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ADAPTATION FUND

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| <b>PROJECT TITLE:</b> An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan  |  |   |
| <b>Country(ies):</b> Tajikistan   | <b>Implementing Partner (AF Executing Entity):</b> Committee for Environmental Protection (CEP) under the Government of the Republic of Tajikistan | <b>Execution Modality:</b> National Implementation Modality (NIM)   |
| <b>Contributing Outcome (UNDAF/CPD, RPD, GPD):</b><br>Outcome 6: People in Tajikistan are more resilient to natural and man-made disasters and benefit from improved policy and operational frameworks for environmental protection and sustainable management of natural resources   |  |   |
| <b>UNDP Social and Environmental Screening Category:</b> Moderate   |  | <b>UNDP Gender Marker:</b> TBD  |
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| <b>Expected date of posting of Mid-Term Review to ERC:</b>  |  | <b>Expected date of posting Terminal evaluation report to ERC:</b>  |
| <b>Brief project description:</b><br><br>The objective of the proposed project is to enhance the livelihoods of the small-scale farmers and pastoralists living in the Kofirnighan River Basin (KRB) under future climate change conditions. Three interrelated outcomes within the project 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 ecosystem-based adaptation. |  |   |
| <b>(1) FINANCING PLAN</b>   |  |   |
| Adaptation Fund   |  | USD 9,213,310.00  |
| <b>(1) Total Budget administered by UNDP</b>  |  | <b>USD 9,213,310.00</b>   |
| <b>AGREED BY:</b>   |  |   |
| Government  |  |   |
| <br><br>Mr. Bahodur Sheralizoda<br>Chairman, Committee for Environmental Protection<br>under the Government of the Republic of Tajikistan<br>Date:  |  | <br><br>Ms. (Dr.) Pratibha Menta,<br>Resident Representative<br>UNDP Country Office in Tajikistan<br>Date:<br>11/06/2020 |

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## LIST OF ACRONYMS AND ABBREVIATIONS

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

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

|                               |   |
|-------------------------------|---|
| <b>UCA</b>                    | University of Central Asia  |
| <b>UN Environment/ UNEP</b>   | United Nations Environment Programme  |
| <b>UNDP</b>                   | United Nations Development Programme  |
| <b>UNECE</b>                  | United Nations Economic Commission for Europe   |
| <b>UNESCO</b>                 | United Nations Educational, Scientific and Cultural Organisation                            |
| <b>UNFCCC</b>                 | United Nations Framework Convention on Climate Change                                       |
| <b>Watershed</b>              | In this document, the smallest hydrological unit for management of land and water resources |
| <b>WAPs</b>                   | Watershed Action Plans  |
| <b>Water Reform Programme</b> | Water Sector Reforms Programme of the Republic of Tajikistan for 2016–2025                  |
| <b>WB</b>                     | World Bank  |
| <b>WBG</b>                    | World Bank Group  |
| <b>WHO</b>                    | World Health Organisation   |
| <b>WMO</b>                    | World Meteorological Organization   |
| <b>WUAs</b>                   | Water User Associations   |

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## I. DEVELOPMENT CHALLENGE

### 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<sup>1</sup>. 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<sup>2</sup>. 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)<sup>3</sup>.

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<sup>4</sup>, 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<sup>5</sup>.

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 Tajikistan. The proposed project's activities will focus 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<sup>6</sup>. 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<sup>7</sup>); 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<sup>2</sup>, making it the smallest of all the Central Asian countries<sup>8,9</sup>. Over 90% of the land is mountainous terrain, with approximately half

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<sup>1</sup> 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.

<sup>2</sup> World Bank (WB). 2013. Tajikistan: Overview of climate change activities.

<sup>3</sup> WB 2013 Tajikistan: Overview.

<sup>4</sup> 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.

<sup>5</sup> WB 2013 Tajikistan: Overview.

<sup>6</sup> The administration delineations are explained in the following sub-section on the socio-economic context of Tajikistan.

<sup>7</sup> 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.

<sup>8</sup> Third National Communication 2014.

<sup>9</sup> The total land surface areas of the remaining four Central Asia countries, in order of increasing size, are: i) Kyrgyzstan at 199,900 km<sup>2</sup>;



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 (**Error! Reference source not found.**). This elevation range has resulted in a significant inter-seasonally and regionally variable climate. Elevation also influences the mean annual temperature, which ranges from -20°C–30°C, 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 glaciers make up ~6% of Tajikistan's land area and are important water reserves, storing ~406 km<sup>3</sup> of water and contributing to between 40 and 60% of the national renewable freshwater resources<sup>10</sup>. 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<sup>11</sup>. 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<sup>12</sup>.

