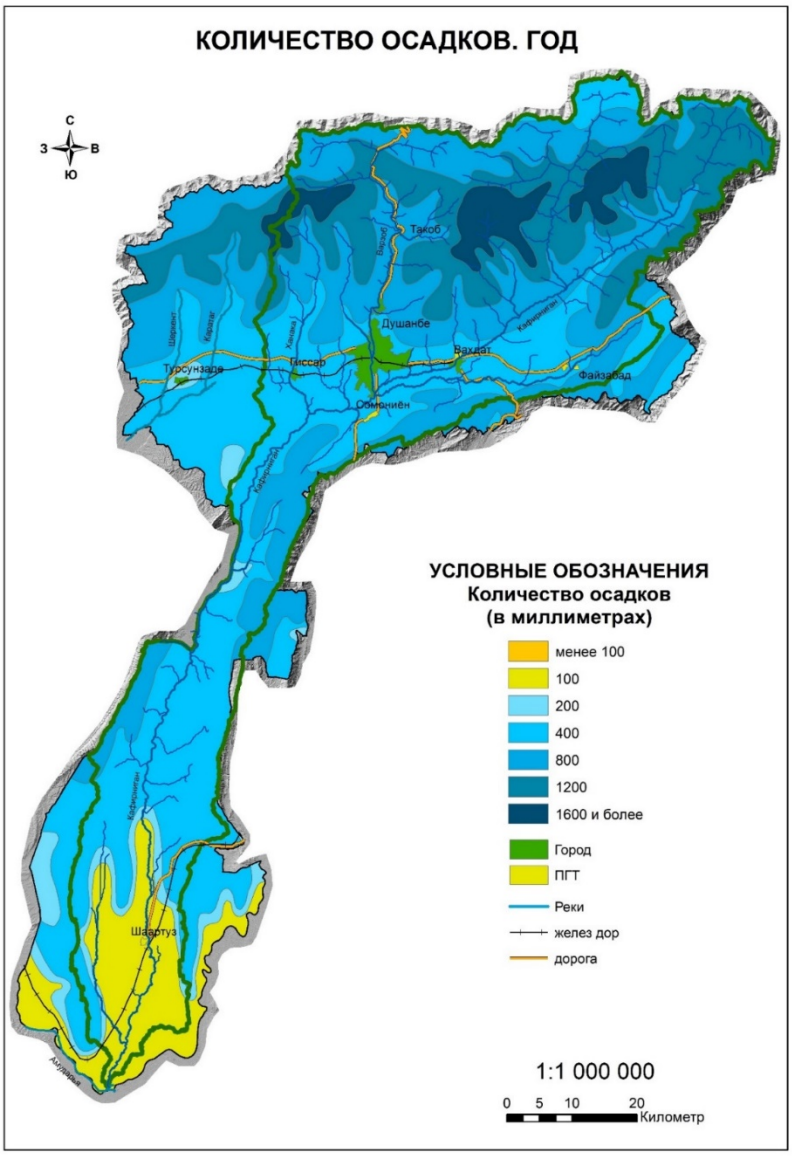
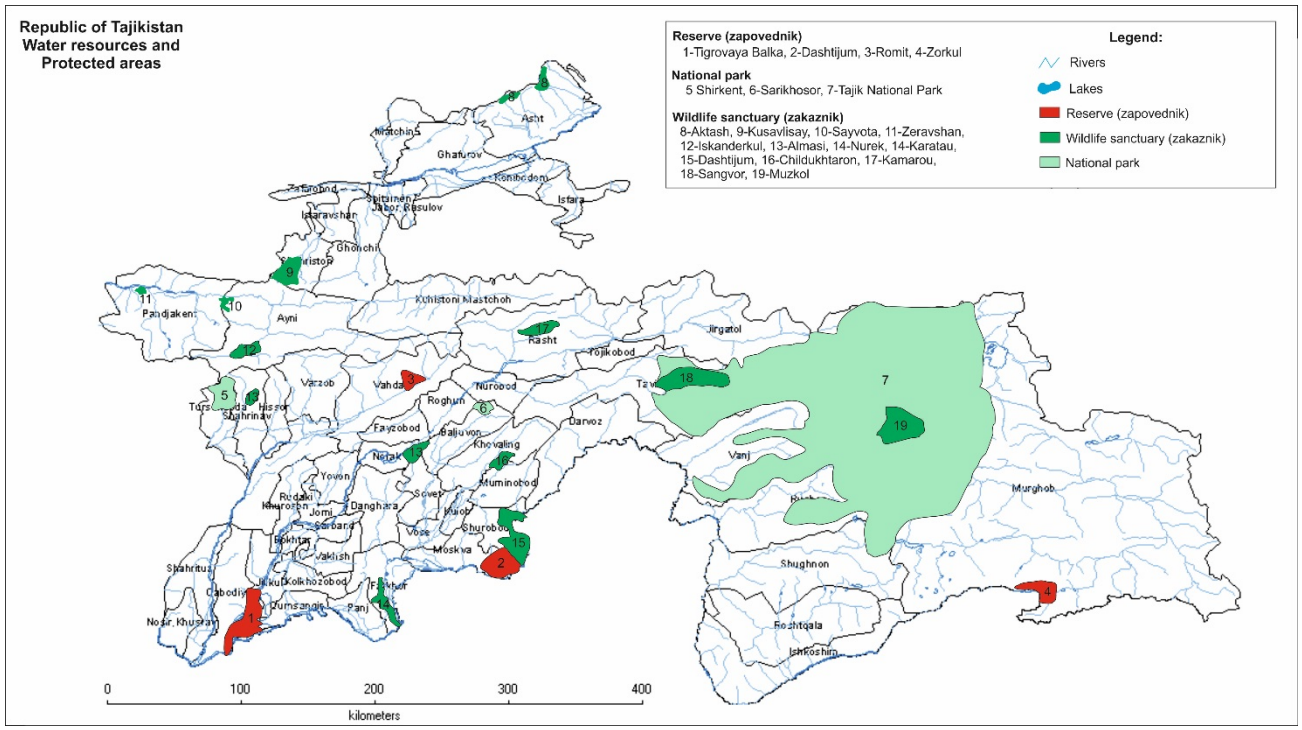


Figure 4. Average annual precipitation in the KRB.

End of justification for KRB

ANNEX 4. ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

ESMF for the project titled: “An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan”



21 September 2018

INTRODUCTION

The present Environmental and Social Management Framework (ESMF) has been developed in support of the AF-funded project "***An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan***" prepared by UNDP together with the Government of Tajikistan. As this project is supported by UNDP, the project has been screened against UNDP's Social and Environmental Standards (SES) utilizing the UNDP Social and Environmental Screening Procedure (SESP) and deemed a Moderate Risk project.

The project includes a range of activities that have not been fully specified in terms of specific locations/components and cannot be fully assessed at this stage for all potential social and environmental risks and impacts. As such, this ESMF has been prepared that sets out the principles, rules, roles, guidelines and procedures for screening, assessing, and managing the potential social and environmental impacts of the forthcoming interventions. It contains measures and plans to avoid, and where avoidance is not possible, to reduce, mitigate and/or offset adverse risks and impacts. The ESMF specifies the most likely applicable social and environmental policies and requirements and how those requirements will be met through procedures for the screening, assessment, approval, mitigation, monitoring and reporting of social and environmental risks and impacts associated with the activities to be supported.

For the project components that have been defined with a reasonable degree of certainty, this ESMF includes as annexes initial management plans (or outlines thereof) for addressing likely social and environmental impacts and to address the requirements of applicable policies and standards, including the UNDP SES.

Overview of the Project

The overall objective of the proposed project is to enhance the climate resilience of small-scale farmers and pastoralists in Tajikistan. Climate-resilient catchment management strategies will inform the planning and development of rural areas on adapting to the increasing impacts of climate change. The strategies will inform the use of Ecosystem-based Adaptation (EbA) interventions that will build the resilience of rural communities while promoting the sustainable management of natural resources through an integrated landscape approach.

Capacity building for EbA, SLM and CSA at the *Raion* (district) and *Jamoat* (sub-district) levels will improve planning and coordination by government decision-makers and local communities for managing the country's ecosystems. Improved ecosystem management will reduce the risks posed by land degradation. Furthermore, such activities will also increase resilience to climate change. The strengthened enabling environment brought about by the project outputs will: i) improve the governance of natural resources at the *Raion* and *Jamoat* levels; ii) enhance support services and enable participatory, local-level planning; and iii) improve decision-making for implementing EbA interventions across the country.

To achieve this objective, there are three proposed project outcomes listed below:

1. Catchment management strategy to manage climate risks operationalised at raion (district) and jamoat (sub-district) levels in the Kofirnighan River Basin
2. An integrated approach to building climate resilience of agro-ecological landscapes operationalised at a village level
3. Existing knowledge management platforms supported for integrated catchment management and EbA

Project components, outcomes and outputs

Table below indicates the proposed component, expected outcomes, concrete outputs and indicative activities of the project, which are further detailed in the project proposal.

Table 1. Project components, expected outcomes, concrete outputs and indicative activities.

Expected Outcomes	Expected concrete Outputs	Indicative activities
Component 1. Integrated catchment management to build climate resilience.		
1. Catchment management strategy to manage climate risks operationalised at *Raion* (district) and *Jamoat* (sub-district) levels in Kofirnighan River Basin (KRB).	1.1. Multi-hazard climate risk models developed for vulnerable watersheds in the KRB.	1.1.1. Conduct a gap analysis on existing risk information in the Kofirnighan River Basin
		1.1.2. Develop Multi-Hazard Climate Risk Models for the Kofirnighan River Basin.
	1.2. Providing support for upgrading automated weather stations in KRB watersheds	1.2.1. Provide technical support for the modernisation of automated weather stations in the most vulnerable districts of the KRB.
		1.2.2. Collect and collate data from improved automated weather stations.
		1.2.3. Use collected data to inform climate risk information and adaptation advisories for agro-ecological extension service providers.
	1.3. Integrated catchment management strategy developed for the KRB.	1.3.1. Develop an integrated catchment management strategy for the KRB to inform and facilitate cross-sectoral landscape planning.
		1.3.2. Deliver a training programme on mainstreaming climate risks for integrated catchment management planning. Sub-activities are detailed below. 1.3.2.1. Training conducted to relevant Committee for Environmental Protection (CEP) representatives to integrate catchment management into implementation and monitoring activities for all projects going forward, both those with a focus on climate change and without. 1.3.2.2. Training provided to the personnel of the supported knowledge management centres – including the DoG Open Centre and to UCA – on assessing available climate risk information and ensuring it is all made available through the relevant portals/hubs. 1.3.2.3. Training provided to *Raion*-and *Jamoat*-level government departments on integrated catchment management and identifying climate risks that require such a management approach.
		1.3.3. Provide training for selected communities on identification of EbA activities and implementation.
	1.4. Strengthened coordination and training mechanisms integrated climate-resilient catchment management.	1.4.1. Strengthen existing training mechanisms at the *Raion* and *Jamoat* levels.
		1.4.2. Provide training on integrating EbA into catchment management [link with Activity 2.1.2].
	1.5. Payment for Ecosystem Services (PES) models to support the long-term financing of integrated catchment management strategy implementation.	1.5.1. Develop suitable PES models for the KRB.
Component 2. Ecosystem-based Adaptation (EbA), including Climate-smart Agriculture (CSA) and Sustainable Land Management (SLM), in agro-ecological landscapes.		
2. An integrated approach to building climate resilience of agro-ecological landscapes operationalised at a village level.	2.1. Agro-ecological extension services supported at the *Jamoat* level to provide technical support for EbA implementation.	2.1.1. Support agro-ecological extension services by training existing service providers on EbA, climate-resilient agriculture and multi-hazard climate risk management.
		2.1.2. Establish EbA demonstration plots in each of the target villages.
		2.1.3. Conduct farmer field schools (FFs) in target villages making use of demonstration plots [Activity 2.1.2].
	2.2. Watershed Action Plans (WAPs) developed that promote climate resilience and enhance economic productivity for target communities.	2.2.1. Conduct participatory mapping at the watershed level.
		2.2.2. Develop Watershed Action Plans (WAPs) for vulnerable watersheds in the KRB.
	2.3. EbA interventions implemented in target watersheds by local communities.	2.3.1. Support local communities to implement priority EbA interventions.
		2.3.2. Support local community members in developing Enterprise Plans (EPs) based on EbA interventions.

		2.3.3. Monitor the impacts of EbA interventions.
Component 3. Knowledge management on building climate resilience through integrated catchment management and EbA in the KRB.		
3. Existing knowledge management platforms supported for integrated catchment management and EbA.	3.1. Existing knowledge management platforms supported for collating information on the planning, implementation and financing of EbA interventions.	3.1.1. Support existing knowledge management platforms responsible for collating, analyzing and disseminating information on climate risks and suitable adaptation options.
		3.1.2. Collect and collate data and information from automated weather stations, agro-ecological extension centers and international publications.
	3.2 An impact evaluation framework established to enable effective adaptive management of EbA activities.	3.2.1. Establish an impact evaluation framework to enable the effective quantification of project benefits and to provide information for future planning and implementation of EbA interventions.
		3.2.2. Obtain data and information through applying the framework will be disseminated via the knowledge platform(s).

Potential Social and Environmental Impacts

The preliminary analysis and screening process (UNDP's Social and Environmental Screening Procedure, or SESP) has revealed some moderate risks, representing potential limited social and environmental impacts associated with proposed project activities. Planned interventions are unlikely to result in significant negative social and environmental impacts. Most impacts are likely to occur during the construction phase of EbA interventions. These impacts are likely to be minor and without long-term adverse effects. Overall, project activities are designed to enhance the provision of ecosystem services within the KRB, reducing negative environmental impacts and generating multiple associated socio-economic co-benefits for local communities. It is expected that these environmental and socio-economic co-benefits will materialise during the operational phase of the project and persist well beyond project completion.

The Environmental and Social Management Plan (ESMP) that details risk mitigation strategies will be developed during the Inception Phase of project implementation. This ESMF is in line with UNDP's Social and Environmental Standards (SES), which will guide all aspects of project implementation.

These potential impacts are summarized and discussed in the table below (*Table 2: Potential social and environmental impacts and mitigation measures*).

Table 2. Potential social and environmental impacts and mitigation measures.

Activity/ Risk	Potential Social and Environmental Impact	Potential Project Benefit	Mitigation measures	Monitoring
Changes in pasture and livestock management practices and reforestation measures (grazing control, rotational grazing, livestock exclusion zones, rehabilitation and restoration of forest ecosystems).	Project activities could potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups.	Improved livelihoods, health and well-being of target communities. Specifically: • Increased pasture productivity and carrying capacity; • Increased provision of food and fodder; • Increased nutrition for local community; • Increased provision of fuel-wood and timber; • Protected crops and livestock from extreme climatic conditions; • Increased bio-diversity conservation; • Increased soil moisture; • Slowed water run-off;	The project will support grazing control measures (rotational grazing), establish livestock exclusion zones and reforestation measures sites in consultation with target benefiting communities. Cost-effectiveness analysis with mid- to long-term impacts will be carried out to inform communities of anticipated benefits, but to address short-term limitations concerning access to pasture lands and forests, the project will promote alternative business solutions and community enterprise developments that will help communities generate compensating incomes. To further support sustainability of given measures, the project will implement site-appropriate interventions, for example, reducing extensive livestock grazing through enhanced fodder production techniques (within exclusion zones, rotational grazing, on-site production, demonstration plots, etc), increasing productivity of on-site animal husbandry, and establishing watering sites at mid-stream levels of catchment/watershed areas (saving livestock energy in search of water sources in the upstream). To alleviate such a limitation, the project will target degraded forests and pasturelands, and once rotational grazing is put in place and target deforested lands are planted with fast-growing woodlots, the communities will soon begin to benefit more already during the project period, the benefits they would not have been otherwise able to have from degraded assets at the time. The project will engage widely with relevant stakeholders at regional, sub-regional and	Mid-term review, project monitoring missions.

			community levels to agree on rotational routes for transit of larger herds, and eliminate potential compromising of implemented grazing control measures applied locally by large herd owners from other communities, districts and/or regions. *Jamoat* level monitoring and control mechanisms will be introduced to enforce agreed measures for elimination of land degradation and improving vegetation growth in target pasture lands, and ensure that target communities effectively benefit from project interventions. The project will also introduce energy-efficient stoves into target communities to compensate for limited access to forest resources. While such experience already exists in other regions of Tajikistan applied by partner development agencies/projects, the outcomes vary across projects with different degrees of efficiency needs. The project will assess the best practices and lessons learned and apply enhanced techniques in Kofirnighan river basin. The project will also support the implementation long-term financing of integrated catchment management strategy through PES models that will be developed for each target district. These models will further enable the financing to undertake initiatives that strengthen ecosystem services and build climate resilience with each target district and community. The PES models will be designed based on a combination of regional, international and local best practices. The design will also be informed by the results of existing PES models made use of in Tajikistan. Such	

			models will be accessed through the knowledge hubs that proposed project is supporting (under Outcome 3).	
Planting of more resilient species, using native varieties, for reforestation activities.	There is a risk of potential use of alien and invasive species.	The project will promote rehabilitation and restoration of abandoned and overexploited forestlands and degraded forest ecosystems, and reforestation of areas affected by adverse climatic events. The overall potential benefit will be: Improved and protected livelihoods, health and well-being of target communities. Specifically: • Reduced forest degradation; • Increased bio-diversity conservation; • Increased water infiltration; • Increased above-ground biomass (increased plant survival); • Protected crops and livestock from extreme climatic conditions; • Reduced slope instability and risk of minor mudslides and landslides; • Slowed water run-off; • Increased soil moisture;	The project will promote the use of native and more resilient varieties as a priority, and if needed alien species may be introduced. Certain species may be used for complementary planting (climate resilient crops seed varieties) in reforestation areas to increase vegetation and biological biodiversity, forest protection and restoration. Prior to such introduction, the project will consult relevant experts at CEP, among development partner agencies, and local *dehkan* and corporate farms on successful examples across the regions. Necessary national environmental standards, norms and procedures of adaptation of intended alien species will be followed and assessed before introduction takes place. While restoration needs are many in each target district within Kofirnighan river basin, the project will consult municipalities and communities to define restoration areas with particular focus on priority areas most vulnerable to water related adverse climatic events. The Project will also support the setting up of a procedure for tracking, monitoring and registration of restoration actions implemented. During the last year of the project an ecological and land use assessment will be carried out to evaluate the rate of success of the restoration.	Organize knowledge sharing hub, document past experiences (successes and failures), informed analysis of regulatory procedures in addressing risks of potential use of alien and invasive species; Mid-term review.

		• Reduced soil loss;		
Sowing of indigenous grass seeds in degraded rangelands	There is a risk of using unproductive and harmful grass seeds. There may be unavailable qualifications for fodder and animal feed species adapted to local conditions and target ecological zones.	The project will promote rehabilitation and restoration of degraded and overgrazed pasturelands. The overall potential benefit will be: improved livelihoods of livestock owners through increased pasture productivity and carrying capacity. Specifically: • Increased water infiltration; • Increased above-ground biomass (increased plant survival); • Increased bio-diversity conservation; • Protected crops and livestock from extreme climatic conditions; • Reduced slope instability and risk of minor mudslides and landslides; • Slowed water run-off; • Increased soil moisture; • Reduced soil loss; • Off-site benefits: reduced downstream siltation, flooding and groundwater river pollution.	In order to address risks of using unproductive and harmful grass seeds, the project will engage with technical specialists institutions (national) and local communities, and jointly carry out: • Geo-botanical survey of summer pasturelands; • Study productivity dynamics of fodder producing summer pasturelands; • Development of recommendations for improvement of summer pasturelands in mountainous areas through sowing effective fodder plans.	Organize knowledge sharing hub, document past experiences (successes and failures), informed analysis of regulatory procedures in addressing risks of potential use of alien and invasive species; Mid-term review.