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ii) Uzbekistan at 448,978 km<sup>2</sup>; iii) Turkmenistan at 491,210 km<sup>2</sup>; and iv) Kazakhstan at 2,725,000 km<sup>2</sup>.

<sup>10</sup> United Nations Economic Commission for Europe (UNECE). 2017. Environmental Performance Review: Tajikistan, Third Review.

<sup>11</sup> 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].

<sup>12</sup> PRISE 2018 "Tajikistan's glaciers melting".



**Figure 1 Map showing the five administrative regions of Tajikistan, namely Sughd, Khatlon, Districts of Republican Subordination (DRS) (previously known as Karategin Region), Badakhshan and Dushanbe<sup>13,14</sup>.**

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 for irrigation annually. This amount is ~10 times less than what was planned in the Water Sector Development Strategy for 2010–2025<sup>15</sup>. 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.

### Socio-economic context

Tajikistan has a rapidly growing population, which at present numbers ~8.35 million<sup>16</sup>. Most people live in rural areas and are heavily dependent on agriculture for their livelihoods. Between 2005 and 2014, the population increased by ~22%<sup>17</sup>. 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<sup>18</sup>.

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,

<sup>13</sup> The five administrative regions of Tajikistan are: i) Sughd *oblast*; ii) Khatlon *oblast*; iii) Gorno-Badakhshan *oblast*; iv) Regional Republic Subordination (RRS) – which consists of 13 autonomous districts; and v) Dushanbe.

<sup>14</sup> 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].

<sup>15</sup> Water Sector Development Strategy for 2010–2025. 2009. Ministry of Land Reclamation and Water Resources (MLRWR) & Organisation for Security and Cooperation in Europe (OSCE), Dushanbe, Tajikistan.

<sup>16</sup> UN DESA/Population Division. 2017. World Population Prospects 2017. Available at: <https://esa.un.org/unpd/wpp/Graphs/DemographicProfiles/> [accessed 03.07.2018].

<sup>17</sup> UNECE 2017 Environmental Performance Review.

<sup>18</sup> Ibid.

been continuous growth in GDP over the last 20 years<sup>19</sup>, 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%<sup>20</sup>.

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<sup>21</sup>. Like in other Central Asian countries, agricultural productivity showed a marked decline during the transition period from the Soviet Regime to independence<sup>22</sup>, with productivity levels dropping ~50% by 1997<sup>23</sup>. 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<sup>24</sup>.

Given the mountainous terrain of the country, transportation networks are integral to economic development<sup>25</sup> 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<sup>26</sup>. These events often cause extensive damage to trade networks, making them extremely detrimental to the economy<sup>27</sup>. In addition, both sudden and slow onset flooding events can cause landslides that have major negative impacts on the population<sup>28</sup>.

### 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*.
- 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<sup>29</sup>. 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

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<sup>19</sup> Trading Economics. 2018. Tajikistan GDP per capita. Available at: <https://tradingeconomics.com/tajikistan/gdp-per-capita> [accessed 03.07.2018].

<sup>20</sup> UNECE 2017 Environmental Performance Review.

<sup>21</sup> 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.

<sup>22</sup> causes include the Tajik Civil War, removal of the centralised Soviet infrastructure and limited agricultural expertise

<sup>23</sup> Lerman Z. 2007. Tajikistan: An overview of land and farm structure reforms. The Hebrew University of Jerusalem. Discussion Paper 208.

<sup>24</sup> UNECE 2017 Environmental Performance Review.

<sup>25</sup> NAPCC 2003.

<sup>26</sup> Monhanty A, Mishra M, Mohanty B & BalaSuddareshwara A. 2011. Climate changes and natural hazards in mountain areas. Mountain Hazards 2011. Dushanbe, Tajikistan.

<sup>27</sup> 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].

<sup>28</sup> WB 2017 Strengthening infrastructure in Tajikistan.

<sup>29</sup> 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.

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<sup>30</sup>.

## 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<sup>31, 32</sup>. The country is part of the Central Asia biodiversity hotspot<sup>33</sup>, which supports a rich diversity of flora and fauna<sup>34</sup>. 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)<sup>35</sup>. Mountain ecosystems, situated between 600 and 7,000 masl, contain ~80% of the country's biodiversity and have high levels of endemism<sup>36</sup>. 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<sup>2</sup> 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<sup>37</sup>.

Of Tajikistan's total land area<sup>38</sup>, ~3.1 million hectares (~22%) is currently conserved<sup>39</sup>. Conservation areas within Tajikistan are formally recognised in the form of reserves and environmental protection zones<sup>40,41,42</sup>. Five wetlands are listed in terms of the Ramsar Convention<sup>43</sup> and one conservation area has been declared a United Nations Educational, Scientific and Cultural Organisation (UNESCO) world heritage site<sup>44</sup>. Despite these conservation efforts, degradation continues to occur over large parts of the country<sup>45</sup>. Illegal poaching and uncontrolled harvesting of plant species are of particular concern within the reserves and protection zones. Because there is such rich diversity in the country<sup>46</sup>, the extinction risk to biodiversity is also high, with 226 plant species and 162 animal species currently classified as rare or threatened<sup>47</sup>. Expanding protected areas and eliminating threats to species extinction are focal areas for the GoT going forward<sup>48,49</sup>.

Most territories of Tajikistan are prone to both natural and anthropogenic factors that contribute to land degradation (Figure 2). 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

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<sup>30</sup> Ilolov & Khudoiyev 2001 Local government in Tajikistan.

<sup>31</sup> Squires VR & Safarov N. 2013. Diversity of plants and animals in mountain ecosystem in Tajikistan. *Journal of Rangeland Science* 43–61.

<sup>32</sup> National Strategy and Action Plan on the Conservation and Sustainable Use of Biodiversity (CBD Strategy). 2003. Government of Republic of Tajikistan, Dushanbe.

<sup>33</sup> 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].

<sup>34</sup> 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].

<sup>35</sup> CBD Strategy 2003.

<sup>36</sup> Squires & Safarov. 2013.

<sup>37</sup> NAPCC 2003.

<sup>38</sup> Third National Communication 2014.

<sup>39</sup> Third National Communication 2014.

<sup>40</sup> 4 reserves, 2 national parks and 13 wildlife reserves

<sup>41</sup> Third National Communication 2014.

<sup>42</sup> 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.

<sup>43</sup> 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.

<sup>44</sup> Third National Communication 2014.

<sup>45</sup> FAO 2008 Country Report.

<sup>46</sup> Fauna and Flora International 2018 "Tajikistan: Wild riches in a mountainous terrain".

<sup>47</sup> CBD Strategy 2003.

<sup>48</sup> e.g. Tajikistan's national programmes on biodiversity and biosafety