Establishment of pasture use groups	Unregulated pasture use, rotational grazing and pasture transit routes may affect achievement of less than optimum project results in target pasturelands.	The project will promote sustainable use of pasturelands that will benefit livestock owners and positively impact on their livelihoods. This will be achieved through introduction of exemplary pasture management practices, governance and joint community participation schemes.	The project will support pasture use groups with necessary information and knowledge building on the stock of pasturelands in target areas, and their level of degradation and help them develop pasture improvement plans. The project will involve local authorities in order to agree on alternative transit routes for livestock owners from other communities to address over-grazing of degraded pastures. Supporting pasture use groups will ensure livestock owners bear responsibility in effective implementation of agreed pasture use plans that foresees payment mechanisms to contribute in sustainability of the interventions.	Mid-term review; Capacity building workshops; Project monitoring missions.
Harvesting of forest resources by local communities	Unsustainable community harvesting of forest resources may adversely affect project forest areas.	The project will support rehabilitation/restoration of degraded forest ecosystems in areas affected by averse climatic events. Reforestation activities are designed to also enhance biodiversity and ecosystems services of degraded areas. Reforestation activities will be guided by existing Forest Development Plans and prioritized in consultation with local municipalities and analysis of climate related vulnerabilities across communities. Although, generally across Tajikistan harvesting of	The project will aim to prevent and mitigate aggressive harvesting practices through a wider awareness campaign among communities at *Jamoat* and district levels, and introduce concrete measures to contain harvesting practices only from healthy forest ecosystems ('sustainable' harvesting). The project will actively engage communities in joint forest management activities, in planting woodlots for fuelwood and timber, implement agroforestry actions to alongside alternative business support (bee-keeping, fodder production, etc), and promote commercial plantations in salinized and degraded lands. The project will provide training for communities concerning suitable fuelwood plantations, fast growing tree species, and share best practices in sustainable use of forest resources. The communities will be supported with commercial plantation of fruit trees and will be introduced with energy-	Mid-term review; Capacity building workshops; Project monitoring missions.

		forest resources for fuelwood has declined thanks to increased access to electricity supply, the need to save electricity bills may push relatively poor households to continue harvesting forest materials to a certain degree. The project activities will target such communities where harvesting practice continues.	efficient eco-stoves to further reduce the use of wood material in vulnerable communities. Aforementioned EbA measures and techniques will be incorporated into the forestry and integrated catchment management strategies to be developed by the Project.	
Some of the expected outcomes of the project, particularly the forest restoration component, are sensitive to potential impacts of climate change	The project is directly addressing climate change vulnerabilities and adaptation capacities in the Kofirnighan river basin, and while it directly promotes adaptation measures, adverse impacts of extreme climatic events (particularly flooding, water run-off) can affect forest and agricultural areas and related livelihoods.	The project's designed activities directly support implementation of ecosystem-based adaptation, including climate-smart agriculture and sustainable land management in agro-ecological landscapes. Such actions include rehabilitation and restoration of degraded forest ecosystems, vegetation growth support, water retention measures, establishing saxaul plantations, climate-resilient crop seed planting, and others to prevent and mitigate water related adverse climatic events that have typically posed risks to livelihoods and health of target communities.	The project will aim to build climate resilience through development of catchment management strategy to manage and operationalize climate risks at district and *Jamoat* levels in Kofirnighan river basin. Current and predicted climatic variability has been taken into account during project design. Throughout the inception and implementation phase, any changes in the climate will be taken into account in planning for the implementation of EbA activities. Drought- and flood-resilient species will be used, as well as indigenous species wherever possible. Techniques to assist plant growth particularly in the seedling/sapling phases and to reduce risk of damage from extreme climate events will be used. Species will be planted in appropriate seasons to reduce the risk of this impact occuring. As part of Early Warning Systems, the project will develop multi-hazard climate risk models (MHCRM) for vulnerable watersheds in KRB and provide technical support for the	Use of climate risk management tools and assessments; Mid-term reviews; Project monitoring missions.

			modernization of automated weather stations in the most vulnerable districts of KRB. These will help authorities and communities adequately assess risks, climate related projections and incorporate these risks in the Kofirnighan River Basin Management Plans to make informed decisions on EbA activities.	
Construction of small-scale water infrastructure and irrigation systems	Project may involve community safety risks from small-scale construction activities	The Project's ecosystem-based adaptation measures may involve construction of water saving irrigation systems, rain-water harvesting systems in water-scarce zones, rehabilitation of irrigation, draining and pumping systems and on-farm water resources management. These measures will benefit communities for their livelihoods and agricultural productions.	The Project will follow related environmental impact assessment procedures and ensure compliance with national construction standards and norms, sanitary norms and regulations, and other national laws and regulations (forestry, water, environment, and health). The project will also follow technical guidance and best practices regarding rain-water harvesting systems, drip-irrigation techniques, and micro-reservoirs that are not adequately institutionalized across the country. Other activities may include construction of gabions, terracing, bank enforcement and small dams, the project will assess best practices and lessons learned to address community safety risks from such construction.	Mid-term review; Project monitoring missions.
Pest control measures and agricultural support may involve potential use of pesticides	There may be a risk of application of pesticides that may have a negative effect on the environment or human health	The Project will support producers to adopt improved farming techniques (e.g. organic agriculture, soil and water conservation) that would reduce the use of fertilizers and harmful pesticides, thus reducing the contamination of soil and water bodies.	The project will promote safe and healthy agro-ecological practices, and communities will be trained on these through support of agro-ecological extension services at the *Jamoat* level to provide technical support for EbA implementation. Though not foreseen, but if potentially harmful pesticides are needed and/or will be used, they will be properly managed, stored, used, following national and international standard regulation and procedures.	Mid-term review; Project monitoring missions.

Duty-bearing ministries/agencies and local authorities do not have sufficient expertise and technical/material resources to meet their obligations in the Project.	Capacities of national institutions, district authorities and governance mechanisms are not sufficient to provide effective (governance) solutions to climate problems that are complex and multi-sectoral. There is a risk that duty-bearing organizations will tend to focus more on mitigation response on consequences of adverse climatic and environmental hazards, rather than on prevention through EbA actions.	The project design includes a dedicated component (Component 3) with an extensive set of capacity building actions and knowledge building and sharing at national, regional, local and community levels, based on analysis of institutional framework and related capacities carried out during the project preparation.	Focal institutions will be strengthened through participatory development of integrated catchment management strategy and Watershed Action Plans for the Kofirnighan river basin. Coordination and training mechanisms will be strengthened within target *Jamoat*s (sub-district government level), which includes capacity building on mainstreaming integrated catchment management (with EbA integrated) into planning and budgetary processes. Trainings target relevant government institutions involved in catchment/watershed management, including CEP and Ministry of Energy and Water Resources. In the framework of implementing the water sector reform programme and development of Kofirnighan River Basin Plan under the leadership of the Ministry of Energy and Water Resources, the project will contribute in the river basin development and planning processes through integrating catchment management strategies and watershed action plans with EbA related interventions as necessary.	Capacity building workshops; Exchange visits to related sites where partner projects have been implemented; Mid-term review; Project monitoring missions;
Potentially affected stakeholders, in particular marginalized groups, could potentially be excluded from fully participating in decisions that may affect them.	Limitations may exist in the capacities of local stakeholders, in particular poor and vulnerable groups, to participate effectively in decision making that can affect them. Marginalized groups in project area of Kafernigan river basin can be considered poor and vulnerable population that	Marginalized groups in project area of Kofirnighan river basin can be considered poor and vulnerable population that potentially include those living in places with increased impacts of climate change, food insecure households, households with limited or	Prior to project implementation, during inception phase, the project will carry out vulnerability assessment of target communities in participatory manner holding focused consultations in designing specific tailor-made activities suitable for vulnerable and marginalized groups. Where feasible such groups will be prioritized for concrete adaptation interventions. The Stakeholder Engagement Plan will guide such consultations inclusively during preparation	Inception assessments; Mid-term review; Consultation workshops; Project monitoring missions.

	potentially include those living in places with increased impacts of climate change, food insecure households, households with limited or no productive assets (limited resilience), livestock and/or agricultural land plots. Given the relatively higher rates of labor migration among men (to Russian Federation and else), households without manpower, female-headed households, and those with small children and elderly may also be considered vulnerable. Often, as experience shows, such vulnerable groups have limited mobility to participate during key stages of project design and implementation.	no productive assets (limited resilience), livestock and/or agricultural land plots. Given the relatively higher rates of labor migration among men (to Russian Federation and else), households without manpower, female-headed households, and those with small children and elderly may also be considered vulnerable. Often, as experience shows, such vulnerable groups have limited mobility to participate during key stages of project design and implementation. The project will implement a number of measures and actions that will benefit these groups.	phases, assuring broad representation of existing relevant community-based organizations and groups. These involve, farming associations and cooperatives, women's committees, intervention related initiative groups, pasture development associations, Water User Associations (WUA), forestry cooperatives and communal health promoters. The project will monitor and assess the extent of involvement of vulnerable and marginalized within such groups and associations. Among targeted actions that may be prioritized and suitable for vulnerable groups may include on-farm adaptation interventions, household plots productivity measures, selection of demonstration plots with farmer field school support. Certain enterprise development and income generating activities (bee keeping, fodder production, livestock productivity support, etc) may also be suitable for the given groups to ensure benefits are distributed inclusively and in equitable manner.	
Women may be excluded from decision-making or not adequately participate in the design/ implementation of the project. As a result, they may have unequal access to resources and/ or access to opportunities and benefits.	Due to high level of male labor outmigration from rural communities, women are overburdened with household management and maintenance of nearby land assets. This may potentially limit women's participation in project consultation and planning processes, but if necessary measures are taken, the increased role of women in agriculture and livestock management at household	Project activities will be designed and implemented so that all genders are: (a) able to participate fully and equitably, (b) receive comparable social and economic benefits, (c) do not suffer disproportionate adverse effects as per UNDP Gender Mainstreaming Strategy.	Designed project activities will be implemented so that all genders are: (a) able to participate fully and equitably, (b) receive comparable social and economic benefits, (c) do not suffer disproportionate adverse effects as per UNDP Gender Mainstreaming Strategy. A more detailed gender analysis will be undertaken in the inception phase of the project to assess divisions of labor and women's role and access to resources and to develop recommendations on how project will promote women's equality and empowerment, including participation in project decision-making, as outlined in the ESMF.	Gender assessment; Use of disaggregated and measurable indicators related to gender equality and women's empowerment; Capacity building workshops; Mid-term review; Project monitoring missions.

	level may result advantageous to women in the first place.		For this purpose, based on a detailed gender analysis, and in consultation with target communities that have prioritized their sub-projects, a comprehensive Gender Action Plan will be developed that will state out requirements to ensure that SES are met. The requirements and measures will ensure that women receive an equitable share of benefits and that their status and interests are not marginalized. Participatory processes will include specially designed methodologies that enhance the participation of women and therefore enhance the inclusion of their views into the activities of the project, using existing mechanisms for representing women's views. For monitoring, disaggregated and measurable data related to gender equality and empowerment of women will be incorporated. Furthermore, when possible, measures and techniques that can have a positive impact by closing the gap of inequality between men and women will be promoted.	

NATIONAL POLICY FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL MATTERS

National policies, plans, strategies and development goals

The table below outlines the relevant national and sub-national policies, plans, strategies and development goals.

Table 3. National policies, plans, strategies and development goals

Strategy	Year enforced	Alignment
National strategies		
National Development Strategy 2016–2030 (NDS)	2016	The primary focus of the NDS is on the long-term development of Tajikistan to improve living standards for the population. NDS objectives to achieving this include: i) poverty eradication; ii) sustainable economic growth; iii) promotion of sustainable consumption and production patterns; and iv) sustainable use of natural resources. The vulnerability of the Tajik population to climate change is acknowledged throughout the NDS, with the importance of agriculture and water management to alleviating this is highlighted. Outcome 1 and 2 of the project therefore align with achieving the ultimate goal of the NDS in the country.
National Strategy and Action Plan on the Conservation and Sustainable Use of Biodiversity (CBD Strategy)	2003	Several interconnected components contribute to the primary objective of the CBD Strategy. A priority element of the 'geosystem-level approach' outlined in the CBD Strategy is the restoration and reforestation of degraded landscapes to reduce soil erosion, particularly in landslide and already eroded areas. Outcome 2 is aligned with this strategic component through implementing EbA activities that contribute to restoration and reforestation in degraded landscapes.
National Strategy on Disaster Risk Management for 2010–2015 (NDRMS)	2010	The NDRMS identifies the significance of climate change-related disasters in the country such as droughts and high-water events. It is also acknowledged in the strategy that mitigation for these types of events needs to be incorporated into the design phase of new development projects. The project is therefore aligned with the NDRMS under Outcome 1, relating to integrated catchment management which includes the improvement of water monitoring systems.
The National Climate Change Adaptation Strategy (NCCAS)	2016	Within the NCCAS there are guidelines provided for priority adaptation actions to be undertaken in Tajikistan. The proposed project is well-aligned with the NCCAS because they both recognize that climate change effects on the agricultural sector result in significant negative impacts for the population. The NCCAS also recognizes the potential of EbA as an effective adaptation approach. The NCCAS is currently in draft format and has not yet been accepted by the government. Notwithstanding this information, the proposed project is aligned with the NCCAS through both Outcome 1 and 2.
National programmes and plans		
National Programme of Actions to Combat Desertification (NPACD)	2001	Outcome 2 of the project aligns with the NPACD focus on 'rational land tenure' and 'measure on rational nature using'. These focal points refer to the sustainable use of natural resources, with clear guidelines on reforestation and mitigating the effects of water erosion. Outcome 3 aligns with two further objectives of the NPACD, namely: i) the development of better platforms to disseminate climate change information; and ii) increasing the role of the local population in collecting and collating data.

Strategy	Year enforced	Alignment
Strategic Programme for Climate Resilience (SPCR)	2011	The SPCR was developed in response to the specific vulnerability of Tajikistan to climate change and the associated economic, environmental and social impacts. It is the strategic overview of the Pilot Programme for Climate Resilience (PPCR), which consists of six core components. One of these core components is 'Agriculture and sustainable land management', which focusses on incorporating climate resilience into all sectors of land management. Outcome 2 of the proposed project has a strong alignment with this component.
National Action Plan for Climate Change Mitigation (NAPCC)	2003	The NAPCC is the only strategic framework in the country that specifically addresses the implications of climate change. All outcomes of the project are strongly aligned wth the NAPCC.
National Environmental Action Plan (NEAP)	2006	The NEAP focusses on a broad spectrum of current environmental concerns, many of which are likely to be exacerbated by climate change. Amongst the most prevalent concerns included in the NEAP include: i) soil erosion; ii) deforestation and land degradation; iii) high water events; and iv) water scarcity. Outcome 1 and 2 of the project align with these concerns. The NEAP also recognizes the need to improve environmental knowledge in Tajikistan at both institutional and local levels, which is complemented in Outcome 3 of the project.
Agricultural Reform Programme of the Republic of Tajikistan for 2012–2020	2012	The Agricultural Reform Programme includes a direct focus on mitigating the negative impacts of climate change for agricultural production. This includes the primary activity of 'systematic reduction of soil erosion, land degradation and deforestation by improving natural resources management'. The programme includes a focus on EbA strategies with emphasis on soil erosion activities. Both Outcome 1 and 2 of the project align with these focal points of the Agricultural Reform Programme. Another important component of the programme is the 'development and establishment of information management systems that would enable communities, local and national authorities to effectively collect, record and analyze reliable information on the impact of natural disasters and climate change'. Outcome 3 of the project is strongly aligned with this component.
Strategies with a focus on climate change		
Greenhouse Gas Abatement Strategy (GHG Strategy) included in the NAPCC	2003	In order to meet the UNFCCC commitments for Tajikistan, the GHG Strategy was developed with the focus to address the problem of source-based anthropogenic emissions. Outcome 2 of the proposed project aligns with the objective of promoting sustainable forms of agriculture in light of climate change considerations. Additionally, Outcome 2 aligns with the priority of enhancing natural sinks of carbon including forests and soils.
Strategy of Adaptation to Climate Change, Prevention and Minimization of its Adverse Effects (Adaptation Strategy) included in the NAPCC	2003	In order to meet the UNFCCC commitments for Tajikistan, the Adaptation Strategy was included within the NAPCC to ensure that climate change adaptation remained a focal point for development in the country. Outcome 2 and 3 of the project align with the following components of the strategy: • improvement of systematic observation and monitoring network for ensuring timely adjustment of adaptation measures; and • improvement of the data collection system and analysis, interpretation and dissemination of the results among the end users. Outcome 1 of the project is aligned with two of the priorities relating to water resources: • development of measures in the field of water resources protection, water and energy saving in the conditions of climate change; and

Strategy	Year enforced	Alignment
		• development of new, and improvement of existing technical and economical tools on water use at national and regional levels. In addition, Outcome 2 of the project aligns with four of the five 'measures of adaptation and minimisation of adverse impacts of climate change' relating to land use. These are listed below. • Zoning of territory depending on the extent and type of influence of climatic factors on the condition of lands taking into account its vulnerability to the different forms of erosion. • Setting a selection of soil protection measures for specific landscapes according to the influence of climatic and anthropogenic factors. • Conducting land-reclamation measures, which include crop rotation, soil protection and limiting the ploughing of steep lands that will help to conserve the humus in the soils under the expected conditions of climate change. • Forest rehabilitation measures in the regions prone to drought and wind erosion.
Laws		
Land Code of The Republic of Tajikistan (Land Code)	1996	The Land Code regulates all land relations and is directed at the rational use and protection of land, improving the fertility of soil, maintenance and improvement of the natural environment and for equal development of all forms of economic activity in Tajikistan. According to the Land Code, provision of land plots to legal entities and individuals is carried out on the basis of resolutions of the relevant executive authorities in accordance with Article 26 of the Land Code. In the case of the project, if tree or any other crop planting is to be undertaken the decision will be taken by district hukumat based on the recommendation of the district level land committee upon consent of the land user (Source: Land Code Article 22. The procedure for granting land).
Water Code of The Republic of Tajikistan (Water Code)	2000	The Water Code is aimed at regulating water relations to ensure rational use. This is so that there is adequate supply for the needs of the population and the natural environment. Decisions pertaining to the work on rehabilitation of irrigation and water pumping stations will be conducted in accordance with provisions of the Water Code and will be agreed upon and coordinated with the Agency for Land Reclamation and Irrigation.
Law of the Republic of Tajikistan on Land Reform (Land Reform Law)	1994	The tasks of land reform in the Republic of Tajikistan are the: i) creation of conditions for equal rights for the development of the various forms of managing land; ii) formation of multi-structural economy; iii) rational use of land and land protection to increase agricultural production. The project will adhere to this Law in its cooperation with *dehkan* farms as land users, in the implementation of interventions related to establishing commercial plantations, organic mulching, dry-tolerant crops, horticulture, etc.
Law of the Republic of Tajikistan on Land Management (Land Management Law)	2001	The objectives of land management in the Republic of Tajikistan include: i) creation of conditions for equal development of different forms of economies on the land; ii) formation of plural economies; iii) rational land tenure and protection of land to increase agricultural production. The project will adhere to this Law in its cooperation with *dehkan* farms as land users, in the implementation of interventions related to establishing commercial plantations, organic mulching, dry-tolerant crops, horticulture, etc. Project activities will, at all times, respect existing land tenure. Wherever possible, project activities will seek to strengthen existing land tenure arrangements through stakeholder engagement.
Law on Environmental Protection	2011	This Law determines and regulates the state policy in the field of environmental protection, and is aimed at providing sustainable social and economic development, guarantee of human rights for the healthy and favorable environment, strengthening of law and order, prevention of negative impact of

Strategy	Year enforced	Alignment
		economic and other activity on the environment, the organization of rational use of natural resources, and providing ecological safety. The project interventions (such as tree planting, establishment of *saxaul* plantations etc.) will facilitate the enforcement of provisions set within the framework of this Law.
Law on Ecological Expertise	2012	The present Law regulates general order of the organization and carrying out of ecological expertise, establishes the rights and the obligations of the parties engaged in carrying out ecological expertise, establishes the rights of the citizens to access information on ecological danger of the objects in the course of the project (under construction and put into operation), describes the modalities of appeal against the resolution and dispute settlement, and establishes liability for the infringement of the legal norms and regulations. Currently, project interventions do not entail any activities that fall under regulation of this Law. In the event such an activity is identified in the course of project implementation, the project will ensure adherence to the conditions stipulated within the framework of this Law.
Law on Pastures	2013	The Law on Pastures stipulates measures for the rational utilization, enrichment and sustainable development of natural pastures for use by livestock, and the avoidance of degradation and destruction of pastures. The Code defines measures to ensure that rational utilization is based according to a number of prescriptions, including determination of carrying capacity, regulations regarding use of pastures, measures to enhance productivity and sustainability of lands, and the collective role of local government entities and grazing right holders or lessees in the effective management of these lands. The project interventions related to pasture management, specifically pasture rotation, establishing livestock exclusion zones for the growing of fodder crops, pasture management such as land-use planning will facilitate the enforcement of provisions set within the framework of this Law.
Law on Dekhan Farms (Dekhan Law)	2016	The Law defines the legal basis for organization and activity of *Dehkan* farms in the Republic of Tajikistan. The *Dehkan* farm is “an independent managing subject carrying out its activities being not a legal person and based on individual business of a person, or members of the one family and other citizens jointly producing agricultural commodities on the basis of the plot of land and other properties being in its possession”. Within the regulations of this Law, agreement on the specific project interventions (like drip irrigation, commercial plantation, horticulture, crop diversification, crop rotation, establishing farmer field schools, etc.) will be individually sought with concerned *dehkan* farms in coordination with district hukumats, depending on the location of sites. Such agreement will be facilitated through community-level stakeholder meetings during the project Inception Phase.

Consistency with national technical standards

The project will adhere to all relevant national technical standards, in accordance with the legislation outlined in 2.2 above. At the Full Proposal development stage, the following legislation has been identified with relevance to the proposed activities:

- the 1996 Land Code of The Republic of Tajikistan;
- the 2000 Water Code of The Republic of Tajikistan;
- the 2001 Law of the Republic of Tajikistan on Land Management;
- the 2001 Law About Environmental Protection; and
- the 2012 Law on Ecological Expertise.

Details about the relevance of each legislation to the proposal are listed in 2.2 above. Given the small scale of the project's EbA interventions in the target sites and communities, as well as their focus on environmental protection, Environmental Impact Assessments (EIAs) are not expected to be necessary for any of the planned interventions. In addition, the proposed projects activities are in line with national social norms, including gender equality and equal access.