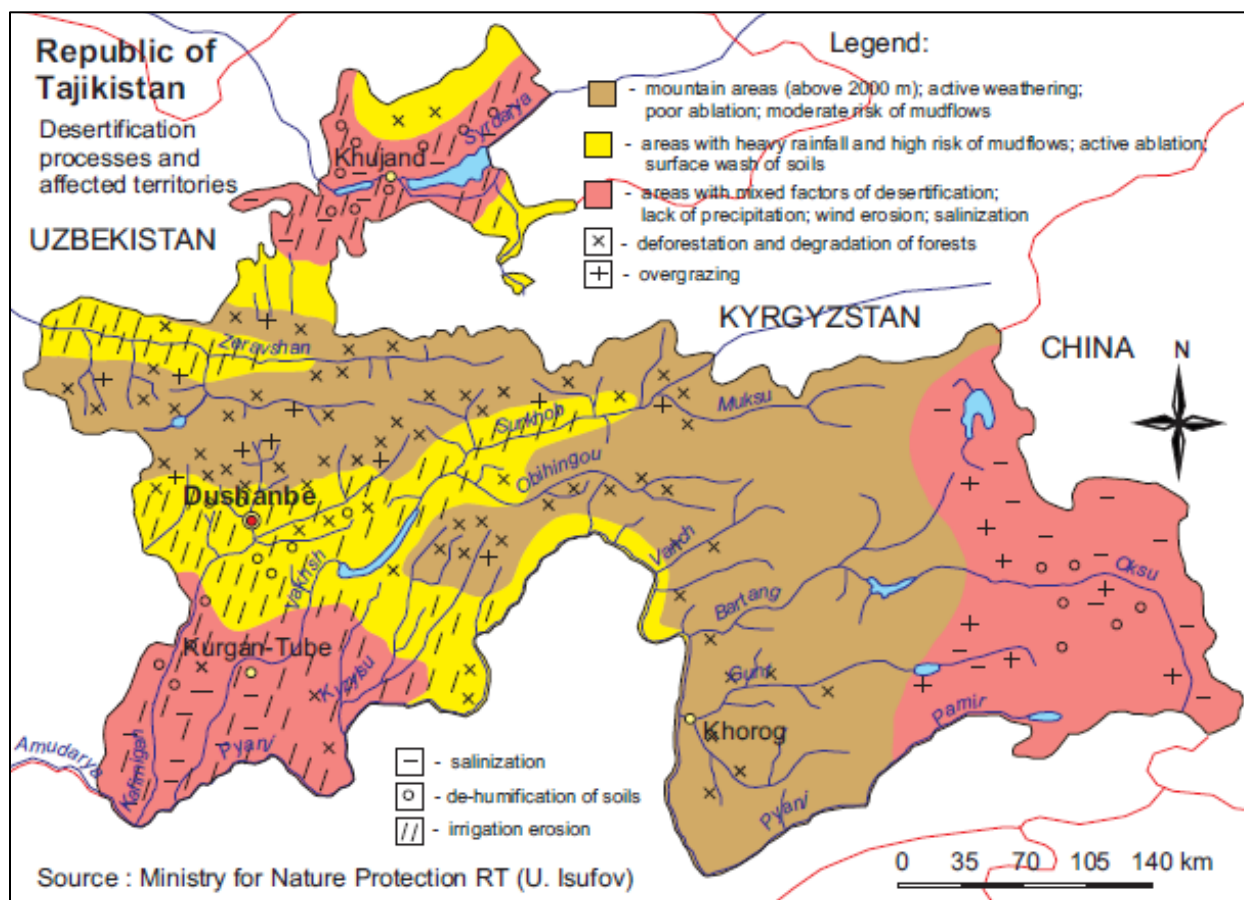
<sup>49</sup> FAO 2008 Country Report.

temperatures, dehydration, wind erosion and intense rainfall events<sup>50</sup>. 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<sup>51</sup>. The effects of the harsh climatic processes coupled with the mismanagement of land are magnified by climate change factors.

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<sup>50</sup> NAPCC 2003.

<sup>51</sup> Third National Communication 2014.



**Figure 2. Map: 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).<sup>52</sup>**

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<sup>53,54</sup>. 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<sup>55</sup>.

### 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) Vakhsh; iii) Pyanj; iv) Kofirnighan; v) Zarafshan; and vi) Karatag. [Figure 3](#) illustrates the river basins in Tajikistan.

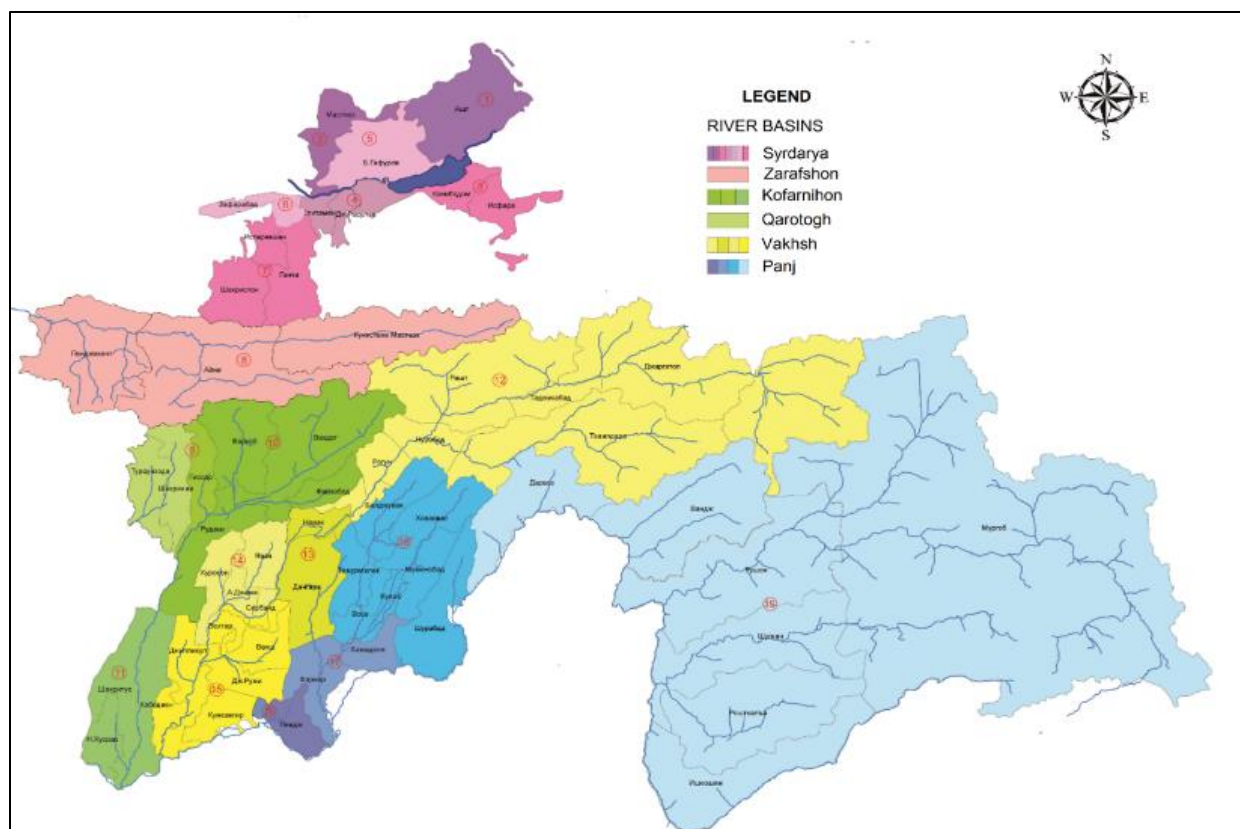
<sup>52</sup> NAPCC 2003.

<sup>53</sup> NAPCC 2003.

<sup>54</sup> Third National Communication 2014.

<sup>55</sup> 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. Map of river basins in Tajikistan, namely Bartang (labelled as Syr Darya), Vakhsh, Pyanj, Kofirnihon, Zarafshan and Karatag<sup>56</sup>.**

The Water Sector Reform Programme of Tajikistan for 2016–2025 (Water Reform Programme)<sup>57</sup> 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 Kofirnihon River Basin.<sup>58</sup> 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 Kofirnihon River Basin (KRB) is one that currently does not have focused efforts being made towards IWRM<sup>59</sup>. 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<sup>60,61</sup>. It is also the smallest of Tajikistan’s four basins and is fully encompassed within Tajikistan (i.e. is not transboundary). A Kofirnihon 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.

<sup>56</sup> Fergana Valley Water Resources Management (WRM). 2018. Kofirnihon River Basin Plan and Management Plan (KRBMP) Draft. Unpublished, Dushanbe, Tajikistan.

<sup>57</sup> 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.

<sup>58</sup> Water Reform Programme 2015.

<sup>59</sup> Fergana Valley WRM 2018 KRBMP Unpublished.

<sup>60</sup> State Agency for Hydrometeorology (Hydromet). 2018. Assessment of Kofirnihon River Basin (KRB), natural disasters and needs. Unofficial document.

<sup>61</sup> see sub-section on KRB below

## 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<sup>62</sup>.

Situated in the south-western and western parts of the country, the KRB occupies a total area of ~11,600 km<sup>2</sup>, with the mountain catchment making up 8,070 km<sup>2</sup> of this (equating to ~70% of the total basin area)<sup>63</sup>. The basin is divided into two regions, namely the north and the central/south regions<sup>64</sup>. 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<sup>2</sup>.<sup>65</sup> The river of Kofirnighan, at ~387 km long, is one of the major contributing inflows of Tajikistan's largest river, the Amu Darya River<sup>66</sup>. 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)<sup>67</sup>.

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

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<sup>62</sup> reducing the project partners and stakeholders to within the country

<sup>63</sup> Tahirov IG & Kupayi GD. 1994. Water resources of Tajikistan of the Republic of Tajikistan. Dushanbe 1:181.

<sup>64</sup> Fergana Valley WRM 2018 KRBMP Unpublished.

<sup>65</sup> Ibid.

<sup>66</sup> Tahirov & Kupayi 1994 Water resources of Tajikistan.

<sup>67</sup> Fergana Valley WRM 2018 KRBMP Unpublished.