UNDP Social and Environmental Standards

UNDP's Social and Environmental Standards (SES) have been applied during development of the project. The SES objectives are to: i) strengthen the social and environmental outcomes of programmes and Projects; ii) avoid adverse impacts to people and the environment; iii) minimize, mitigate, and manage adverse impacts where avoidance is not possible; iv) strengthen UNDP and partner capacities for managing social and environmental risks; and v) ensure full and effective stakeholder engagement, including through a mechanism to respond to complaints from project-affected people.

UNDP will not support activities that do not comply with national law and obligations under international law, whichever is the higher standard (hereinafter "Applicable Law"). UNDP seeks to support governments to adhere to their human rights obligations and empower individuals and groups, particularly the most marginalized, to realize their rights and to ensure that they fully participate throughout UNDP's programming cycle.

Table 4: Elements of UNDP's Social and Environmental Standards (SES)

Overarching Policy	Project-Level Standards	Policy Delivery Process & Accountability
Principle 1: Human Rights **Principle 2:** Gender Equality and Women's Empowerment **Principle 3:** Environmental Sustainability	**Standard 1:** Biodiversity Conservation and Sustainable Natural Resource Management **Standard 2:** Climate Change Mitigation and Adaptation **Standard 3:** Community Health, Safety and Working Conditions **Standard 4:** Cultural Heritage **Standard 5:** Displacement and Resettlement **Standard 6:** Indigenous Peoples **Standard 7:** Pollution Prevention and Resource Efficiency	**Quality Assurance** **Screening and Categorization** **Assessment and Management** **Stakeholder Engagement** and **Response Mechanism** **Access to Information** **Monitoring, Reporting**, and **Compliance review**

UNDP's SES have been reviewed by the Adaptation Fund and it was determined that the SES address the requirements of the Adaptation Fund's Environmental and Social Policy.

The project was screened with UNDP's Social and Environmental Screening Procedure (see Annex 13) which resulted in a "Moderate" overall project social and environmental risk categorization. The following UNDP Social and Environmental Standards are considered triggered by the project:

Principle 1: Human Rights
Principle 2: Gender Equality and Women's Empowerment
Principle 3: Environmental Sustainability
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management

Standard 2: Climate Change Mitigation and Adaptation
Standard 3: Community Health, Safety and Working ConditionsStandard 7: Pollution Prevention and Resource Efficiency
Standard 5: Displacement and Resettlement
Standard 7: Pollution Prevention and Resource Efficiency

The Standards are underpinned by an Accountability Mechanism with two key functions:

- A Stakeholder Response Mechanism (SRM) that ensures individuals, peoples, and communities affected by UNDP projects have access to appropriate procedures for hearing and addressing project-related grievances; and
- A Compliance Review process to respond to claims that UNDP is not in compliance with UNDP's social and environmental policies.

Prior to project approval, the Full Proposal has been screened according to the UNDP Social and Environmental Safeguards Procedure. This is to ensure that the necessary safeguards have been addressed and incorporated into the project design. The final Full Proposal will include the completed quality assessment and social and environmental safeguards templates.

ESMF REQUIREMENTS AND PROCEDURES FOR SCREENING, ASSESSMENT AND MANAGEMENT

Objectives and Requirement of the ESMF

The purpose of this section is to ensure that project activities, once fully defined, are screened for risks and appropriate assessment and management measures are adopted. In addition, it serves as a "commitment plan" listing the key assessments and management plans that will need to be undertaken and budgeted for. This includes plans mandated by the UNDP SES, where relevant.

The ESMF identifies potential social and environmental risks and impacts from project activities and outlines strategies and procedures for identifying risks and impacts from as yet fully defined project components and for managing those risks and minimising undesirable environmental and social impacts. Further, the ESMF identifies stakeholder engagement processes and a Grievance Redress Mechanism for stakeholders with concerns and/or complaints regarding the project.

An ESMF is a management tool used to assist in addressing potential adverse social and environmental impacts associated with project activities. To ensure the environmental and social objectives of the projects are met and adverse impacts are avoided and/or mitigated, the present ESMF will be used by the project implementers.

The ESMF identifies steps for screening potential social and environmental issues and impacts of particular project activities as their specific locations are further defined and for preparing and approving appropriate action plans for avoiding, and where avoidance is not possible, reducing, mitigating, and managing adverse impacts.

The objective of ESMF is to identify environmental and social impacts and risks associated with the sub-projects defined in target communities of Kofirnighan river basin. This will allow the project implementation teams (National Project Team, national and local authorities) to identify and implement appropriate risk mitigation measures. In addition, the ESMF aims to:

- Increase climate resilience and adaptive capacity of Kofirnighan river basin municipalities and target communities;
- Implement on the ground ecosystem-based adaptation measures for forest, land and water resources management in the targeted areas;
- Strengthen knowledge building, information management, and monitoring systems on climate change vulnerability and adaptive capacity;
- Promote sustainable livelihoods, health and wellbeing of target communities, and management practice in utilization of natural resources;
- Describe all monitoring procedures required to identify social and environmental impacts;
- Adopt the best practicable means available to prevent or minimize environmental and social impact; and
- Ensure compliance with all applicable laws, regulations and standards for the protection of environment.

Screening Procedures of the ESMF

Prior to project implementation, activities will be screened against an agreed "negative list". Potentially the following sub-project or activities will be deemed ineligible for the ecosystems-based adaptation measures in the Kofirnighan river basin if they:

- Involve significant conversion or degradation of natural habitats (forest ecosystems, pasturelands, etc);
- May cause measurable adverse impacts to critical natural habitats;
- Risk the introduction of alien and potentially invasive alien species;
- May negatively affect endangered species;
- Involve physical displacement of people;
- Do not comply with construction norms and standards;
- Purchase, application or storage of harmful pesticides or hazardous materials;
- Production or activities involving forced labor/ harmful child labor; and
- Production or trade in wood or other forestry products from unmanaged forests.

The final sub-projects to be funded will be selected based on the following performance criteria: (a) degree to which the sub-project addresses the adaptation needs identified in the KRB; (b) cost-effectiveness; (c) ease of implementation; and (d) innovativeness. These criteria will be updated and finalized during the project inception phase.

The project includes a number of sub-projects under Component 2 and their specific locations that remain to be fully defined and assessed. Based on developed Watershed Action Plans, specific locations (communities) for EbA measures will be selected and concrete activities from the list below (Table 5) will be prioritized.

Table 5. EbA measures that have been identified as successful/potentially successful in the KRB. In the 'Applicable area' column, 'N' denotes the northern sub-basin while 'S' denotes the southern sub-basin.

No.	Description	Applicable area
1	Construction of 'protection' gabions along rivers to provide buffers during flash floods.	N,S
2	The introduction of water-saving irrigation techniques such as drip irrigation, dry farming, composting/mulching and making use of cover crops.	N, S

No.	Description	Applicable area
3	Rehabilitation/restoration of degraded forest ecosystems making use of *saxaul* species, as well as others.	N, S
4	Sustainable harvesting for livelihoods from existing 'healthy' forest ecosystems.	N
5	Establishing livestock exclusion zones for the growing of fodder crops such as lucerne and sainfoin.	N, S
6	Establishing shelterbelts and integrating bio-drainage measures to reduce wind erosion and improve water infiltration.	N, S
7	Introducing indigenous and palatable grass seeds into degraded rangelands.	N, S
8	Introducing rotational grazing of livestock between pastures to assist with increasing field water absorption and decreasing water runoff.	N, S
9	Pasture management such as land-use planning and introducing improved management measures such as exclusion zones and rotational grazing of livestock.	N, S
10	Establishing joint forest management involving communities and local government.	N, S
11	Introducing intercropping and agroforestry, and in specific areas may include apiculture, i.e. beekeeping.	N, S
12	Introducing sustainable long-term community services such as renewable energy and energy-efficient stoves.	N, S
13	Setting up shelterbelts in areas frequently exposed to erosion.	S
14	Establishing commercial plantations making use of an array of indigenous fruit species in lucerne and degraded lands.	S
15	Introducing organic mulching for farmers to use on croplands which promotes soil fertility as well as water-saving.	S
16	Diversifying crop use, including drought-tolerant and climate-resilient crops.	S
17	Establishing greenhouses for horticulture including local lemon, tomato and cucumber.	S
18	Establishing community woodlots in lucerne and abandoned areas for fuelwood.	S
19	Providing additional and improving existing extension services provision which will include developing advisories for farmers.	S
20	Establishing on-farm water resource management.	S
21	Rehabilitating existing irrigation, drainage and pumping systems.	S

Once the project activities are fully specified, the project SESP will be updated to review the fully specified components and to determine whether additional social and environmental impacts may be present and need to be assessed and managed. Where the screening of the fully defined projects components identifies potential social and environmental risks that could be categorized as High Risk, these components will be redesigned to eliminate and/or minimize such risks. The SESP will also be updated in there are any significant changes in the project's design or context that may materially change its social and environmental risk profile.

Assessment and Management of Environmental and Social Risks and Impacts

The targeted assessments/site-specific assessments/comprehensive Environmental and Social Impact Assessment (ESIA) will be undertaken once project activities/sub-projects and sites are fully

defined. The assessment(s) will be conducted in a manner consistent with national regulations and the UNDP SES and lead to the development of appropriately scaled management measures and plans to address the identified risks and impacts.

The UNDP SES and SESP require that in all cases required social and environmental assessments and adoption of appropriate mitigation and management measures must be completed, disclosed, and discussed with stakeholders prior to implementation of any activities that may cause adverse social and environmental impacts.

Environmental and Social Impact Assessment (ESIA) is carried out to identify and predict impacts of proposed sub-project activities. The process includes: (a) impact screening, (b) scoping, (c) prediction and mitigation; (d) management, monitoring and evaluation. The ESIA defines the degree to which the benefits of the potential future project activities will be distributed in an equitable manner across the affected population and examine opportunities to enhance social inclusion, social accountability, strengthen social cohesion, increase social capital, and build ownership as per AF principles.

In addition, the following targeted assessments and mitigation/management measures will be required:

- Gender analysis in the initial phase of the project to assess divisions of labor and women's role and access to resources in order to develop recommendations on how the project will promote women's equality and empowerment.
- Marginalized and vulnerable groups assessment in the project inception to prioritize communities and groups for adaptation interventions.
- Ecological and land use assessment to evaluate the rate of success of the forest restoration activities.
- Pasture use assessment with indication of degree of degradation, over-grazing, and successful experience in pasture restoration activities across the country.

Table 5. Checklist for environmental and social principles for the proposed project.

Checklist of environmental and social principles	Potential impacts and risks	MITIGATION MEASURES
Compliance with the Law	N/A	Project activities will be undertaken in compliance with the domestic laws of Tajikistan and with all relevant international laws.
Access and Equity	There is a risk that project activities could potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups.	Tajikistan's livestock population continues to increase annually and poses a great stress on degrading pastureland resources with very limited fodder production available nationally and at district levels. Communities have reported that current areas of pasturelands are not sufficient to support the current livestock populations. In addition, reforestation measures supported by the project will limit access to forest resources for local communities. Therefore, the project will support grazing control measures (rotational grazing), establish livestock exclusion zones and reforestation measures sites in consultation with target benefiting communities. Cost-effectiveness analysis with mid- to long-term impacts will be carried out to inform communities of anticipated benefits, but to address short-term limitations concerning access to pasture lands and forests, the project will promote alternative business solutions and community enterprise developments that will help communities generate compensating incomes. To further support sustainability of given measures, the project will address the need to reduce extensive livestock grazing through enhanced fodder production techniques (within exclusion zones, rotational grazing, on-site production, demonstration plots, etc), productive on-site animal husbandry, and establishment of watering sites at mid-stream levels of catchment/watershed areas (saving livestock energy in search of water sources in the upstream). The project will engage widely with relevant stakeholders at regional, sub-regional and community levels to agree on rotational routes for transit of larger herds, and eliminate potential compromising of implemented grazing control measures applied locally by large herd owners from other communities, districts and/or regions. *Jamoat* level monitoring and control mechanisms will be introduced to enforce agreed measures for elimination of land degradation and improving vegetation growth in target pasture lands, and ensure that target communities effectively benefit from project interventions. The project will also introduce energy-efficient stoves into target communities to compensate for limited access to forest resources. While such experience already exists in other regions of Tajikistan applied by partner development agencies/projects, the outcomes vary across projects with different degree of efficiency needs. The project will assess the best practices and lessons learned and apply enhanced techniques in Kofirnighan river basin.

		The project will also support the implementation long-term financing of integrated catchment management strategy through PES models that will be developed for each target district. These models will further enable the financing to undertake initiatives that strengthen ecosystem services and build climate resilience with each target district and community. The PES models will be designed based on a combination of regional, international and local best practices. The design will also be informed by the results of existing PES models made use of in Tajikistan. Such models will be accessed through the knowledge hubs that proposed project is supporting (under Outcome 3).
Marginalized and Vulnerable Groups	Potentially affected stakeholders, in particular marginalized groups, could potentially be excluded from fully participating in decisions that may affect them.	Marginalized groups in project area of Kofirnighan river basin can be considered poor and vulnerable population that potentially include those living in places with increased impacts of climate change, food insecure households, households with limited or no productive assets (limited resilience), livestock and/or agricultural land plots. Given the relatively higher rates of labor migration among men (to Russian Federation and elsewhere), households without manpower, female-headed households, and those with small children and elderly people may also be considered vulnerable. Often, as experience shows, such vulnerable groups have limited mobility to participate during key stages of project design and implementation. Prior to project implementation, during inception phase, the project will carry out vulnerability assessment of target communities in a participatory manner holding focused consultations in designing specific tailor-made activities suitable for vulnerable and marginalized groups. Where feasible such groups will be prioritized for concrete adaptation interventions. The Stakeholder Engagement Plan will guide such consultations inclusively during preparation phases, assuring broad representation of existing relevant community-based organizations and groups. These involve, farming associations and cooperatives, women's committees, intervention related initiative groups, pasture development associations, Water User Associations (WUA), forestry cooperatives and communal health promoters. The project will monitor and assess the extent of involvement of vulnerable and marginalized people within such groups and associations. Targeted actions that may be prioritized and suitable for vulnerable groups include on-farm adaptation interventions, household plots productivity measures, selection of demonstration plots with farmer field school support. Certain enterprise development and income generating activities (bee keeping, fodder production, livestock productivity support, etc) may also be suitable for the given groups to ensure benefits are distributed inclusively and in equitable manner.
Human Rights	N/A	Project activities will respect and, where applicable, promote international human rights. Tajikistan is the most vulnerable country to climate change in Central Asia. Negative effects of climate change on the Tajik population include glacial and permafrost melt, increased rainfall intensity and longer and more frequent dry spells. Together, these effects have increased the rate of topsoil erosion, threatening the livelihoods, health and wellbeing of the population.

		Losses from natural hazards currently amount to ~20% of the country's GDP and climate change impacts are predicted to increase the frequency and magnitude of such losses. In the future, loss amounts are expected to rise from ~US$50 million in 2014 to ~US$132 million by 2030. Approximately 33% of all agricultural losses in the country are currently attributable to climate change and variability. Furthermore, it has been projected that crop yields in Tajikistan will decrease by an additional 5–30% by 2050, with the potential for severe negative impacts on the country's economy. Moreover, by 2050, ~77% of the country's population will be living in areas most exposed to the impacts of climate change. Tajikistan's vulnerabilities are attributed to the country's weak social structures, low adaptive capacity, underdeveloped infrastructure, low income insecurity, poor service provision, strong dependence on agriculture and institutional constraints. To address these challenges, the project will support Tajikistan's authorities and target population to enhance the climate resilience amongst small-scale farmers and pastoralists of Kofirnighan River basin. Improving the climate resilience of these communities will involve developing a climate-resilient catchment management strategy to inform the planning and development of rural areas in adapting to the increasing impacts of climate change. Interventions will also promote sustainable management of natural resources through an integrated landscape approach to catchment management. The project will directly benefit an estimated 50,000 individuals who are especially vulnerable to the impacts of climate change, through the design and implementation of concrete on-the-ground EbA interventions for more efficient natural resources management. These measures will also provide social and economic benefits to target population in terms of livelihoods, health and wellbeing of the population. In terms of human rights mainstreaming, the impact is multidimensional in nature and addresses the right to food, energy, water, health and etc. In particular, the project's interventions have the following social and economic benefits for target population: (a) increased profit margins and farm income, (b) reduced loss of crops and land caused by slope instability, drought or dry spells and also caused by ineffective agricultural practices and livestock grazing/breeding; (c) reduced agricultural inputs, water consumption and thus production costs; (d) reduced risk of economic failure due to diversification of production on and off-farm; (e) reduced crops susceptibility to pests; (f) increased nutrition and food security for local communities; (g) increased provision of fuelwood and timber and reduced loss of trees to drought or dry spells; and (h) increased pasture productivity, fodder production and carrying capacity. In addition, the project interventions increase nonmaterial benefits such as ecosystem services such as tourism and recreation, derived from increased conservation value of the landscape.

		Throughout the project implementation period, the project will seek to ensure that benefits of the project are shared broadly in a non-discriminatory and equitable manner. The project will ensure that all relevant stakeholders participate in decision-making processes and consultations, and that such participatory processes are transparent. Necessary strategies, action plans, site selection criteria, lessons learned will be documented and shared regularly through community driven consultation platforms that the project will seek to facilitate. A wide range of stakeholders were consulted with during the scoping and validation phase of proposed project development. Importantly, the project's Executing Entity, the Committee for Environmental Protection (CEP), was consulted through the iterative process of refining the project design. As the national organisation responsible for implementing adaptation projects in the country, the CEP is comprised of numerous technical experts. Therefore, the CEP is well-positioned to ensure that the project design is tailored to local requirements, that it benefits vulnerable groups and includes necessary gender considerations. A Validation Workshop was held in Dushanbe on 22 June 2018 that included representatives from relevant Kofirnighan river basin districts, international organisations, academia and partner projects. For relevant list of stakeholders, validation workshop participants, stakeholders consulted with during the development of the concept and full proposal are included in the project document.
Gender Equity and Women's Empowerment	Women may be excluded from decision-making or not adequately participate in the design/implementation of the project. As a result, they might have unequal access to resources and/ or access to opportunities and benefits.	Project activities will be designed and implemented so that all genders are: i) able to participate fully and equitably; ii) receive comparable social and economic benefits; and iii) do not suffer disproportionate adverse effects as per UNDP Gender Mainstreaming Strategy. A gender analysis will be carried out during the Inception Phase of the proposed project to ensure this. Tajikistan has a relatively high Gender Inequality index rating (0.36) with women's labor force participation rate of 58.9 percent, compared to men at 77.1 percent. Despite the nearly equal population ratio of man and women in rural Tajikistan, the relatively higher rates of labor migration among men, leaves rural women typically with triple work burden: employment for income, household and care responsibilities, and growing food for consumptions. Thus the project will ensure that women are active members of community organizations and sub-project stakeholder participation groups members taking part in the decision making processes to ensure that benefits are distributed equitably and fairly among men and women in target zones. The project anticipates that at least 50% of beneficiaries will be women. The stakeholder participation mechanisms for sub-project formulation and implementation will include provisions to ensure that women are able to represent their interests effectively, and the social impact indicators and corresponding targets of the project will be gender-sensitive, ensuring that women receive an equitable share of benefits and that their status and interests are not marginalized.

		A gender analysis will be undertaken in the initial phase of the project to assess divisions of labor and women's role and access to resources and to develop recommendations on how the project will promote women's equality and empowerment, including participation in project decision-making, as outlined in the ESMF. Measures will ensure that women receive an equitable share of benefits and that their status and interests are not marginalized. Participatory processes will include specially designed methodologies that enhance the participation of women and therefore enhance the inclusion of their views into the activities of the project, using existing mechanisms for representing women's views. For monitoring, disaggregated and measurable data related to gender equality and empowerment of women will be incorporated. Furthermore, when possible, measures and techniques that can have a positive impact by closing the gap of inequality between men and women will be promoted.
Core Labour Rights	N/A	Project activities will observe the core labour standards of Tajikistan as well as those identified by the International Labour Organisation.
Indigenous Peoples	N/A	Project activities will be designed in accordance with the rights and responsibilities set forth in the UN Declaration on the Rights of Indigenous Peoples and other applicable national and international instruments relating to indigenous people.
Involuntary Resettlement	N/A	Project activities will not cause any involuntary resettlement of communities.
Protection of Natural Habitats	Through project activities, the management of Tajikistan's natural habitats will be supported, particularly through Component 1 and 2 involving integrated catchment management and EbA in agro-ecological landscapes.	Project activities will not involve any conversion or degradation of critical natural habitats, including those that are: i) legally protected; ii) officially proposed for protection; iii) recognised by authoritative sources for high conservation value, including as critical habitats; or iv) recognised as protected by traditional or indigenous local communities.
Conservation of Biological Diversity	With reforestation activities, there is a risk of potential use of alien and invasive alien species	The Project will be supporting activities in environmentally sensitive areas, but this work will aim at reducing impacts in these areas with a net positive impacts.
Climate Change	N/A	Project activities will not result in any significant or unjustified increase in GHG emissions or other drivers of climate change. The project's designed activities directly support implementation of ecosystem-based adaptation, including climate-smart agriculture and sustainable land management in agro-ecological landscapes. Such actions include rehabilitation and restoration of degraded forest

		ecosystems, vegetation growth support, water retention measures, establishing *saxaul* plantations, climate-resilient crop seed planting, and others to prevent and mitigate water related adverse climatic events that have typically posed risks to livelihoods and health of target communities. Current and predicted climatic variability has been taken into account during project design. Throughout the inception and implementation phase, any changes in the climate will be taken into account in planning for the implementation of EbA activities. Drought- and flood-resilient species will be used, as well as indigenous species wherever possible. Techniques to assist plant growth particularly in the seedling/sapling phases and to reduce risk of damage from extreme climate events will be used. Species will be planted in appropriate seasons to reduce risk of hazard impact. The project also aims to build climate resilience through development of a catchment management strategy to manage and operationalize climate risks at district and *Jamoat* levels in Kofirnighan river basin. The project will develop multi-hazard climate risk models (MHCRM) for vulnerable watersheds in KRB and provide technical support for the modernization of automated weather stations in the most vulnerable districts of KRB. These will help authorities and communities adequately assess risks, climate related projections and incorporate these risks in the Kofirnighan River Basin Management Plans to make informed decisions on EbA activities.
Pollution Prevention and Resource Efficiency	There may be a risk of application of pesticides that may have a negative effect on the environment or human health.	Project activities will be designed and implemented in a way that meets applicable international standards for maximizing energy efficiency and minimizing material resource use, the production of wastes, and the release of pollutants. Project interventions are not expected to produce any significant amounts of waste or other pollutants. Any potential opportunities identified for improved resource efficiency and pollution reduction during the project development phase will be captured in the project design. The Project will support communities to adopt improved farming techniques (organic agriculture, soil and water conservation, more resilient crop varieties) that would reduce the use of fertilizers and pesticides. Although biological pest control will be preferred, and nor foreseen, potentially harmful pesticides may be needed for specific use. In this particular case, they will be properly managed, stored, used, following national and international standard regulation and procedures.
Public Health	Project may involve community safety risks from small-scale construction activities	The Project will follow related environmental impact assessment procedures and ensure compliance with national construction standards and norms, sanitary norms and regulations, and other national laws and regulations (forestry, water, environment, and health). The project will also follow technical guidance and best practices regarding rain-water harvesting systems, drip-irrigation techniques, and micro-reservoirs that are not adequately institutionalized across the country.

		Other activities may include construction of gabions, terracing, bank enforcement and small dams, the project will assess best practices and lessons learned to address community safety risks from such construction.
Physical and Cultural Heritage	N/A	Project activities will be designed and implemented in a way that avoids the alteration, damage or removal of any physical cultural resources, cultural sites, and sites with unique natural values recognized as such at the community, national or international level.
Lands and Soil Conservation	Project activities will promote the conservation of soil and land resources. Specifically, through the implementation of EbA activities under Component 2, soil stability will be increased, the runoff of nutrients from topsoil will be reduced and soil horizons at project sites with sheet or gulley erosion will be restored.	Project activities will be designed and implemented in a way that promotes soil conservation and avoids degradation or conversion of productive lands or land that provides valuable ecosystem services.

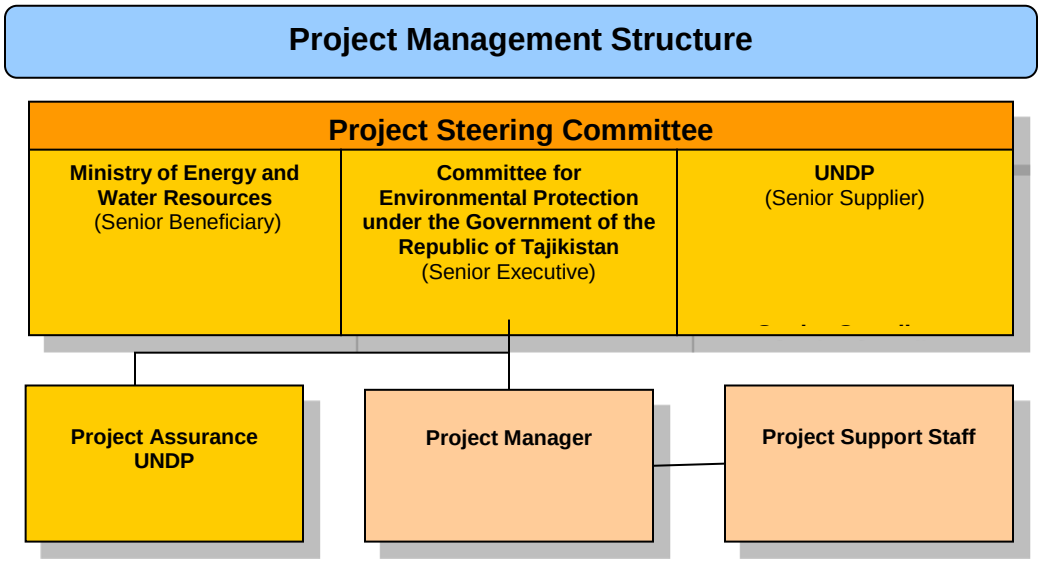
IMPLEMENTATION AND OPERATION

General Project Management Structure and Responsibilities

The Committee for Environmental Protection (CEP) under the Government of the Republic of Tajikistan is the government institution responsible for the implementation of the project and will act as the Executing Agency (EA). The Ministry of Agriculture, Ministry of Energy and Water Resources, Agency for Land Reclamation and Irrigation along with other relevant national entities will act as project partners and will become part of Project Steering Committee.

A high-level Project Management structure is shown in Figure 2. The key roles are discussed below.

Figure 1 Project organisation structure



Project Steering Committee

The Project Steering Committee (PSC) will be responsible for the overall implementation of the project. The PSC will include representatives from UNDP in Tajikistan, CEP, as well as from other relevant stakeholders including Ministry of Energy and Water Resources. In addition, the PSC will be responsible for ensuring the effective coordination of this project with other relevant initiatives in Tajikistan.

The Project Steering Committee (PSC) will be convened by CEP and will serve as the project's coordination and decision-making body. The PSC meetings will be chaired by the NPD. It will meet according to necessity, but not less than once in 6 months, to review progress, approve work plans and approve major deliverables.

The PSC is responsible for ensuring that the project remains on course to deliver products of the required quality to meet the outcomes defined. The PSC's role will include: (i) overseeing project

implementation; (ii) approving all work plans and budgets, at the proposal of the Project Manager (PM), for submission to Istanbul Regional Hub; (iii) approving any major changes in plans or programmes; (iv) providing technical input and advice; (v) arbitrating any conflicts within the project and/or negotiating solutions between the project and any other stakeholders and (vi) overall evaluation.

The project will also use the existing locally established mechanisms for local consultation and participation. In addition to such mechanisms, consultative committees will be formed, consisting of representatives from local government in the project areas, community representatives, and individuals with technical expertise. The consultative committees will provide technical guidance and feedback to the PSC.

Project Management Unit and Project Manager

The Project Management Unit will be established under the Committee for Environmental Protection (CEP) – the project's Executing Agency. The PMU will include the key roles identified in the organisation chart, in particular the National Project Director (CEP) and Project Manager (UNDP).

The NPD will be a member of CEP, assigned to the project for its period of duration. The NPD's prime responsibility is to ensure that the project produces the results specified in the project document to the required standard of quality and within the specified constraints of time and cost.

The day-to-day administration will be carried out by a Project Manager (PM), Project Analyst (PA), Admin. Finance Assistant (AFA), and Project Assistant (PA), who will be located at UNDP premises. As per Government requests, the staff will be recruited using standard UNDP recruitment procedures. The PM will, with the support of the AFA and PA, manage the implementation of all activities, including: preparation/updates of work and budget plans, record keeping, accounting and reporting; drafting of terms of reference, technical specifications and other documents as necessary; identification, proposal of consultants, coordination and supervision of consultants and suppliers; organization of duty travel, seminars, public outreach activities and other events; and maintaining working contacts with partners at the central and local levels. The Project Manager will liaise and work closely with all partner institutions to link the project with complementary national programmes and initiatives.

The PM is accountable to UNDP for the quality, timeliness and effectiveness of the activities carried out, as well as for the use of funds. The PM will produce Annual Work and Procurement Plans (AWP&PP). The PM will further produce quarterly operational reports and Project Performance Reports (PPR). These reports will summarize the progress made versus the expected results, explain any significant variances, detail the necessary adjustments and be the main reporting mechanism for monitoring activities. The PM will be technically supported by contracted national and international service providers, based on need as determined by the PM and approved by the PSC, as needed. Recruitment of specialist services will be done by the PM, in accordance with UNDP's rules and regulations.

The Project Manager is responsible for overseeing implementation of the ESMF and required environmental and social risk management actions as outlined in Table 2 (ESMF) and SES

Project Assurance

The ‘project assurance’ function of UNDP is to support the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. Project assurance has to be independent of the Project Manager; therefore, the Project Management Unit and/or Project Steering Committee cannot delegate any of its assurance responsibilities to the Project Manager. Furthermore, as the Senior Supplier, UNDP provides quality assurance for the project; ensures adherence to the NIM guidelines and compliance with UNDP policies and procedures, including its Social and Environmental Standards and implementation of the requirements of this ESMF.

A UNDP Programme Officer, or M&E Officer, typically holds the Project Assurance role on behalf of UNDP. UNDP Tajikistan will support project implementation by assisting in monitoring project budgets and expenditures, recruiting and contracting project personnel and consultant services, subcontracting and procuring equipment. UNDP Tajikistan will also monitor the project implementation and achievement of the project outcomes/outputs and ensure the efficient use of donor funds through an assigned UNDP Team Leader. UNDP will act as the Senior Supplier and Project Assurance.

Project Delivery and Administration

Project Delivery

The Executive Agency – through the PMU, Project Manager and subsidiary departments and the delivery organisations (e.g. contractors and/or NGOs LIST WHERE KNOWN) – will implement the project. In addition, collaboration with councils, existing NGOs and local communities is expected by UNDP.

As outlined in UNDP's application to the Adaptation Fund Board for accreditation as a Multilateral Implementing Entity, UNDP employs a number of execution modalities determined on country demand, the specificities of an intervention, and a country context. Under the national execution modality proposed, UNDP selects a government entity as the Executing Entity based on relevant capacity assessments performed by UNDP. Please note that UNDP uses slightly different terminology to that used by the operational policies and guidelines of the Adaptation Fund. In UNDP terminology, the "executing entity" is referred to as the "Implementing Partner" in countries which have adopted harmonized operational modalities and the "Executing Entity" in countries which have not yet done so. The Executing Entity is the institutional entity entrusted with and fully accountable to UNDP for successfully managing and delivering project outputs. It is responsible to UNDP for activities including: the preparation and implementation of work plans and annual audit plans; preparation and operation of budgets and budget revisions; disbursement and administration of funds; recruitment of national and international consultants and personnel; financial and progress reporting; and monitoring and evaluation. As stated above, however, UNDP retains ultimate accountability for the effective implementation of the project.

As a Multilateral Implementing Entity, UNDP is responsible for providing a number of key general management and specialized technical support services. These services are provided through UNDP's global network of country, regional and headquarters offices and units and include assistance in: project formulation and appraisal; determination of execution modality and local capacity assessment; briefing and de-briefing of staff and consultants; general oversight and monitoring, including participation in reviews; receipt, allocation and reporting to the donor of financial resources; thematic and technical backstopping; provision of systems, IT infrastructure, branding, and knowledge transfer; research and development; participation in policy negotiations;

policy advisory services; programme identification and development; identifying, accessing, combining and sequencing financing; troubleshooting; identification and consolidation of learning; and training and capacity building.

The Committee for Environmental Protection will be responsible for executing this five-year project with the support of the UNDP under UNDP's National Implementation Modality (NIM). At the request of the Government of Tajikistan, UNDP is the Multilateral Implementing Entity (MIE). The project is nationally implemented (NIM), in line with the Standard Basic Assistance Agreement (SBAA, 1993) and the UN Development Assistance Framework (UNDAF) 2016-2020 between the UN and the Government of Tajikistan, as well as Country Programme Document 2016-2020 between UNDP and the Government of Tajikistan.

The CEP will assume responsibility for the implementation, and the timely and verifiable attainment of project objectives and outcomes. It will provide support to the management unit, and inputs for, the implementation of all activities. The CEP will nominate a high-level official who will serve as the National Project Director (NPD) for project implementation. The NPD will chair the Project Steering Committee and be responsible for providing government oversight and guidance to the implementation. The NPD will not be paid from project funds but will represent a Government in kind contribution.

UNDP has the technical and administrative capacity to support the Committee for Environmental Protection and assume the responsibility for mobilising and effectively applying the required inputs to reach the expected outputs. The financial arrangements and procedures for the project are governed by the UNDP rules and regulations for National Implementation Modality (NIM). All procurement and financial transactions will be governed by applicable UNDP regulations under NIM.

UNDP Direct Project Services as requested by Government: The UNDP, as the Multilateral Implementing Entity for this project, will provide project management cycle services for the project as defined by the Adaptation Fund Board. In addition, the Government of Tajikistan may request UNDP direct services for specific projects, according to its policies and convenience. If requested the services would follow the UNDP policies on the recovery of direct costs. These services (and their costs) are specified in the Letter of Agreement (Annex 8). As is determined by the AF Board requirements, these service costs will be assigned as Project Management Cost, duly identified in the project budget as Direct Project Costs.

Administration of Environmental and Social Management Framework

The Executive Agency CEP will be responsible for overseeing the implementation and compliance with the ESMF via the collaborating delivery organisations (e.g. contractors, NGOs). The ESMF and developed management plans and will be part of any tender documentation.

The CEP will be responsible for the revision or updates of this document and relevant management plans during the course of work. Material changes to the ESMF will be made in consultation with UNDP.

The UNDP and CEP are accountable for the provision of specialist advice on environmental and social issues to the delivery organisations (e.g. contractors, NGOs) and for environmental and social monitoring and reporting. The CEP or its delegate will assess the environmental and social performance of the delivery organisations (e.g. contractors, NGOs) in charge of delivering each

component throughout the project and ensure compliance with the ESMF. During operations the delivery organisations will be accountable for implementation of the ESMF. Personnel working on the project have accountability for preventing or minimising environmental and social impacts.

For construction activities, the delivery organisation/site supervisor will be responsible for daily inspections (e.g. environmental inspections, Occupational Health & Safety) of the construction site. The CEP will cross check these inspections by undertaking monthly audits. The Supervising Engineer/Project Manager will supervise the contractor, while the CEP will be responsible for environment and social issues.

The delivery organisations (e.g. contractor, NGO) will be responsible for the day-to-day compliance of the ESMF at the specific project site. The delivery organisations (e.g. contractor, NGO) will maintain and keep all administrative and social and environmental records which would include a log of complaints and incidents together with records of any measures taken to mitigate the cause of the complaints or incidents (see below sections on incident reporting and on complaints).

STAKEHOLDER ENGAGEMENT

Project Stakeholders

A wide range of stakeholders were consulted with during the scoping and validation phase of proposed project development. Importantly, the project's Executing Entity, the CEP, was consulted through the iterative process of refining the project design. As the national organization responsible for implementing adaptation projects in the country, the CEP is comprised of numerous technical experts. Therefore, the CEP is well-positioned to ensure that the project design is tailored to local requirements, that it benefits vulnerable groups and includes necessary gender considerations.

A Validation Workshop was held in Dushanbe on 22 June 2018 that included representatives from relevant KRB districts, international organizations, academia and partner projects. The primary stakeholders that will be involved in the implementation of the proposed project are detailed in Table 6, while a complete list of all participants present at the workshop is included in Annex 1 of the project proposal.

A complete list of all stakeholders consulted with during the development of the Concept and Full Proposal is included in Table 7.

Table 6. Primary stakeholders to be involved in project implementation.

Stakeholder	Brief description
Committee of Environmental Protection (CEP)	The CEP is the main specialised governmental body responsible for implementation of the state policy on environmental protection in Tajikistan. Responsibilities of the CEP include the following: • developing drafts of governmental policies, strategies and action plans for environmental protection as well as implementation; • drafts laws, by-laws and decisions for the protection of the environment; • performs monitoring of the implementation of laws, by-laws, state policies and measures on environmental protection;

	• oversees the implementation process of all environmental conventions where Tajikistan is a member; • acts as the GEF Focal Point; • acts as the GCF National Designated Authority; and • acts as the Adaptation Fund Focal Point.
National Agency on Hydrometeorology (Hydromet)	The Hydromet is responsible for environment-, climate- and hydro-meteorological-related monitoring. It is the agency responsible to formulate and inform the GoT and local authorities on short-term weather forecasts. The scope of activities of the Hydromet are broad and include: • observation and data collection on hydro-, meteorological- and climate-related regimes in Tajikistan; • observation over the extreme weather events and other hydrometeorological disasters in the country; • archiving historic and present data and analyses of the patterns tendencies; and • serving as a National Focal Point under the UNFCCC and provides technical support and policy advice to the CEP for its implementation process; as well as representing the GoT in UNFCCC negotiations.
Ministry of Energy and Water Resources (MEWR)	The MEWR is tasked with the formulation and implementation of national energy- and water-related policies. Particular climate-related activities of the MEWR include: • the design, revision and regular update of national strategies for energy and water development; • drafting respective legal documents for the improvement and development of energy and water sector-based projects; • monitoring the implementation of National Development Programs and Action Plans on renewable energy sources; and • participating in the strategic development projects on hydropower plants construction.
University of Central Asia	Contribution of knowledge building and technical know-how related to suggested project's EbA related interventions.
Open Centre, DoG	Contribution of knowledge building and technical know-how related to suggested project's EbA related interventions.

A list of the stakeholders consulted to date and those that will be consulted during the development of the full project proposal are listed below.

Table 4. A list of all stakeholders consulted with during development of the proposed project.

Stakeholder	Stakeholder type
Aga Khan Development Foundation	Regional development agency
Agency of Statistics	Government agency
Asian Development Bank	International development agency
ClimAdapt	International organisation
Committee for Emergency and Civil Defence	Government agency
Committee of Environmental Protection (CEP)	Government agency
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	International development agency
European Union	International organisation
Food and Agriculture Organisation of the United Nations (FAO)	International development agency
Forestry Agency	Government agency
KFW Development Bank	International development bank
Ministry of Economic Development and Trade (MEDT)	Government agency

Ministry of Energy and Water Resources (MEWR)	Government agency
Ministry of Transport	Government agency
National Agency on Hydrometeorology (Hydromet)	Government agency
Swiss Agency for Development and Cooperation (SDC)	International development agency
UNDP Disaster Risk Management Programme (DRMP)	UNDP programme
United Nations Children's Fund	International development agency
United States Agency for International Development (USAID)	International development agency
University of Central Asia	Regional academic institution
World Bank	International development bank

Stakeholder Engagement Programme

The Stakeholder Engagement Programme seeks to set the procedures for ensuring consultation and stakeholder engagement during assessment, development of action plans, and monitoring of social and environmental impacts associated with specific project activities, including information disclosure requirements.

The UNDP jointly with CEP and the MoEWR will develop and release project-related information to communities, organizations and municipalities where the project is implementing its activities. In order to do so, the project will make use of:

- Newspapers, local radio podcasts, and local television;
- Brochures, leaflets, non-technical summary documents and technical reports.

The project will ensure that women and other relevant groups such as the elderly, and the youth receive an equitable share of benefits and that their status and interests are not marginalized. Participatory processes will include specially designed methodologies that enhance the participation of women and these other groups; therefore, it is expected to enhance the inclusion of their views into the activities of the project, using existing mechanisms for representing their views.

The Stakeholder Engagement Programme will build on various activities and methods, including the promotion of participatory processes, joint decision-making, and partnerships undertaken with local communities, NGOs, and local governments. The project will support the operationalization and formalization of the KRB Platform, which is envisaged as a key multi-stakeholder coordination, consultations and information sharing mechanism involving national and municipal entities, as wells community based- and civil society organisations. The project will also support exchange visits, inter-agency collaboration, and training and capacity building initiatives.

The stakeholder engagement activities will take place in different phases of the project and in specific locations of the KRB. Two major stakeholder engagement activities will be the inception and final workshops where various stakeholders will have the opportunity to participate and be informed about the project outcomes.

The National Project Coordinator is responsible for carrying out the specific stakeholder engagement activities. These activities will be supported by the Project Management Unit (PMU); in case the PMU is not capable of undertaking the activities, technical assistance will be provided.

Stakeholder engagement activities and required technical assistances will be funded by the project's budget as part of specific Outputs.

The project team will develop and release updates on the project on a regular basis to provide interested stakeholders with information on project status.

Stakeholder Consultation and Information Disclosure

The project builds on extensive stakeholder engagement and consultations which will continue throughout project implementation, including in the identification, assessment, and development of management measures for forthcoming project activities. The project was discussed with a wide range of stakeholders including relevant government departments, industry groups, NGOs, and individual community members and approved by Government. Extensive on-ground consultation has been undertaken during the design of the project (provide any Reports on Consultations in annexes).