**Table 1. Kofirnighan River Basin population numbers according to cities and villages<sup>68</sup>.**

| No.          | Districts and cities | Population <sup>69</sup> |           |             | Population density <sup>70</sup> | No. of cities | No. of urban-type settlements | No. of <i>jamoats</i> |
|--------------|----------------------|--------------------------|-----------|-------------|----------------------------------|---------------|-------------------------------|-----------------------|
|              |                      | 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                     |
| <b>Total</b> |                      | <b>2,802,500</b>         | <b>38</b> | <b>62</b>   | <b>180,8</b>                     | <b>4</b>      | <b>10</b>                     | <b>77</b>             |

The State Agency for Hydrometeorology (Hydromet) has identified KRB as a basin particularly vulnerable to extreme climate events<sup>71,72</sup>. Such extreme events have affected 163 communities within the basin. These KRB communities are illustrated in [Figure 3](#), 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<sup>73,74</sup>. Ranking of areas used the following criteria<sup>75</sup>:

- 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.<sup>76</sup> These six districts are described in greater detail below<sup>77</sup>.

<sup>68</sup> Agency for Statistics. 2017. Regions of the Republic of Tajikistan. Under the President of the Republic of Tajikistan.

<sup>69</sup> Population census as at 1 January 2017.

<sup>70</sup> Population density is measured per km<sup>2</sup>.

<sup>71</sup> Hydromet 2018 Assessment of KRB, Unofficial document.

<sup>72</sup> Further information concerning the KRB's vulnerability to extreme climate events is presented under 'Climate change context'.

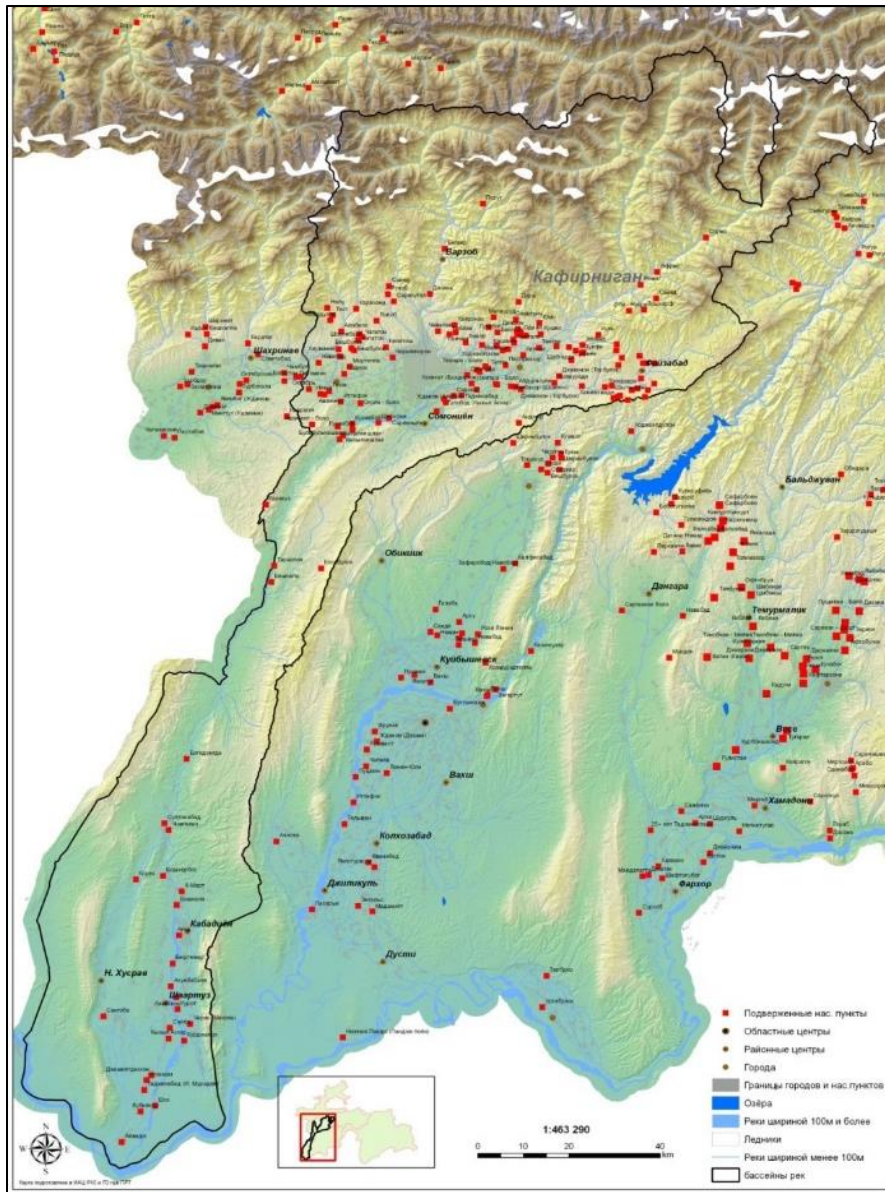
<sup>73</sup> Asian Development Bank (ADB). May 2016. Tajikistan: Building Capacity for Climate Resilience – Mid-term Report (MTR). Technical Assistance Consultant's Report. Prepared by ABT Associates for the ADB and GoT. Project No: 45436-001; TA 8090.