Meaningful, effective and informed stakeholder engagement and participation will continue to be undertaken that will seek to build and maintain over time a constructive relationship with stakeholders, with the purpose of avoiding or mitigating any potential risks in a timely manner. The scale and frequency of the engagement will reflect the nature of the activity, the magnitude of potential risks and adverse impacts, and concerns raised by affected communities.

Stakeholders will have access to relevant project information in order to understand potential project-related opportunities and risks and to engage in project design and implementation. Specifically, the following information will be made available:

- Stakeholder engagement plans and summary reports of stakeholder consultations,
- Social and environmental screening reports (SESP) with project documentation (30 days prior to approval),
- Draft social and environmental assessments, including any draft management plans (30 days prior to finalization),
- Final social and environmental assessments and associated management plans,
- Any required social and environmental monitoring reports.

This information is to be disclosed in a timely manner, in an accessible place, and in a form and language understandable to affected persons and other stakeholders. These elements of effective disclosure are briefly elaborated below:

- Timely disclosure: information on potential project-related social and environmental impacts and mitigation/management measures will be provided in advance of decision-making whenever possible. In all cases, draft and final screenings, assessments and management plans must be disclosed and consulted on prior to implementation of activities that may give rise to potential adverse social and environmental impacts.
- Accessible information: Appropriate means of dissemination will need to be considered in consultation with stakeholders. This could include posting on websites, public meetings, local councils or organizations, newsprint, television and radio reporting, flyers, local displays, direct mail.
- Appropriate form and language: Information needs to be in a form and language that is readily understandable and tailored to the target stakeholder group.

Grievance Redress Mechanism

During the design, construction and implementation of any project, a person or group of people may perceive or experience potential harm, directly or indirectly due to the project activities. The grievances that may arise can be related to social issues such as eligibility criteria and entitlements, disruption of services, temporary or permanent loss of livelihoods and other social and cultural issues. Grievances may also be related to environmental issues such as excessive dust generation, damages to infrastructure due to construction related vibrations or transportation of raw material, noise, traffic congestions, decrease in quality or quantity of private/ public surface/ ground water resources during irrigation rehabilitation, damage to home gardens and agricultural lands, etc.

Should such a situation arise, there must be a mechanism through which affected parties can resolve such issues in a cordial manner with the project personnel in an efficient, unbiased, transparent, timely and cost-effective manner. To achieve this objective, a Grievance Redress Mechanism has been included in the ESMF for this project.

The Grievance Redress Mechanism is designed to:

a. be a legitimate process that allows for trust to be built between stakeholder groups and assures stakeholders that their concerns will be assessed in a fair and transparent manner;
b. allow simple and streamlined access to the Grievance Redress Mechanism for all stakeholders and provide adequate assistance for those that may have faced barriers in the past to be able to raise their concerns;
c. provide clear and known procedures for each stage of the Grievance Redress Mechanism process, and provides clarity on the types of outcomes available to individuals and groups;
d. ensure equitable treatment to all concerned and aggrieved individuals and groups through a consistent, formal approach that, is fair, informed and respectful to a concern, complaints and/or grievances;
e. to provide a transparent approach, by keeping any aggrieved individual/group informed of the progress of their complaint, the information that was used when assessing their complaint and information about the mechanisms that will be used to address it; and
f. enable continuous learning and improvements to the Grievance Redress Mechanism. Through continued assessment, the learnings may reduce potential complaints and grievances.

The GRM will be gender- and age-inclusive and responsive and address potential access barriers to women, the elderly, the disabled, youth and other potentially marginalized groups as appropriate to the Project. The GRM will not impede access to judicial or administrative remedies as may be relevant or applicable and will be readily accessible to all stakeholders at no cost and without retribution.

Information about the Grievance Redress Mechanism and how to make a complaint and/or grievance must be communicated during the stakeholder engagement process and placed at prominent places for the information of the key stakeholders.

All complaints and/or grievances regarding social and environmental issues can be received either orally (to the field staff), by phone, in complaints box or in writing to the UNDP, WHO or the Contractor. A key part of the grievance redress mechanism is the requirement for the WHO/PMU and construction contractor to maintain a register of complaints and/or grievances received at the respective project site offices. The following information will be recorded:

a. time, date and nature of enquiry, concern, complaints and/or grievances;
b. type of communication (e.g. telephone, letter, personal contact);
c. name, contact address and contact number;
d. response and review undertaken as a result of the enquiry, concern, complaints and/or grievances; and
e. actions taken and name of the person taking action.

UNDP SRM and SECU

In addition to the project-level and national grievance redress mechanisms, complainants have the option to access UNDP's Accountability Mechanism, with both compliance and grievance functions. The Social and Environmental Compliance Unit investigates allegations that UNDP's Standards, screening procedure or other UNDP social and environmental commitments are not being implemented adequately, and that harm may result to people or the environment. The Social and Environmental Compliance Unit is housed in the Office of Audit and Investigations, and managed by a Lead Compliance Officer. A compliance review is available to any community or individual with concerns about the impacts of a UNDP programme or project. The Social and Environmental Compliance Unit is mandated to independently and impartially investigate valid requests from locally impacted people, and to report its findings and recommendations publicly.

The Stakeholder Response Mechanism offers locally affected people an opportunity to work with other stakeholders to resolve concerns, complaints and/or grievances about the social and environmental impacts of a UNDP project. Stakeholder Response Mechanism is intended to supplement the proactive stakeholder engagement that is required of UNDP and its Implementing Partners throughout the project cycle. Communities and individuals may request a Stakeholder Response Mechanism process when they have used standard channels for project management and quality assurance, and are not satisfied with the response (in this case the project level grievance redress mechanism). When a valid Stakeholder Response Mechanism request is submitted, UNDP focal points at country, regional and headquarters levels will work with concerned stakeholders and Implementing Partners to address and resolve the concerns. Visit www.undp.org/secu-srm for more details. The relevant form is attached at the end of the ESMF.

MONITORING & EVALUATION OF ESMF IMPLEMENTATION

Table below provides a summary of specific measures related to implementation of the ESMF requirements.

Table 6. Summary of ESMF Implementation Activities

Monitoring Activity	Purpose	Frequency	Expected Action	Roles and Responsibilities	Cost (if any)

Development of Environmental and Social Impact Assessment (ESIA)	Carried out and drafted in a participatory and gender responsive manner, in-depth analysis of potential social and environmental impacts, as well as identification / validation of mitigation measures linked to projects activities.	Quarters one and two of programme implementation	Risks and potential impacts are assessed according the site of implementation and the modality, with support of external consultants and participation of project team and stakeholders; management actions are identified and incorporated into project implementation strategies.	CEP with the support of UNDP will launch the ESIA process. A group of consultants will lead the process and garner the expertise needed. Stakeholders will review the terms of reference, and validate the findings. The Consultants and the team will ensure that relevant changes and updates are made to the ESMF and again validated by stakeholders.	
Track progress of ESMF implementation	Application of mitigation measures, as well as any required changes to ESMF, including site-specific plans as required by applicable SES, will be monitored through a participatory process, and with results reported to Project Board on bi-annual basis until ESMP (or stand-alone management plans) is in place.	Quarterly, or in the frequency required for each measure.	Slower than expected progress will be addressed by project management.	Collection of data will be ascribed to various stakeholder groups and the PMU. The project management unit, and particularly the safeguards and gender officer, will integrate the mitigation measures into the overall monitoring and reporting framework of the project.	
Implementation of mitigation measures and monitoring of potential impacts identified in ESIA,	Permanent and participatory implementation and monitoring of impacts and mitigation measures, in accordance with Environmental and Social Management Plan - ESMF (to be revised and updated once the ESIA is completed)	Continuous	Implementation of ESMF; participatory monitoring of ESIA findings (i.e. identifying and aligning indicators, monitoring potential impacts and risks); integration of ESMF into project implementation strategies	The PMU will be responsible for the implementation of the mitigation measures in conjunction with stakeholders in various parts of the project.	
Learning	Knowledge, good practices and lessons learned regarding social and environmental risk management will be captured regularly, as well as actively sourced from other projects and partners and integrated back into the project.	At least annually	Relevant lessons are captured by the project team and used to inform management decisions.	PMU, PSC, CEP, MoEWR	
Bi-Annual Project Quality Assurance	The quality of the project will be assessed against UNDP's quality standards to identify project strengths and weaknesses and to inform management decision making to improve the project.	Bi-Annually	Areas of strength and weakness will be reviewed by project management and used to inform decisions to improve project performance.	PMU, PSC	
Review and adapt activities and approach as necessary	Internal review of data and evidence from all monitoring actions to inform decision making.	At least annually	Performance data, risks, lessons and quality will be discussed by the project board and used to make course corrections.	PMU	

Project Report	As part of progress report to be presented to the Project Board and key stakeholders, analysis, updating and recommendations for risk management will be included.	Annually, and at the end of the project (final report)		PSC	
Project Review (PSC)	The project's governance mechanism (i.e., project board) will hold regular project reviews during which an updated analysis of risks and recommended risk mitigation measures will be discussed.	At least annually	Any risks and/ or impacts that are not adequately addressed by national mechanisms or project team will be discussed in project board. Recommendations will be made.	PSC	

BUDGET FOR ESMF IMPLEMENTATION

A budget has been prepared for the implementation of the ESMF as follows:

Activity / Item	**Cost**
ESMF Updating and Auditing	$10,000
General ESMF Expenses	$20,000
Consultants for ESIA/targeted assessments and development of identified management plans	$50,000
Stakeholder Engagement Workshops	$140,000
Project-level Grievance Redress Mechanism	$50,000
Total	**$900,000**

Guidance for Submitting a Request to the Social and Environmental Compliance Unit (SECU) and/or the Stakeholder Response Mechanism (SRM)

Purpose of this form

- **If you use this form, please put your answers in bold writing to distinguish text**
- **The use of this form is recommended, but not required. It can also serve as a guide when drafting a request.**

This form is intended to assist in:

(1) Submitting a request when you believe UNDP is not complying with its social or environmental policies or commitments and you are believed you are being harmed as a result. This request could initiate a 'compliance review', which is an independent investigation conducted by the Social and Environmental Compliance Unit (SECU), within UNDP's Office of Audit and Investigations, to determine if UNDP policies or commitments have been violated and to identify measures to address these violations. SECU would interact with you during the compliance review to determine the facts of the situation. You would be kept informed about the results of the compliance review.

and/or

(2) Submitting a request for UNDP "Stakeholder Response" when you believe a UNDP project is having or may have an adverse social or environmental impact on you and you would like to initiate a process that brings together affected communities and other stakeholders (e.g., government representatives, UNDP, etc.) to jointly address your concerns. This Stakeholder Response process would be led by the UNDP Country Office or facilitated through UNDP headquarters. UNDP staff would communicate and interact with you as part of the response, both for fact-finding and for developing solutions. Other project stakeholders may also be involved if needed.

Please note that if you have not already made an effort to resolve your concern by communicating directly with the government representatives and UNDP staff responsible for this project, you should do so before making a request to UNDP's Stakeholder Response Mechanism.

Confidentiality If you choose the Compliance Review process, you may keep your identity confidential (known only to the Compliance Review team). If you choose the Stakeholder Response Mechanism, you can choose to keep your identity confidential during the initial eligibility screening and assessment of your case. If your request is eligible and the assessment indicates that a response is appropriate, UNDP staff will discuss the proposed response with you, and will also discuss whether and how to maintain confidentiality of your identity.

Guidance

When submitting a request please provide as much information as possible. If you accidentally email an incomplete form, or have additional information you would like to provide, simply send a follow-up email explaining any changes.

Information about You

Are you…

1. A person affected by a UNDP-supported project?
Mark "X" next to the answer that applies to you: Yes: No:

2. An authorized representative of an affected person or group?

Mark "X" next to the answer that applies to you: Yes: No:

If you are an authorized representative, please provide the names of all the people whom you are representing, and documentation of their authorization for you to act on their behalf, by attaching one or more files to this form.

3. First name:
4. Last name:
5. Any other identifying information:
6. Mailing address:
7. Email address:
8. Telephone Number (with country code):
9. Your address/location:
10. Nearest city or town:
11. Any additional instructions on how to contact you:
12. Country:

What you are seeking from UNDP: Compliance Review and/or Stakeholder Response
You have four options:

- Submit a request for a Compliance Review;
- Submit a request for a Stakeholder Response;
- Submit a request for both a Compliance Review and a Stakeholder Response;
- State that you are unsure whether you would like Compliance Review or Stakeholder Response and that you desire both entities to review your case.

13. Are you concerned that UNDP's failure to meet a UNDP social and/or environmental policy or commitment is harming, or could harm, you or your community? Mark "X" next to the answer that applies to you: Yes: No:

14. Would you like your name(s) to remain confidential throughout the Compliance Review process?
Mark "X" next to the answer that applies to you: Yes: No:
If confidentiality is requested, please state why:

15. Would you like to work with other stakeholders, e.g., the government, UNDP, etc. to jointly resolve a concern about social or environmental impacts or risks you believe you are experiencing because of a UNDP project?
Mark "X" next to the answer that applies to you: Yes: No:

16. Would you like your name(s) to remain confidential during the initial assessment of your request for a response?
Mark "X" next to the answer that applies to you: Yes: No:

If confidentiality is requested, please state why:

17. Requests for Stakeholder Response will be handled through UNDP Country Offices unless you indicate that you would like your request to be handled through UNDP Headquarters. Would you like UNDP Headquarters to handle your request?

Mark "X" next to the answer that applies to you: Yes: No:
If you have indicated yes, please indicate why your request should be handled through UNDP Headquarters:

18. Are you seeking both Compliance Review and Stakeholder Response?
Mark "X" next to the answer that applies to you: Yes: No:

19. Are you unsure whether you would like to request a Compliance Review or a Stakeholder Response? Mark "X" next to the answer that applies to you: Yes: No:

Information about the UNDP Project you are concerned about, and the nature of your concern:

20. Which UNDP-supported project are you concerned about? (if known):

21. Project name (if known):

22. Please provide a short description of your concerns about the project. If you have concerns about UNDP's failure to comply with its social or environmental policies and commitments, and can identify these policies and commitments, please do (not required). Please describe, as well, the types of environmental and social impacts that may occur, or have occurred, as a result. If more space is required, please attach any documents. You may write in any language you choose
    -
    -
    -

23. Have you discussed your concerns with the government representatives and UNDP staff responsible for this project? Non-governmental organisations?

Mark "X" next to the answer that applies to you: Yes: No:

If you answered yes, please provide the name(s) of those you have discussed your concerns with Name of Officials You have Already Contacted Regarding this Issue:

First Name	Last Name	Title/Affiliation	Estimated Date of Contact	Response from the Individual

24. Are there other individuals or groups that are adversely affected by the project?

Mark "X" next to the answer that applies to you: Yes: No:

25. Please provide the names and/or description of other individuals or groups that support the request:

First Name	Last Name	Title/Affiliation	Contact Information

Please attach to your email any documents you wish to send to SECU and/or the SRM. If all of your attachments do not fit in one email, please feel free to send multiple emails.

Submission and Support
To submit your request, or if you need assistance please email: project.concerns@undp.org

GENDER CONSIDERATIONS

In the 2014 edition of the Social Institutions and Gender Index (SIGI), Tajikistan reportedly has medium levels of discrimination against women in social institutions (SIGI score of 0.1393). It has lower discrimination in restricted access to resources and assets and higher discrimination in son bias.

During the project preparation phase, the following key gender issues were identified:

a. In 2012, the ratio of female to male primary education enrolment was 98%. In 2011, the ratio of female to male secondary school enrolment was 88% and 97 for primary education. The male/female sex ratio for the working age population in 2013 is 0.98. Rigid notions of men's and women's roles in society and in the home remain. It is believed that men should occupy the role of breadwinner and head of the household, while women should confine themselves to domestic and care work within the home.

b. Under the Land Code, women and men have equal rights to access and manage land. According to the World Bank (2011), 78% of female-headed households (where there is no working-age male) manage land, compared to 89% of male-headed households, and 91% of female-headed households with at least one working age male.

c. The Tajik Civil Code gives women the right to have access to property other than land and to enter into contracts in their own names. In practice, property is routinely registered in the name of husbands or male relatives, as property ownership is seen as a male prerogative. In addition, most married couples live in property belonging to the husband's parents, meaning that the wife often has no legal claim on the property at all. Many women are still unaware of their rights and the opportunities available to them as a result of the land reform processes that began in the 1990s. Even when they do know their rights, registering a farm is a complex administrative process. When women are allocated land in their own right, it is often of poor quality for farming, and they are often denied access to land belonging to their husbands in the event of divorce or widowhood. In addition, requirements in the Land Code that land only be allocated to those who are qualified to manage it discriminate against women, given that few have formal agricultural qualifications, and local officials tend to view them as incapable of running a farm. Woman lack education, access to productive resources, and technical training that would enable them to increase productivity above subsistence levels, and increase wealth.

d. Under the Family Code and the Civil Code, within registered marriages, spouses have equal property rights, but this does not apply to unregistered, religious marriages, leaving many women unable to claim their property rights when the relationship breaks down.

e. Women and men have the same rights to access bank loans and credit. Few women apply for loans, however, primarily because they do not understand their rights and the procedures involved. The fact that most property is registered to men rather than women makes it difficult for women to secure credit, as they cannot provide collateral for loans. High bank charges and rates of interest also hamper women's access to credit. As of 2012, women made up 32.91% of recipients of micro-credit in Tajikistan, according to the Microfinance Information Exchange.

The project activities have been designed to address some of these gender-related issues, as follows:

f. The project will facilitate the employment, training and equipping of woman as community liaison officers, leskhoz forest enforcement staff, local environmental enforcement staff.

g. The project will actively encourage the equitable use of women labour and supervisors from local rural villages in: the planning and implementation of pasture management plans; the planning and restoration of degraded high altitude pastures; and the planning and rehabilitation/restoration of high altitude forests.

h. The project will ensure that women-owned and/or managed businesses participate equitably in the procurement of project-funded materials, supplies, equipment and infrastructure. In some instances, the project may adopt a preferential procurement approach to the provision of minor services and supplies from local women-owned businesses.

i. The project will ensure that the reach of project-funded education/awareness-raising programmes, sustainable livelihood development support, and skills training will include both male- and female-headed households from the targeted villages.

j. The project will ensure that the interests of women and women-headed households are adequately represented on River Basin Development Plans, Pasture User Unions and Participatory Forest Management Committees; and are actively involved in the planning of protected areas, pastures and forests and generally in planning of all EbA related interventions in the project implementation planning domain.

k. The project will ensure that the reach of project-funded support include both male- and female-headed households from the targeted villages.

l. The project will actively assist women-headed households living in the high altitude areas to access: (i) small sub-project support for sustainable livelihoods; and (ii) technical and financial support from project grants for developing and installing alternative fuel and energy systems, income generating business opportunities, and implementing more sustainable pasture management practices.

m. The project will commit dedicated financial and technical support to addressing the significant knowledge constraints in pasture users from women-headed households.

n. The project will ensure that the River Basin Management Plan includes strategies, activities and budgets that will enable and finance the equitable involvement of women in the implementation of the plan.

o. The project will advocate for an increase in the number of women involved in research and monitoring of pastures, forests, conservation areas, where EbA related activities are being carried out.

p. The project will collaborate with the project-contracted businesses and international experts to continually develop and implement mechanisms which may further strengthen the capacities of local women and women-headed households across the project planning domain.

q. Incorporate specific awareness activities for women and vulnerable groups (children, elderly, disabled) into all communication activities to reduce disproportional vulnerabilities and ensure inclusivity of the measures.

The project will promote women's equality and empowerment, including participation in project decision-making. The project will ensure that women receive an equitable share of benefits and that their status and interests are not marginalized. Participatory processes will include specially designed methodologies that enhance the participation of women and therefore enhance the inclusion of their views into the activities of the project, using existing mechanisms for representing women's views.

For monitoring, disaggregated and measurable data related to gender equality and empowerment of women will be incorporated in relevant project reports (Inception Report) as well as updated within ESMF and SES. Furthermore, when possible, measures and techniques that can have a positive impact by closing the gap of inequality between men and women will be promoted.

Given the relatively higher rates of labor migration among men (to Russian Federation and else), households without manpower, i.e. female-headed households, may also be considered vulnerable. Often, as experience shows, such vulnerable groups have limited mobility to participate during key stages of project design and implementation.

Marginalized groups in project area of Kofirnighan river basin can be considered poor and vulnerable population that potentially include those living in places with increased impacts of climate change, food insecure households, households with limited or no productive assets (limited resilience), livestock and/or agricultural land plots.

Prior to project implementation, during inception phase, the project will carry out a comprehensive vulnerability assessment of target communities in participatory manner holding focused consultations in designing specific tailor-made activities suitable for vulnerable and marginalized groups. Where feasible such groups will be prioritized for concrete adaptation interventions.

The Stakeholder Engagement Plan will guide such consultations inclusively during preparation phases, assuring broad representation of existing relevant community-based organizations and groups. These involve, farming associations and cooperatives, women's committees, intervention related initiative groups, pasture development associations, Water User Associations (WUA), forestry cooperatives and communal health promoters. The project will monitor and assess the extent of involvement of vulnerable and marginalized within such groups and associations.

Among targeted actions that may be prioritized and suitable for vulnerable groups may include on-farm adaptation interventions, household plots productivity measures, selection of demonstration plots with farmer field school support. Certain enterprise development and income generating activities (bee keeping, fodder production, livestock productivity support, etc) may also be suitable for the given groups to ensure benefits are distributed inclusively and in equitable manner.

During the Inception Phase of the Project, when relevant sub-projects will be short-listed and prioritized for concrete communities, a more detailed Gender Analysis will be carried out along with development of Gender Action Plan that will cover identified target communities.

ANNEX 5. HYDROMET LIST OF NEEDS FOR THE REPAIR AND REHABILITATION OF WEATHER STATIONS

Hydrological stations presented for restoration:
- Kofirnighan River – Tartki;
- Kofirnighan River – Chinar; and
- Sardai-miyona River – Romit.

Hydrometric crossing

Hydrometric crossing (SEBA) is designed for the implementation of hydrometric operations on rivers up to 250 meters wide and flow velocity up to 5.0 m/s. The hydrometric crossing should provide a measurement of the flow velocity, depth and width of the flow and the sampling of water turbidity with remote control from the shore.

The minimum requirements for the hydrometric crossing are as follows:
- strain of the supporting and towing cables with the help of tightening screw couplings; and
- a maximum load of 150 kg.

The minimum requirements for hydrometric crossing are as follows:
- cable system;
- carriages for roller;
- roller block;
- observation booths;
- electric double-drum winch; and
- ancillary equipment.

Cable system

The rope system should include at minimum the following:
- supporting cable with a diameter of 20-24 mm;
- towing cable for horizontal movement of carriage rollers with a diameter of 6 mm (at least);
- suspension cable with a conductive wire for vertical displacement of a gauging load with a diameter of at least 3.25 mm; and
- a set of coastal support.

Roller carriage

The roller carriage is designed to move the gauging weight along the Carrier Cable #3. It is a solid construction with rubberised rollers and ball bearings.

Roller block

The roller block is designed for operation of a tow rope with a cable voltage of 21/2 – to prevent the cable from slipping.

Observer cabin

The observer's cabin must meet the following minimum requirements.

- Material: steel 4–5 mm.
- Dimensions: width – not less than 180 cm; length – not less than 300 cm; height – not less than 230 mm.
- Double-leaf metal door with lock.
- Holes for wiring of the tow rope and the hanging rope.

The Electric double-drum winch and the Control Panel should be located in the Observer's Cabin.

Electric double-drum winch

The electric double-drum winch is designed for horizontal and vertical movement of the gauging weight and must meet the following requirements.

- Electric motor: 3-step motor (1.5 kW, 380 V, 3 different speeds – 13.26 and 53 cm/s) or adjustable motor (1.5 kW, 220 V AC, adjustable speed from 0 to about 50 cm/sec; it is possible to work with a generator.
- Ability to work with a safe handle in the absence of electricity.
- Equipment electric clutch switch for switching the direction of work from horizontal to vertical (lifting and lowering).
- Block of horizontal and vertical displacement counters, which includes a combined (automatic/mechanical) meter for measuring distance (river width) with 5 digits and a counter for measuring the depth with 4 digits.
- Indicator of the drift angle of the suspended turntable.
- Work side: right.
- Maximum loading: 100 kg.

Remote Control

On the Control Panel, all controls, alarms, an electric pulse counter and a stopwatch must be placed.

The control panel should, at a minimum, include the following.

- 1 (one) measuring unit must meet the following requirements:
  - range of measured revolutions: 1–3000;
  - measurement interval: 60–300 s;
  - range of calculation of the water flow rate: 0.01–5 m/s;
  - degree of protection IP40; and
  - electrical supply.
- 1 (one) surface and bottom contact adapter must meet the following minimum requirements:
  - indication of the operation of the Flowmeter (p.);
  - indication of the operation of the bottom contact of the Flowmeter;
  - indication of the operation of the surface contact of the Flowmeter;
  - toggle switch for surface contact of the Flowmeter;
  - terminals for connection of the Measuring unit;
  - terminals for connecting the signal conductors of a rope with a conductive wire;
  - stopwatch;
  - electrical supply.
- 1 (one) table for recording observations in size: width and length – not less than 50 cm; height – not more than 75 cm.

Specific technical characteristics of the Control Panel should be offered by the Contractor depending on its technical solution.

Auxiliary equipment

The auxiliary equipment kit should include:
hydrometric load (SEBA) 50/75 100 kg; and
flow velocity meter (SEBA).

ANNEX 6. SOCIAL AND ENVIRONMENTAL SCREENING

The completed template, which constitutes the Social and Environmental Screening Report, must be included as an annex to the Project Document. Please refer to the Social and Environmental Screening Procedure and Toolkit for guidance on how to answer the 6 questions.

Project Information

Project Information	
1. Project Title	An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan
2. Project Number	PIMS 6219
3. Location (Global/Region/Country)	Tajikistan

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?
Briefly describe in the space below how the Project mainstreams the human-rights based approach
In terms of human rights mainstreaming the impact is multidimensional in nature that address right to food, energy, water, health and etc. In particular, the project's interventions have the following social and economic benefits for target population: (a) increased profit margins and farm income, (b) reduced loss of crops and land caused by slope instability, drought or dry spells and also caused by ineffective agricultural practices and livestock grazing/breeding; (c) reduced agricultural inputs, water consumption and thus production costs; (d) reduced risk of economic failure due to diversification of production on and off-farm; (e) reduced crops susceptibility to pests; (f) increased nutrition and food security for local communities; (g) increased provision of fuelwood and timber and reduced loss of trees to drought or dry spells; and (h) increased pasture productivity, fodder production and carrying capacity. In addition, the project interventions increase nonmaterial benefits such as ecosystem services such as tourism and recreation, derived from increased conservation value of landscape. Throughout the project implementation period, the project will seek to ensure that benefits of the project are shared broadly in a non-discriminatory and equitable manner. As designed, the project will ensure that all relevant stakeholders participate in decision making processes and consultations, and that such participatory processes are transparent. Necessary strategies, action plans, site selection criteria, lessons learned will be documented and shared regularly through community driven consultation platforms that the project will seek to facilitate. A wide range of stakeholders were consulted with during the scoping and validation phase of proposed project development. Importantly, the project's Executing Entity, the Committee for Environmental Protection (CEP), was consulted through the iterative process of refining the project design. As the national organisation responsible for implementing adaptation projects in the country, the CEP is comprised of numerous technical experts. Therefore, the CEP is well-positioned to ensure that the project design is tailored to local requirements, that it benefits vulnerable groups and includes necessary gender considerations. A Validation Workshop was held in Dushanbe on 22 June 2018 that included representatives from relevant

Kafernigan river basin districts, international organisations, academia and partner projects. A list of stakeholders, validation workshop participants, stakeholders consulted with during the development of the concept and full proposal are included in the project document.
In addition, the Environmental and Social Management Framework (ESMF) has been developed to support the project, and that sets out the principles, rules, roles, guidelines and procedures for screening, assessing, and managing the potential social and environmental impacts of the forthcoming but yet undefined interventions (in terms of concrete communities and components). It contains measures and plans to avoid, and where avoidance is not possible, to reduce, mitigate and/or offset adverse risks and impacts. During project implementation phase, the project will mobilize local authorities, active community members, and civil society organizations during the selection processes and short-listing of sub-projects in concrete communities and ensure impartiality of decision making processes that ensure due achievement of project objectives in the Kafernigan river basin.
Moreover, during the design, construction and implementation of any sub-projects, a person or a group of people may perceive or experience potential harm, directly or indirectly due to the project activities, and to address such situation, a Grievance Redress Mechanism has been included in the ESMF for this project through which affected parties can resolve issues in a cordial manner with the project personnel in an efficient, unbiased, transparent, timely and cost-effective manner.

Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment

Tajikistan has a relatively high Gender Inequality index rating (0.36) with women's labor force participation rate of 58.9 percent, compared to men at 77.1 percent. Despite the nearly equal population ratio of man and women in rural Tajikistan, the relatively higher rates of labor migration among men, leaves rural women typically with triple work burden: employment for income, household and care responsibilities, and growing food for consumptions. Thus the project will ensure that women are active members of community organizations and sub-project stakeholder participation groups members taking part in the decision making processes to ensure that benefits are distributed equitably and fairly among men and women in target zones. Defined sub-projects will implemented so that all genders are: i) able to participate fully and equitably; ii) receive comparable social and economic benefits; and iii) do not suffer disproportionate adverse effects as per UNDP Gender Mainstreaming Strategy. A more detailed gender analysis will be carried out during the Inception Phase of project implementation, and a Gender Action Plan then prepared and implemented to ensure this. This gender analysis will also identify local-level gender dynamics to ensure that involvement in the project does not adversely affect the labour burden of women and men. The project anticipates that at least 50% of beneficiaries will be women. The stakeholder participation mechanisms for sub-project formulation and implementation will include provisions to ensure that women are able to represent their interests effectively, and the social impact indicators and corresponding targets of the project will be gender-sensitive, ensuring that women receive an equitable share of benefits and that their status and interests are not marginalized.

Briefly describe in the space below how the Project mainstreams environmental sustainability

Environmental sustainability is a core aspect of the project's approach. The use of EbA as the main approach to climate risk reduction will ensure that that project activities will result in net positive environmental benefits. Specifically, the project approach will use EbA interventions to strengthen the provision of ecosystem goods and services in rural Tajik watersheds to promote resilience to climate change. On-the-ground interventions will achieve environmental sustainability by: i) rehabilitating ecosystems that provide adaptation benefits to rural communities; ii) reducing rural communities' reliance on unsustainable natural resource extraction by providing alternative livelihoods; and iii) improving the resource efficiency of rural communities' livelihoods.

It is expected that project activities will result in: i) an increase in local biodiversity; ii) improved surface water quality; iii) reduced negative hydrological impacts; and iv) a reduction in soil loss through erosion. Few potential environmental risks have been associated with the proposed project activities and these risks are easily mitigated. Risks and mitigation measures are detailed in Part B of this document.

Part B. Identifying and Managing Social and Environmental Risks

QUESTION 2: What are the Potential Social and Environmental Risks? *Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any "Yes" responses). If no risks have been identified in Attachment 1 then note "No Risks Identified" and skip to Question 4 and Select "Low Risk". Questions 5 and 6 not required for Low Risk Projects.*	**QUESTION 3: What is the level of significance of the potential social and environmental risks?** *Note: Respond to Questions 4 and 5 below before proceeding to Question 6*			**QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?**
Risk Description	***Impact and Probability (1-5)***	***Significance (Low, Moderate, High)***	***Comments***	***Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.***
Risk 1: Principle 1 (Q3): There is a risk that project activities could potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups.	I: 3 P: 3	**Moderate**	Changes in pasture and livestock management practices and reforestation measures (grazing control, rotational grazing, livestock exclusion zones and reforestation) may limit availability/accessibility to some basic services.	Tajikistan's livestock population continues to increase annually and poses a great stress on degrading pastureland resources with very limited fodder production available nationally and at district levels. Communities have reported that current areas of pasturelands are not sufficient to support the current livestock populations. In addition, reforestation measures supported by the project will limit access to forest resources for local communities. To alleviate such a limitation, the project will target degraded forests and pasturelands, and once rotational grazing is put in place and target deforested lands are planted with fast-growing woodlots, the communities will soon begin to benefit more already during the project period, the benefits they would not have been otherwise able to have from degraded assets at the time. Specifically, the project will support grazing control measures (rotational grazing), establish livestock exclusion zones and reforestation measures sites in consultation with target benefiting communities. Cost-effectiveness analysis with mid- to long-term impacts will be carried out to inform communities of anticipated benefits, but to address short-term limitations concerning access to pasture lands and forests, the project will

				promote alternative business solutions and community enterprise developments that will help communities generate compensating incomes. To further support sustainability of given measures, the project will address the need to reduce extensive livestock grazing through enhanced fodder production techniques (within exclusion zones, rotational grazing, on-site production, demonstration plots, etc), productive on-site animal husbandry, and establishment of watering sites at mid-stream levels of catchment/watershed areas (saving livestock energy in search of water sources in the upstream). The project will engage widely with relevant stakeholders at regional, sub-regional and community levels to agree on rotational routes for transit of larger herds, and eliminate potential compromising of implemented grazing control measures applied locally by large herd owners from other communities, districts and/or regions. Jamoat level monitoring and control mechanisms will be introduced to enforce agreed measures for elimination of land degradation and improving vegetation growth in target pasture lands, and ensure that target communities effectively benefit from project interventions. The project will also introduce energy-efficient stoves into target communities to compensate for limited access to forest resources. While such experience already exists in other regions of Tajikistan applied by partner development agencies/projects, the outcomes wary across projects with different degree of efficiency needs. The project will assess the best practices and lessons learned and apply enhanced techniques in Kafernigan river basin. The project will also support the implementation long-term financing of integrated catchment management strategy through PES models that will be developed for each target district. These models will further enable the financing to undertake initiatives that strengthen ecosystem services and build climate resilience with each target district and community. The PES models will be designed based on a combination of regional, international and local best practices. The design will also be informed by the results of existing PES models made use of in Tajikistan. Such models will be accessed through the knowledge hubs that proposed project is supporting (under Outcome 3).
Risk 2: Principle 1 (Q4): Potentially affected stakeholders, in particular	I: 2 P: 2	**Moderate**	Limitations may exist in the capacities of local	Prior to project implementation, during inception phase, the project will carry out vulnerability assessment of target

marginalized groups, could potentially be excluded from fully participating in decisions that may affect them.			stakeholders, in particular poor and vulnerable groups, to participate effectively in decision making that can affect them. Marginalized groups in project area of Kafernigan river basin can be considered poor and vulnerable population that potentially include those living in places with increased impacts of climate change, food insecure households, households with limited or no productive assets (limited resilience), livestock and/or agricultural land plots. Given the relatively higher rates of labor migration among men (to Russian Federation and else), households without manpower, female-headed households, and those with small children and elderly may also be considered vulnerable. Often, as experience shows, such vulnerable groups have limited mobility to participate during key stages of project design and implementation.	communities in participatory manner holding focused consultations in designing specific tailor-made activities suitable for vulnerable and marginalized groups. Where feasible such groups will be prioritized for concrete adaptation interventions. The Stakeholder Engagement Plan will guide such consultations inclusively during preparation phases, assuring broad representation of existing relevant community-based organizations and groups. These involve, farming associations and cooperatives, women's committees, intervention related initiative groups, pasture development associations, water users associations, forestry cooperatives and communal health promoters. The project will monitor and assess the extent of involvement of vulnerable and marginalized within such groups and associations. Among targeted actions that may be prioritized and suitable for vulnerable groups may include on-farm adaptation interventions, household plots productivity measures, selection of demonstration plots with farmer field school support. Certain enterprise development and income generating activities (bee keeping, fodder production, livestock productivity support, etc) may also be suitable for the given groups to ensure benefits are distributed inclusively and in equitable manner.
Risk 3: Principle 1 (Q5): Duty-bearing ministries/agencies and local authorities do not have sufficient expertise and technical/material resources to meet their obligations in the Project.	I: 3 P: 5	**Moderate**	Capacities of national institutions, district authorities and governance mechanisms are not sufficient to provide effective (governance) solutions to climate problems that are complex and multi-sectoral. There is a risk that duty-bearing organizations will tend to focus more on mitigation response on consequences of	The project design includes a dedicated component (Component 3) with an extensive set of capacity building actions and knowledge building and sharing at national, regional, local and community levels, based on analysis of institutional framework and related capacities carried out during the project preparation. At national level, focal institutions will be strengthened through participatory development of integrated catchment management strategy and Watershed Action Plans for the Kafernigan river basin. Coordination and training mechanisms will be strengthened within target Jamoats (sub-district government level), which includes capacity building on mainstreaming integrated catchment management (with

			adverse climatic and environmental hazards, rather than on prevention through EbA actions.	EbA integrated) into planning and budgetary processes. Trainings target relevant government institutions involved in catchment/watershed management, including CEP and Ministry of Energy and Water Resources. In the framework of implementing the water sector reform programme and development of Kafernigan River Basin Plan under the leadership of the Ministry of Energy and Water Resources, the project will contribute in the river basin development and planning processes through integrating catchment management strategies and watershed action plans with EbA related interventions as necessary.
Risk 4: Principle 2 (Q2): Women may be excluded from decision-making or not adequately participate in the design/implementation of the project. As a result, they might have unequal access to resources and/ or access to opportunities and benefits.	I: 2 P: 3	**Moderate**	Due to high level of male labor outmigration from rural communities, women are overburdened with household management and maintenance of nearby land assets. This may potentially limit women's participation in project consultation and planning processes, but if necessary measures are taken, the increased role of women in agriculture and livestock management at household level may result advantageous to women in the first place.	Designed project activities will be implemented so that all genders are: (a) able to participate fully and equitably, (b) receive comparable social and economic benefits, (c) do not suffer disproportionate adverse effects as per UNDP Gender Mainstreaming Strategy. A more detailed gender analysis will be undertaken in the inception phase of the project to assess divisions of labor and women's role and access to resources and to develop recommendations on how project will promote women's equality and empowerment, including participation in project decision-making, as outlined in the ESMF. For this purpose, based on a detailed gender analysis, and in consultation with target communities that have prioritized their sub-projects, a comprehensive Gender Action Plan will be developed that will state out requirements to ensure that SES are met. The requirements and measures will ensure that women receive an equitable share of benefits and that their status and interests are not marginalized. Participatory processes will include specially designed methodologies that enhance the participation of women and therefore enhance the inclusion of their views into the activities of the project, using existing mechanisms for representing women's views. For monitoring, disaggregated and measurable data related to gender equality and empowerment of women will be incorporated. Furthermore, when possible, measures and techniques that can have a positive impact by closing the gap of inequality between men and women will be promoted.
Risk 5: Standard 1 (Q1.5): With reforestation, rehabilitation, and restoration of abandoned and	I: 2 P: 1	**Moderate**	Forest restoration will involve planting of more resilient tree	Prior to introduction of alien species, the project will consult relevant experts at CEP, among development partner agencies, dehkan and coroporate farms on

overexploited forests and degraded forest ecosystems, there is a risk of potential use of alien and invasive alien species			species, using native varieties. From Proposal p101: The project's activities will promote the rehabilitation/restoration of abandoned and overexploited forests and degraded forest ecosystems, as well as reforestation of areas adversely affected by extreme climate events. The use of native and climate-resilient varieties will be promoted, but alien species may be introduced if necessary. Certain alien species may be used for complementary planting (climate-resilient crops seed varieties) in areas being reforested to increase biological biodiversity and enhance climate resilience. Prior to such introduction, relevant experts at the Committee for Environmental Protection (CEP) and among development partner agencies will be consulted on successful examples across the regions. National environmental norms, standards and procedures for the introduction of alien species will be followed in each case.	successful examples across the regions. Necessary national environmental standards, norms and procedures of adaptation of intended alien species will be followed and assessed before introduction takes place. While restoration needs are many in each target district within Kafernigan river basin, the project will consult municipalities and communities to define restoration areas with particular focus on priority areas most vulnerable to water related adverse climatic events. The Project will also support the setting up of a procedure for tracking, monitoring and registration of restoration actions implemented. During the last year of the project an ecological and land use assessment will be carried out to evaluate the rate of success of the restoration.
Risk 6: Standard 1 (Q1.6): The Project involves reforestation of degraded forest areas in which some community harvesting of forest resources occurs	I: 3 P: 2	**Low**	The project will promote reforestation of degraded forests. The project targets community managed forest areas where use of forestry resources is being practiced (wood and timber).	

Risk 7: Standard 2 (Q2.2): Some of the expected outcomes of the project, particularly the forest restoration component, are sensitive to potential impacts of climate change, including floods, GLOFs, etc.	I: 3 P: 2	**Moderate**	The project is directly addressing climate change vulnerabilities and adaptation capacities in the Kafernigan river basin, and while it directly promotes adaptation measures, adverse impacts of extreme climatic events (particularly flooding, water run-off) can affect forest and agricultural areas and related livelihoods.	The project's designed activities directly support implementation of ecosystem-based adaptation, including climate-smart agriculture and sustainable land management in agro-ecological landscapes. Such actions include rehabilitation and restoration of degraded forest ecosystems, vegetation growth support, water retention measures, establishing saxaul plantations, climate-resilient crop seed planting, and others to prevent and mitigate water related adverse climatic events that have typically posed risks to livelihoods and health of target communities. Current and predicted climatic variability has been taken into account during project design. Throughout the inception and implementation phase, any changes in the climate will be taken into account in planning for the implementation of EbA activities. Drought- and flood-resilient species will be used, as well as indigenous species wherever possible. Techniques to assist plant growth particularly in the seedling/sapling phases and to reduce risk of damage from extreme climate events will be used. Species will be planed in appropriate seasons to reduce risk of hazard impact. The project also aims to build climate resilience through development of catchment management strategy to manage and operationalize climate risks at district and Jamoat levels in Kafernigan river basin. As part of Early Warning Systems, the project will develop multi-hazard climate risk models (MHCRM) for vulnerable watersheds in KRB and provide technical support for the modernization of automated weather stations in the most vulnerable districts of KRB. These will help authorities and communities adequately assess risks, climate related projections and incorporate these risks in the Kafernigan River Basin Management Plans to make informed decisions on EbA activities.
Risk 8: Standard 3 (Q3.1): Project may involve community safety risks from small-scale construction activities	I: 3 P: 1	**Low**	The ecosystem based adaptation measures may involve construction of water saving irrigation systems, rain-water harvesting systems in water-scarce zones, rehabilitation of irrigation,	

			draining and pumping systems and on-farm water resources management.	
Risk 9: Standard 7 (Q7.4): There may be a risk of application of pesticides that may have a negative effect on the environment or human health	I: 3 P: 1	**Low**	Pest control measures and agricultural support may involve potential use of pesticides	

	QUESTION 4: What is the overall Project risk categorization?		
	Select one (see SESP for guidance)		**Comments**
	Low Risk	☐	
	Moderate Risk	X	
	High Risk	☐	
	QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?		
	Check all that apply		**Comments**
	Principle 1: Human Rights	X	The project design includes a dedicated component (Component 3) with an extensive set of capacity building actions and knowledge building and sharing at national, regional, local and community levels, based on analysis of institutional framework and related capacities carried out during the project preparation. At national level, focal institutions will be strengthened through participatory development of integrated catchment management strategy and Watershed Action Plans for the Kafernigan river basin. Coordination and training mechanisms will be strengthened within target Jamoats (sub-district government level), which includes capacity building on mainstreaming integrated catchment management (with EbA integrated) into planning and budgetary processes.
	Principle 2: Gender Equality and Women's Empowerment	X	Project activities will be designed and implemented so that all genders are: (a) able to participate fully and equitably, (b) receive comparable social and economic benefits, (c) do not suffer disproportionate adverse effects as per UNDP Gender Mainstreaming Strategy. A gender analysis will be carried out during the Inception Phase of the project implementation to ensure this. Measures will ensure that women receive an equitable share of benefits and that their status and interests are not marginalized. Participatory processes will include

			specially designed methodologies that enhance the participation of women and therefore enhance the inclusion of their views into the activities of the project, using existing mechanisms for representing women's views.
	1. Biodiversity Conservation and Natural Resource Management	X	The Project will be supporting activities in environmentally sensitive areas, but this work will aim at reducing impacts in these areas with a net positive impacts.
	2. Climate Change Mitigation and Adaptation	X	Although the project directly supports adaptation actions, adverse impacts of extreme climatic events (particularly flooding, water run-off, landslides, mudflows, and drought) may affect forest ecosystems and agricultural areas and related livelihoods.
	3. Community Health, Safety and Working Conditions	☐	
	4. Cultural Heritage	☐	
	5. Displacement and Resettlement	X	
	6. Indigenous Peoples	☐	
	7. Pollution Prevention and Resource Efficiency	X	

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		**Answer (Yes/No)**
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? [24]	No
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	Yes
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	Yes
5.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	Yes
6.	Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	No
Principle 2: Gender Equality and Women's Empowerment		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	Yes
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
4.	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? *For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being*	No
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management		
1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? *For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes*	No

[24] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	No
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	Yes
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	Yes
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? *For example, construction of dams, reservoirs, river basin developments, groundwater extraction*	No
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? *For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.*	No
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant[25] greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	Yes
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? *For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding*	No
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	Yes
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No

[25] In regards to CO_2, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	Yes
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	Yes
5.3	Is there a risk that the Project would lead to forced evictions?[26]	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	Yes
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? *If the answer to the screening question 6.3 is "yes" the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.*	No

[26] Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	No
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	No
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? *For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol*	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	Yes
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

ANNEX 7. STANDARD LETTER OF AGREEMENT BETWEEN UNDP AND THE GOVERNMENT FOR THE PROVISION OF SUPPORT SERVICES

Dear Mr. Khairullo Ibodzoda,

1. Reference is made to consultations between officials of the Government of **Tajikistan** (hereinafter referred to as "the Government") and officials of UNDP with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and the Government hereby agree that the UNDP country office may provide such support services at the request of the Government through its institution designated in the relevant programme support document or project document, as described below.

2. The UNDP country office may provide support services for assistance with direct payments. In providing such support services, the UNDP country office shall ensure that the capacity of the Government-designated institution is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the office.

3. The UNDP country office may provide, at the request of the designated institution, the following support services for the activities of the programme/project:
(a) Identification and/or recruitment of project and programme personnel;
(b) Identification and facilitation of training activities;
(c) Procurement of goods and services;

4. The procurement of goods and services and the recruitment of project and programme personnel by the UNDP country office shall be in accordance with the UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the project document, in the form provided in the Attachment hereto. If the requirements for support services by the country office change during the life of a programme or project, the annex to the programme support document or project document is revised with the mutual agreement of the UNDP resident representative and the designated institution. Maximum possible amount of support services shall not exceed the amount indicated in the Project Document ($132,000).

5. The relevant provisions of the **Standard Basic Assistance Agreement between the Government of the Republic of Tajikistan and UNDP signed on 03 December 1993**, (the "SBAA"), including the provisions on liability and privileges and immunities, shall apply to the provision of such support services. The Government shall retain overall responsibility for the nationally managed programme or project through its designated institution. The responsibility of the UNDP country office for the provision of the support services described herein shall be limited to the provision of such support services detailed in the annex to the programme support document or project document.

6. Any claim or dispute arising under or in connection with the provision of support services by the UNDP country office in accordance with this letter shall be handled pursuant to the relevant provisions of the SBAA.

7. The manner and method of cost-recovery by the UNDP country office in providing the support services described in paragraph 3 above shall be specified in the annex to the programme support document or project document.

8. The UNDP country office shall submit progress reports on the support services provided and shall report on the costs reimbursed in providing such services, as may be required.

9. Any modification of the present arrangements shall be effected by mutual written agreement of the parties hereto.

10. If you are in agreement with the provisions set forth above, please sign and return to this office two signed copies of this letter. Upon your signature, this letter shall constitute an agreement between your Government and UNDP on the terms and conditions for the provision of support services by the UNDP country office for nationally managed programmes and projects.

Yours sincerely,

_____

Signed on behalf of UNDP
Pratibha Mehta
UNDP Resident Representative

_____

For the Government
Mr. Khairullo Ibodzoda
Chairman of the Committee for Environmental Protection under the Government of the Republic of Tajikistan
[*Date*]

ANNEX 8. UNDP FEES FOR SUPPORT TO ADAPTATION FUND PROJECT

1. Reference is made to consultations between **Committee for Environmental Protection (CEP)**, the institution designated by the Government of **Tajikistan** and officials of UNDP with respect to the provision of support services by the UNDP country office for the nationally managed project **"An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan", (Project #: 00111538) "the Project"**.

2. In accordance with the provisions of the letter of agreement signed on [*insert date of agreement*] and the **project document**, the UNDP country office shall provide support services for the **Project** as described below.

3. **Support services to be provided:**

Support services (insert description)	Schedule for the provision of the support services	Cost to UNDP of providing such support services (where appropriate)	Amount and method of reimbursement of UNDP (where appropriate)
1. Human Resources			
a) TOR review and post classification + creation	Jun-19	34.35	240.45
b) Advertisement	Jun-19	119.96	839.72
c) Short-listing (including long-listing)	Jun-19	239.92	1,679.44
d) Test Evaluation	Jun-19	88.83	621.81
e) Interviewing	Jun-19	239.92	1,679.44
f) Reference check	Jun-19	40.06	280.42
g) Review recruitment case	Jun-19	25.85	180.95
h) Contract issuance	Jun-19	82.38	576.66
i) Recurrent personnel management services: staff payroll & banking administration & management (for whole contract period):	Annual fee per employee per year)		0.00
Payroll validation, disbursement		157.04	5,653.44
Extension, promotion, entitlements		134.6	3,499.60
Performance evaluation		134.6	4,845.60
Leave monitoring		22.43	807.48
Leave monitoring - Absence data management in Atlas only		5.7	205.20
l) Staff HR & Benefits Administration & Management *(one time fee, per staff. Services incl.* contract issuance, benefits enrollment, payroll setup - this price applies to the separation process as well)	Yearly	205.66	1,233.96

Total, HR:			**22,344.17**
2. Finance			
a) Payment to vendor and staff	Daily/Monthly	38.49	27,712.80
- Urgent payments to vendor and staff (within 1 day)	Ad hoc	76.98	923.76
- Urgent payments to vendor and staff (within 3 day)	Ad hoc	57.74	1,385.76
b) Issue check only (Atlas Agencies only)	Ad hoc	16.7	501.00
- Issue check only (Atlas Agencies only - within 1 day)	Ad hoc	33.4	400.80
- Issue check only (Atlas Agencies only - within 3 days)	Ad hoc	25.05	601.20
c) Vendor profile only (Atlas Agencies only)	As per the working plan	20.66	3,099.00
AR Management Process (create/apply receivable pending item- Atlas Agencies Only)	As per the working plan	35.6	356.00
d) Journal Voucher or General Ledger Journal Entry (GLJE)	Quarterly, yearly	35.67	713.40
e) PCA reports review and certification	As per the working plan	25.8	258.00
f) F10 Settlement	As per the working plan	23.12	2,774.40
g) Issue/Apply Deposits Only	As per the working plan	21.74	217.40
Total, Finance:			**38,943.52**
3. Procurement			
a) Procurement not involving CAP - below US$ 50,000			
-Identification and selection	As per the working plan	282.29	27,664.42
- Issue Purchase Order	As per the working plan	41.95	3,775.50
b) Procurement process involving CAP (and/or ITB, RFP, requirements) - above US$ 50,000)	As per the working plan		0.00
- Identification & selection	As per the working plan	489.45	12,236.25
- Contracting/Issue Purchase Order	As per the working plan	104.07	2,601.75
c) Consultant recruitment	As per the working plan		0.00
- Advertising	As per the working plan	36.11	1,805.50
- shortlisting and selection	As per the working plan	157.13	7,856.50
- Contract issuance	As per the working plan	72.22	3,611.00
d) Procurement involving RACP (goods, services & consultant > US$150,000)	As per the working plan		0.00
- Identification & selection	As per the working plan	582.33	1,164.66
- Contracting	As per the working plan	60.67	121.34

- *Issue PO*	As per the working plan	48.01	96.02
- Follow up	As per the working plan	60.67	121.34
e) Asset disposal involving CAP	By the closure of the project	275.14	2,751.40
Total, Procurement:			**63,805.68**
4. Admin Support			
Ticket request (booking, purchase)	As per the working plan	71.79	4,307.40
Travel cost estimates- Simple	As per the working plan	26.42	2,599.23
Total, Admin Support:			**6,906.63**
Total DPC			**132,000.00**

4. Description of functions and responsibilities of the parties involved:

As the national implementing partner, the **Committee for Environmental Protection under the Government of the Republic of Tajikistan (CEP)** will oversee all aspects of project implementation. CEP is responsible for the protection of ecosystems, protection of surface and underground water resources and monitoring the environment and natural resources, and climate monitoring. In addition, it carries out environmental assessments of various projects. The CEP structure includes local CEP representation at the district and provincial (Oblast) level. Among other tasks, district and provincial units of the CEP supervise the wastewater monitoring and control water use permit. They carry out systematic review and assessment of the environment in Tajikistan and develop standards for pollution control. The CEP will appoint National Project Coordinator (NPC) to oversee the project implementation.

Overall governance of the project will be carried out by the **Project Steering Committee**, which will include CEP, other national agencies including the Ministry of Energy and Water Resources, Ministry Agriculture and Agency for Land Reclamation and Irrigation, local Khukumat representatives and UNDP. The PSC may invite other agencies to join as members, with the roster to be definitively set and approved no later than the project's inception period. The National Project Coordinator will serve as Chair of the Project Steering Committee, with assistance from UNDP in organizing and running all meetings and other exchanges of information. Meetings of the Project Steering Committee will take place at least once annually in time for approval of the following year's Annual Work Plan. Additional meetings may be called as needed by the NPC.

UNDP will join CEP in managing the project and providing quality assurance, in accordance with plans approved by the Project Steering Committee. Most of UNDP's work for the project will be based in its Country Office (CO) in Dushanbe, under the supervision of the Team Leader for Disaster Risk Reduction, Environment and Energy and other senior programme staff, including the UNDP Resident Representative and UNDP Country Director as warranted. UNDP will also engage contractors to carry out Midterm and Final Evaluations of the project. The UNDP Regional Technical Advisor, based in the UNDP Regional Service Centre in Istanbul, will provide technical support, assistance with coordination, and overall project monitoring to ensure consistency with expectations from UNDP and Adaptation Fund.

The day-to-day operations of the project will be carried out by six full-time project staff, headed by the **Project Manager**. The Project Manager will be responsible for carrying out the activities of the project as set forth in this Project Document and any revisions approved by the Project Steering Committee. At least one month in advance of the start of each project year, the Project Manager will prepare Annual Work Plans. These plans will be reviewed and approved by the Project Steering Committee and thereafter will be used by project staff as tools for planning, implementing, and

tracking work flows. In addition, for each meeting of the Project Steering Committee, the Project Manager will prepare a full status report on project activity, including recent accomplishments, risks, and proposed mitigation measures. The Project Manager will also be responsible for preparing all required annual reports for UNDP and Adaptation Fund.

UNDP country office staff will assist the Project Manager in all the administrative work of the project, including logistics and clerical work. In addition, the country office will provide administrative support to the Government with regard to various specific administrative functions, whose costs will be billed as Direct Project Costs according to this Letter of Agreement.

Responsibilities of other entities of the Government are set forth in the table below.

Maximum DPC amount to be charged to AF fund is USD 132,000.

"An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan"

Category	Services Provided by UNDP	UNDP Fee (8.5%)
Identification, Sourcing and Screening of Ideas	Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). Engage in upstream policy dialogue related to a potential application to the AF. Verify soundness & potential eligibility of identified idea for AF.	$ 39,157
Feasibility Assessment / Due Diligence Review	Provide up-front guidance on converting general idea into a feasible project/programme. Source technical expertise in line with the scope of the project/programme. Verify technical reports and project conceptualization. Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against AF requirements. Determination of execution modality and local capacity assessment of the national executing entity. Assist in identifying technical partners. Validate partner technical abilities. Obtain clearances from AF.	$ 117,470

Development & Preparation	Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project/programme. Source technical expertise in line with the scope of the project/programme needs. Verify technical reports and project conceptualization. Verify technical soundness, quality of preparation, and match with AF expectations. Negotiate and obtain clearances by AF. Respond to information requests, arrange revisions etc.	$ 156,626.20
Implementation	Technical support in preparing TORs and verifying expertise for technical positions. Provide technical and operational guidance project teams. Verification of technical validity / match with AF expectations of inception report. Provide technical information as needed to facilitate implementation of the project activities. Provide advisory services as required. Provide technical support, participation as necessary during project activities. Provide troubleshooting support if needed. Provide support and oversight missions as necessary. Provide technical monitoring, progress monitoring, validation and quality assurance throughout. Allocate and monitor Annual Spending Limits based on agreed work plans. Receipt, allocation and reporting to the AFB of financial resources. Oversight and monitoring of AF funds. Return unspent funds to AF.	$ 352,408
Evaluation and Reporting	Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting. Participate in briefing / debriefing. Verify technical validity / match with AF expectations of all evaluation and other reports	$ 117,470

	Undertake technical analysis, validate results, and compile lessons. Disseminate technical findings	
Total		$ 783,131

ANNEX 9. COST BENEFIT ANALYSIS OF PROPOSED COMMUNITY-LEVEL ADAPTATION MEASURES

Table 5. Cost benefit analysis for community-level adaptation measures proposed for Vahdat, Fayzabad and Varzob Districts.

Measure	Benefits assessed	Internal Rate of Return (IRR)	Benefit cost ratio (BCR)	Payback period (years)
1. Terracing	Increase the cultivation of fruits, berries and wild fruit trees	45%	6,5:1	3
2. Bio-drainage	Planting trees leads to a decrease in groundwater, which leverages yield to 15-20%	25%	4,5:1	5
3. Stone lines	Reduce the impact of natural disasters, including floods and landslides	10%	3:1	8
4. Stone and/or organic mulching of croplands	Increase the yield of agricultural crops by 25-30%. Saving water, reducing soil degradation.	25%	6,5:1	2
5. Diversification of crops and use of drought-resilient crops	Create a condition for the production of competitive products on the market, the use of drought-resistant crops and mitigating the impact of climate change, increase yield by 25-30%	40%	6,5:1	4
6. Horticulture in greenhouses	It will enable to produce lemons and vegetables all throughout the year. Increase the yield by 40-50%.	50%	7,5:1	6
7. On-and off-farm agroforestry	Agro forest land reclamation will ensure the radical improvement of land through the use of soil-protective, water-regulating and other properties of protective forest plantations.	40%	6,5:1	5
8. Planting of woodlots for fuel wood and timber	Reduce unauthorized deforestation of natural forests, reduce the costs fuel for cooking and of heating houses.	30%	8:1	4
9. Rehabilitation/Restoration of degraded forest ecosystems e.g. planting indigenous trees in micro-basins	Increase the area of forest plantations, reduce soil degradation and mitigate the impact of natural disasters.	10%	4:1	8
10. Sustainable harvesting from intact forest ecosystems as well as indigenous forests rehabilitated/restored in degraded areas	Ensure food security for households, in particular the most vulnerable. Will create a condition for selling the collected products in external markets	30%	6:1	1
11. Sowing of indigenous grass seeds (primarily palatable species) in degraded rangelands	Increase pasture productivity and productivity of livestock products by 20-25%	20%	6:1	2
12. Rotational grazing practices	Reduce degradation and increase pasture productivity and pasture restoration	15-20%	5:1	3

Measure	Benefits assessed	Internal Rate of Return (IRR)	Benefit cost ratio (BCR)	Payback period (years)
13. Climate/drought resilient seed varieties	Foster production of competitive products on the market, the use of drought-resistant crops to reduce the impact of climate change, increase yield by 25-30%	40%	6,5:1	4
14. Intercropping	Foster rational land use, increases the yield and profitability of farmers	30	10:1	2
15. Seed system support measures, seed banks	Improve farmers' access to quality seeds, reduce risks of sowing substandard seed materials, increase yield by 20-30%.	25	8:1	5
16. Extension advisory services	To raise the level of awareness and knowledge of farmers in the production sphere, storage and sale of products	15	4:1	4
17. Rehabilitation of degraded lands and land degradation control through pasture management	Reduce degradation and increase pasture productivity and pasture restoration.	15-20%	5:1	3
18. Soil fertility	Increase the yield of agricultural crops, which will affect the increase in the profitability of farmers	40%	12:1	3
19. Sustainable sloping lands cultivation – including agroforestry, orchards, woodlots and shelter-belts	Reduce the degradation of sloping lands, ensure the substantial improvement of land through the use of soil-protective, water-regulating and other properties of protective forest plantations, increase the area of forest plantations.	45%	10:1	7
20. Joint forest management (including agroforestry	Increase the responsibility for the conservation of forest plantations, increase the yield of forest plantations and the profitability of households through rational use of forests	25%	8:1	6
21. Energy efficiency stoves	Reduce the use of fuel for cooking and heating the premises by an average of 30-40%, which will affect the reduction of household expenses	25%	9:1	2
22. Establishment of pasture use groups	Advance the rational use of pastures, increasing productivity and restoring pastures, including improving passages for livestock, access to water	40%	8:1	5
23. Nursery development for forest expansion	Improve access to seedlings at lower prices to restore and expand forests. The development of nurseries will provide an opportunity to expand and restore forests (seedlings adapted to local conditions).	30%	6:1	7
24. Capacity building on community level on climate	Improve awareness of the population, especially women and the most vulnerable, in adapting to	25%	6:1	5

Measure	Benefits assessed	Internal Rate of Return (IRR)	Benefit cost ratio (BCR)	Payback period (years)
change adaptation (seminars, trainings) including women	climate change in agricultural production			
25. Demonstration plots for effective water use and other adaptation actions with consideration of climate change	Enhance awareness of the population, especially women and the most vulnerable, in adapting to climate change in agricultural production	35%	5:1	4

Table 6. Cost benefit analysis for community-level adaptation measures proposed for Kabodiyon, Shaartuz and Nosiri-Khusrav Districts.

Measure	Benefits assessed	Internal Rate of Return (IRR)	Benefit cost ratio (BCR)	Payback period (years)
1. Bio-drainage	Planting trees leads to a decrease in groundwater to increase yield to 15-20%	25%	4,5:1	5
2. Establishment of saxaul plantations	Improve farmers' access to saxaul saplings, which in turn will reduce the impact of sand drills and the conservation of agricultural land	40%	8:1	6
3. Commercial plantations in salinized/degraded lands	To reduce salinity and land degradation, and enable to increase the area of agricultural land	30%	9:1	7
4. Organic mulching of croplands	Increase the yield of agricultural crops by 25-30%. Saving water, reducing soil degradation.	25%	6,5:1	2
5. Diversification of crops and use of drought-resilient crops	Create a condition for the production of competitive products on the market, the use of drought-resistant crops and mitigating the impact of climate change, increase yield by 25-30%	40%	6,5:1	4
6. Horticulture in greenhouses (lemon, tomato, cucumber)	It will enable to produce lemons and vegetables all throughout the year. Increase the yield by 40-50%.	50%	7,5:1	6
7. On-and off-farm agroforestry	Agro forest land reclamation will ensure the radical improvement of land through the use of soil-protective, water-regulating and other properties of protective forest plantations.	40%	6,5:1	5
8. Planting of woodlots for fuelwood and timber	Reduce unauthorized deforestation of natural forests, reduce the costs fuel for cooking and of heating houses.	30%	8:1	4
9. Rehabilitation/restoration of degraded forest ecosystems e.g. planting indigenous trees in micro-basins	Increase the area of forest plantations, reduce soil degradation and mitigate the impact of natural disasters.	10%	4:1	8

Measure	Benefits assessed	Internal Rate of Return (IRR)	Benefit cost ratio (BCR)	Payback period (years)
10. Sowing of indigenous grass seeds (primarily palatable species) in degraded rangelands	Increase pasture productivity and productivity of livestock products by 20-25%	20%	6:1	2
11. Rotational grazing practices	Reduce degradation and increase pasture productivity and pasture restoration	15-20%	5:1	3
12. Climate/drought resilient seed varieties	Foster production of competitive products on the market, the use of drought-resistant crops to reduce the impact of climate change, increase yield by 25-30%	40%	6,5:1	4
13. Intercropping	Foster rational land use, increases the yield and profitability of farmers	30	10:1	2
14. Seed system support measures; seed banks	It will improve farmers' access to quality seeds, reduce risks of sowing substandard seed materials, increase yield by 20-30%.	25%	8:1	5
15. Extension advisory services	To raise the level of awareness and knowledge of farmers in the production sphere, storage and sale of products	15%	4:1	4
16. On-farm water resource management and efficiency improvement measures	Increase the efficiency of using the on-farm irrigation system, improve farmers' access to irrigation water	40-50%	5:1	3
17. Rehabilitation of degraded lands and land degradation control through pasture management	Reduce degradation and increase pasture productivity and pasture restoration	15-20%	5:1	3
18. Soil fertility	Increase the yield of agricultural crops, which will affect the increase in the profitability of farmers	40%	12:1	3
19. Sustainable sloping lands cultivation – including agroforestry, orchards, woodlots and shelter-belts	Reduce the degradation of sloping lands, ensure the substantial improvement of land through the use of soil-protective, water-regulating and other properties of protective forest plantations, increase the area of forest plantations.	45%	10:1	7
20. Joint forest management	Increase the responsibility for the conservation of forest plantations, increase the yield of forest plantations and the profitability of households through rational use of forests	25%	8:1	6
21. Agroforestry	Agro forest land reclamation will ensure the gradual improvement of land through the use of soil-protective, water-regulating and other protective forest plantations.	40%	6,5:1	5

Measure	Benefits assessed	Internal Rate of Return (IRR)	Benefit cost ratio (BCR)	Payback period (years)
22. Capacity building on community level on climate change adaptation (seminars, trainings) including women	Improve awareness of the population, especially women and the most vulnerable, in adapting to climate change in agricultural production	25%	6:1	5
23. Demonstration plots for effective water use and other adaptation actions with consideration of climate change	Enhance awareness of the population, especially women and the most vulnerable, in adapting to climate change in agricultural production	35%	5:1	4

ANNEX 10. WORKPLAN

The tentative workplan for the proposed project is presented in the table below. This workplan indicates the proposed duration for activities under each output, as well as the expected year in which the output is expected to be delivered.

		Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Component 1. Integrated catchment management to build climate resilience.	Output 1.1. Multi-hazard climate risk models developed for vulnerable watersheds in the Kofirnighan River Basin.																				
	Output 1.2. Support provided for upgrading automated weather stations in Kofirnighan River Basin watersheds.																				
	Output 1.3. Integrated catchment management strategy developed for the Kofirnighan River Basin.																				
	Output 1.4. Strengthened coordination and training mechanisms for integrated climate-resilient																				

	catchment management.																				
	Output 1.5. Payment for Ecosystem Services models to support the long-term financing of integrated catchment management strategy implementation.																				
Component 2. Ecosystem-based Adaptation, including Climate smart Agriculture and Sustainable Land Management, in agro-ecological landscapes.	Output 2.1. Agro-ecological extension services supported at the *jamoat* level to provide technical support for EbA implementation.																				
	Output 2.2. Watershed Action Plans developed that promote climate resilience and enhance economic productivity for target communities.																				
	Output 2.3. EbA interventions implemented in target watersheds by																				

	local communities.																				
Component 3. Knowledge management on building climate resilience through integrated catchment management and EbA in the Kofirnighan River Basin.	Output 3.1. Existing knowledge management platforms supported for collating information on the planning, implementation and financing of EbA interventions.																				
	Output 3.2. An impact evaluation framework established to enable effective adaptive management of EbA activities.																				

Adaptation Fund-UNDP Full Proposal on 'An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan' (submitted 7 August 2018)

Response sheet to corrective actions (CARs) and clarifying requests (CRs) (received 28 August 2018)

3 September 2018

Table 1. Summary of corrective actions (CARs) and clarifying requests (CRs), parties responsible for responding and responses.

Corrective actions (CARs)	Party/ies responsible	Response	Section addressed
CAR 1: All AF-funded activities need to comply with relevant national technical standards. Please clarify how this will be achieved, in line with the AF ESP.	Committee for Environmental Protection, UNDP, district authorities.	The proposed activities will be carried out in line with all relevant national technical standards. These standards, as well as a brief description on how the project will align with them, have been detailed in Annex 4 (ESMF).	ANNEX 4. ESMF
CAR 2: Please carry out consultations with project beneficiaries and possibly affected parties, in line with the ESP and the GP of the AF.	Committee for Environmental Protection, UNDP, district authorities	Series of consultations with relevant government and civil society stakeholders have already been completed (for details, please see Appendix 1 of the Full Proposal). Identified climate vulnerable districts have also been consulted. During the Inception Phase of the proposed project, full stakeholder and beneficiary consultations will be carried out with the target beneficiaries that will be involved in the participatory development of the Watershed Action Plans (WAPs). At the present time, these specific beneficiaries and households cannot be identified as watersheds in the KRB have not yet been delineated. It is expected that, by the time of project inception, activities under the establishment of the KRBMP will have included watershed delineation. This delineation will be required before the proposed AF project can select final sites within the identified districts for project implementation. The KRBMP is expected to be completed in 2019, while the proposed AF project is expected to begin in 2020.	Annex 1.
CAR 3: Please include the list of tables for reporting Adaptation Fund Core Impact Indicators. This is	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. Table 21 has been inserted into the document and includes the Adaptation Fund Core Indicators.	PART III. IMPLEMENTATION ARRANGEMENTS > F. Alignment with Adaptation Fund

essential to track progress towards lifetime targets.			Results Framework > Table 22
CAR 4: Please update table 20, to revise the column "Fund Outcome Indicator" to reflect alignment of project outcomes with all relevant AF outcome indicators. Please also update the total grant amount to reflect the actual requested amount (USD 9,996,441).	Committee for Environmental Protection, UNDP, district authorities	Table 20 has been revised to include additional 'Fund Outcome Indicators'. Total grant amount and amounts per project outcomes have been updated.	PART III. IMPLEMENTATION ARRANGEMENTS > F. Alignment with Adaptation Fund Results Framework
CAR 5: Please categorise the project in line with the ESP.	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. The project has been categorised as risk level *Medium*, in line with the ESP.	ANNEX 4. ESMF
CAR 6: Please identify and provide an overview of the environmental and social risks and impacts associated with the project, in line with the ESP and the GP. The IE is recommended to make full use of the ESP and GP documents and the related guidance documents.	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. An overview of Environmental and Social risks and impacts associated with the proposed project have been provided in Annex 4 (ESMF).	ANNEX 4. ESMF
CAR 7: Please include measures in the proposal for the management of environmental and social risks of the project, in line with the ESP and the GP.	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. Mitigation and management measures for the environmental and social risks of the project have been included in Annex 4 (ESMF).	ANNEX 4. ESMF
CAR 8: Please include a grievance mechanism that meets the ESP and GP requirements.	UNDP, Committee for Environmental Protection, district authorities	A grievance mechanism will be implemented according to UNDP's Social and Environmental Safeguards Policy (SESP). Details on the grievance mechanism, as well as a template for a grievance redress form, have been included in Annex 4 (ESMF).	ANNEX 4. ESMF

CAR 9: Update to also include the expected concrete outputs that will be planned per year. This is especially valuable information to help the secretariat track planned activities in the review of annual project performance reports (PPRs).	Committee for Environmental Protection, UNDP, district authorities	Thank you for this component. A workplan has been added in Annex 11.	ANNEX 4. ESMF
Clarifying requests (CRs)	**Party/ies responsible**	**Response**	**Section addressed**
CR 1: Please clarify measures to expand the positive impacts and results of this project to other vulnerable communities KRB basin, potential pathways for scaling up and replication of successful interventions.	C4EcoSolutions	Additional text has been added to the document: "UNDP is supporting the GoT in developing National Adaptation Plans (NAPs), and, as part of this process, climate adaptation will be mainstreamed into four priority sectors (Energy, Water, Transport and Agriculture). The lessons learned and best practices from the Adaptation Fund project will inform the ongoing NAP development process to ensure that project activities and the climate-resilient catchment management approach are scaled up across all other basins in the country. The project lessons learned and best adaptive practices as well as climate risk information generated by the project will also inform the ongoing process of water reform in Tajikistan."	PART I: PROJECT INFORMATION > Project objective
CR 2: Please clarify how the project intends to overcome the barriers to implementation of the preferred solution that are mentioned in the proposal.	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. Text has been added to each barrier to indicate how the proposed approach will overcome the respective barrier.	PART I: PROJECT INFORMATION > Project Background and context > Alternative solution and barriers.
CR 3: In the current full proposal please specify under output 1.5, the PES system service models that will be developed.	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. During the project development phase, no specific PES models were identified. It is expected that, once watersheds have been delineated and WAPs have been developed, tangible PES models will be identified. The proposed project will focus on developing the enabling environment for such PES models to be implemented in the future. This will be achieved by identifying willing buyers and sellers as well as financial intermediaries. In addition, linkages will be created between the identified entities.	Output 1.5.

<table>
<tr>
<td>CR 4: More than 80% of the project funds have been allocated towards outcome 2, however please adequately list the planned interventions under this component, that justifies the allocated USD 7,282,810.</td>
<td>Committee for Environmental Protection, UNDP, district authorities</td>
<td>Thank you for this comment. Outcome 2 includes on-the-ground EbA activities in over 100 villages across six districts and 14 jamoats. A full list of interventions is provided in the Full Proposal and Annex 10. Budget has been allocated to Outcome 2 according to an estimation of the amount of input required in each of the six districts for on-the-ground EbA interventions, as shown below:
<table>
<tr><th>#</th><th>Districts</th><th>Total in USD</th></tr>
<tr><td>1</td><td>Vahdat</td><td>1,994,500</td></tr>
<tr><td>2</td><td>Varzob</td><td>658,000</td></tr>
<tr><td>3</td><td>Fayzabad</td><td>916,000</td></tr>
<tr><td>4</td><td>Nosiri Khisrav</td><td>643,000</td></tr>
<tr><td>5</td><td>Kabodiyon</td><td>1,092,500</td></tr>
<tr><td>6</td><td>Shaartuz</td><td>696,000</td></tr>
<tr><td></td><td>Total</td><td>6,000,000</td></tr>
</table>
In addition to the costs of on-the-ground interventions listed in the proposal and Annex 10, budget has been allocated to: i) the development of at least 14 WAPs; ii) the construction of nurseries in each jamoat; iii) the construction of demonstration plots; and iv) providing support to local communities to develop sustainable natural resource-based enterprise plans.</td>
<td>Outcome 2.</td>
</tr>
<tr>
<td>CR 5: Clarify in the current full proposal if all/ some of the EBA measures listed in Table 7 will be developed.</td>
<td>Committee for Environmental Protection, UNDP, district authorities</td>
<td>Additional text has been added to the document as follows: “Final selection of activities from a long list of measures, in each watershed will be made through the participatory development of WAPs (Activity 2.2.2). Communities will select the most appropriate interventions for their watersheds through the WAP development process. It is expected that all activities mentioned in Table 7 will be implemented; however, each local community will be mandated to prioritize activities in their local sub-watershed. While additional activities suggested by local communities may be considered for implementation during the project, these activities will first be assessed by social and environmental experts for: i) alignment with project objectives; ii) effectiveness in reducing vulnerability; iii) potential for the proposed activity to result in adverse and irreversible social or environmental impacts; and iv) potential for the proposed activity to result in positive social and environmental externalities.”</td>
<td>PART II: PROJECT JUSTIFICATION > A. Project Components > Activity 2.1.2. Establish EbA demonstration plots in each of the target villages</td>
</tr>
<tr>
<td>CR 6: Under output 2.3 please provide additional information on how the environmental sustainability of local</td>
<td>Committee for Environmental Protection, UNDP, district authorities</td>
<td>Additional text has been added to the document: “The implementation of sustainable livelihoods will increase the environmental sustainability of local communities by providing these communities with sources of supplemental income that is decoupled from environmental degradation. For example, community woodlots will provide local communities with access to fuelwood</td>
<td>PART II: PROJECT JUSTIFICATION > A. Project Components ></td>
</tr>
</table>

community livelihoods will be increased through the implementation of sustainable livelihoods such as harvesting fuel wood and timber species from local community woodlots.		and timber from suitable fast-growing species that will reduce their reliance on sourcing fuelwood from nearby forests. Woodlots will also be situated nearby beneficiary communities to reduce the labour burden of collecting fuelwood. Improved management practices from agricultural and pasture lands will reduce environmental degradation from overgrazing and soil degradation while also increasing local biodiversity. Complementary activities, such as apiculture, will provide additional income to local communities."	Output 2.3. EbA interventions implemented in target watersheds by local communities.
CR 7: Please clarify if the woodlots are pre-existing or whether there will be measures to locate woodlots in a way that minimises the risks of invasion of woodlot species into indigenous forests and damaging water sources. Additionally, please provide more information on how they will be managed, as well what measures are being proposed for active monitoring and removal of invading saplings into adjacent forests and woodlands.	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. The following reply has been added to the proposal: "Several principles inform project activities where plant introduction/management is an aspect (e.g. forest rehabilitation, agroforestry, shrubland conservation, pasture rehabilitation, crop production). • Expert input: Regional and/or local experts (ecological, hydrological and agricultural) will be appointed to provide input into the selection and development of protocols for each of the EbA interventions, particularly where plant-introduction/management is an aspect. • Site selection: As part of the participatory mapping process, expert input (ecological, hydrological and agricultural) will inform the selection of sites for EbA interventions. For example, it is envisaged that existing woodlots will be supplemented; newly-planted woodlots will be situated in appropriate, low-risk areas (a safe distance from areas of high conservation value or biodiversity hotspots). • Species selection: Wherever possible, naturally-occurring species will be planted. Where necessary, non-invasive, non-naturally-occurring species will be planted. Known invasive species or species with potentially invasive traits will be avoided. Where alien species will be introduced, the Committee for Environmental Protection (CEP) will be consulted prior to such introduction to ensure that these species do not pose a risk to endemic biodiversity. • Operational monitoring and management: Regular monitoring by the appointed regional/local ecologist/s will be undertaken to ensure early detection and rapid response to any species emerging as potentially invasive. An appropriate invasive species eradication plan will be developed and implemented according to stipulated timeframes." We also note that the EE of the project (CEP) is responsible for environmental protection in Tajikistan and has considerable ecological expertise.	PART II: PROJECT JUSTIFICATION > A. Project Components > Component 2. Ecosystem-based Adaptation, including Climate-smart Agriculture and Sustainable Land management, in agro-ecological landscapes.

		Consequently, adverse and irreversible ecological impacts as a result of project activities are unlikely to occur.	
CR 8: Please clarify what economic, social and environmental benefits this project is expected to bring to the KRB regional communities during the project implementation period and after the project completion	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. Table 8 lists the benefits that are expected to be accrued during and after the proposed project. Clarifying text has been added before the table to indicate that the benefits will accrue both during project implementation and after project completion.	PART II: PROJECT JUSTIFICATION > B. Economic, social and environmental benefits
CR 9: In table 8, please demonstrate two scenarios (a) without the project; and (b) with the project, what environmental, social and economic benefits are expected to accrue to the KRB communities and beyond. Please amend Table 8 to show the additional environmental, social and economic benefits due to the project.	Committee for Environmental Protection, UNDP, district authorities	Table 8 has been expanded to include both scenarios: a) without the project (baseline); and b) with the project (additionality).	PART II: PROJECT JUSTIFICATION > B. Economic, social and environmental benefits > Table 8
CR 10: Please elaborate how this project will strengthen gender responsiveness in Table 8.	Committee for Environmental Protection, UNDP, district authorities	Table 8 has been amended to incorporate additional information on gender responsiveness.	PART II: PROJECT JUSTIFICATION > B. Economic, social and environmental benefits > Table 8
CR 11: Pages 71-75 try to demonstrate cost-effectiveness of the project but it is too general. Please (1) Use quantitative or qualitative indicators to measure cost-	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. The three scenarios have been strengthened and summarised in a table for comparison. In addition, cost-benefit analyses of the proposed EbA interventions have been undertaken and are presented in Appendix 10.	PART II: PROJECT JUSTIFICATION > C. Cost Effectiveness

effectiveness; (2) Put the three scenarios including their quantitative results in one table for comparison			
CR 12: On page 75, the project document, please elaborate on how the project activities will increase rural Tajik resilience to climate change	Committee for Environmental Protection, UNDP, district authorities	As recommended, additional text has been added to the document: "The proposed project aligns with these national priorities by promoting the climate resilience of rural Tajik citizens through the integrated management of climate vulnerable catchments and watersheds by using EbA. Watershed restoration using EbA will strengthen the provision of ecosystem services. These ecosystem services support both soil stabilisation as well as water retention and groundwater infiltration. Consequently, activities under the project will support and climate-proof the livelihoods of Tajik farmers by reducing the exposure and vulnerability to climate change induced disasters. The EbA interventions that have been selected will also generate a number of co-benefits that will improve the livelihoods of Tajik farmers. These co-benefits will include improved agricultural productivity and income diversification."	PART II: PROJECT JUSTIFICATION > D. Consistency with national priorities
CR 13: In Table 10 on pages 82-84, please elaborate the additionality of the project. Highlight, a new national policy and legislation (if any), additional economic, social and environmental benefits on the top of all other existing or past projects. This will clearly show that this project is unique and not duplication of any other projects. Furthermore, please also include a column on complementarity (where relevant) with existing projects.	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. Table 10 (now Table 11) has been amended to include descriptions of the additionality of the proposed project to existing initiatives.	PART II: PROJECT JUSTIFICATION > F. Duplication in project design
CR 14: Please use quantitative numbers (where possible) to	Committee for Environmental	Thank you for this comment. Quantitative numbers have been added to Table 19 (which is now Table 20). The main targets are: 46,000 men and women with reduced vulnerability to climate change, at least 1,500 ha of land with EbA	PART III: IMPLEMENTATION ARRANGEMENTS

measure and targets and verifications of the project in Table 19. For example, please specify the number of planned activities with the government and local communicates. These numbers will become a benchmark for future project evaluation	Protection, UNDP, district authorities	activities implemented and at least 14 Watershed Action Plans developed. For details on the targets, kindly refer to Table 20 in the proposal.	> E. Results Framework
CR 15: Please clarify if the gender analysis mentioned in Table 13 has been carried out and how the outcomes of the analysis are reflected in the project document**.**	Committee for Environmental Protection, UNDP, district authorities	Thank you for this comment. The reference in Table 13 (now Table 20) is an error in writing. It should read that a gender analysis will be conducted in the Inception Phase of the proposed project. The changes have been made throughout the project.	Entire document
CR 16: Please clarify in the project document, if there are measures in place for the integration of gender considerations in project/programme implementation.	UNDP, Committee for Environmental Protection, district authorities.	Thank you for this comment. Such information can be found in the revised version of Annex 4 (ESMF), Section 4: Gender Considerations. A number of measures have been identified to promote inclusive benefit-sharing throughout the lifetime of the project.	ANNEX 4. ESMF
CR 17: Please clarify the roles of the IE and EE in the implementation of the project, with respect to ensuring compliance with the ESP and GP	UNDP, Committee for Environmental Protection, district authorities	Thank you for this comment. Such information can be found in the revised version of Annex 4 (ESMF). UNDP will be responsible for monitoring the implementation of the project in line with the UNDP Social and Environmental Safeguards Policy (SESP). The EE (CEP) will implement the proposed project and ensure that project activities remain compliant with applicable national standards, in particular the Law on Environmental Protection.	ANNEX 4. ESMF
CR 18: Please provide additional information that reflects the inclusion of monitoring arrangements, in compliance with the Gender Policy of the Fund.	UNDP, Committee for Environmental Protection, district authorities	Thank you for this comment. UNDP will be responsible for monitoring the impacts of the project, in line with UNDP's SESP. Gender-specific considerations in project design have been included in Section 4 of Annex 4 and the project results will be monitored using gender-disaggregated data.	ANNEX 4. ESMF