<sup>74</sup> 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).

<sup>75</sup> ADB 2016 Tajikistan: Building Capacity for Climate Resilience – MTR.

<sup>76</sup> Fergana Valley WRM 2018 KRBMP Unpublished.

<sup>77</sup> Further information concerning districts' vulnerability to extreme climate events is presented under district descriptions.



**Figure 4. 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 is situated ~10 km east of Dushanbe and, at 3,700 km<sup>2</sup>, 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<sup>78</sup>.

As of 2017, the total population of Vahdat was 324,000 people, with ~83% of the population living in rural areas<sup>79</sup>. 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

<sup>78</sup> Fergana Valley WRM 2018 KRBMP Unpublished.

<sup>79</sup> Ibid.

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.

### **Varzob District**

Varzob District is situated north of Dushanbe and covers an area of ~1,700 km<sup>2</sup>. 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<sup>2</sup> 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<sup>80</sup>.

An array of natural disasters affects 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<sup>81</sup>.

The total population of the district is ~769,000 people, 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)<sup>82</sup>. 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<sup>83</sup> (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<sup>84</sup>.

### **Faizobod District**

The district of Faizobod covers an area of ~900 km<sup>2</sup> 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<sup>85</sup>.

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<sup>86</sup>.

The main natural disasters occurring within Faizobod are floods, mudflows and landslides. All these disasters are primarily caused by the flooding of the Surkhudara 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<sup>87</sup>.

### **Nosiri Khusrav District**

The Nosiri Khusrav district is ~800 km<sup>2</sup> 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<sup>88</sup>, 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.

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<sup>80</sup> Fergana Valley WRM 2018 KRBMP Unpublished.

<sup>81</sup> Ibid.

<sup>82</sup> Fergana Valley WRM 2018 KRBMP Unpublished.

<sup>83</sup> e.g. walnut orchards

<sup>84</sup> Fergana Valley WRM 2018 KRBMP Unpublished.

<sup>85</sup> Fergana Valley WRM 2018 KRBMP Unpublished.

<sup>86</sup> Ibid.

<sup>87</sup> Ibid.

<sup>88</sup> as of January 2017

### **Shaartuz District**

The district of Shaartuz covers ~1,500 km<sup>2</sup>, 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) Ariktoq (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, 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<sup>2</sup>. Of Shaartuz's total working population, more than 7% work as migrant labourers beyond district borders.

### **Kabodiyon District**

The district of Kabodiyon covers 1,900 km<sup>2</sup>. 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 is 173,800 people. Approximately 93% of the population lives in rural areas, with a density of ~97 people per km<sup>2</sup>. More than 11% of Kabodiyon's working population works as migrant labourers outside of the district.

### **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.

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

| Service                        | Description of threat to service  |
|--------------------------------|---|
| <b>Provisioning services</b>   |   |
| <b>Fresh water</b>             | 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 <sup>89</sup> ; all of which affect catchment hydrology through increased run-off and large-scale gully and sheet erosion <sup>90</sup> .   |
| <b>Food</b>                    | Tajikistan’s agricultural sector is an integral component of the country’s economy, contributing more than 20% of the GDP <sup>91,92</sup> . 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 <sup>93</sup> , as well as soil erosion, declining soil fertility and unsustainable use of pastures <sup>94</sup> .  |
| <b>Raw materials</b>           | Forests are a critical resource to communities <sup>95</sup> , providing food and wood, as well as fodder and grazing to support livelihoods <sup>96</sup> . Permanent pastures currently cover ~3.6 million ha <sup>97,98</sup> 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 <sup>99</sup> . Sheep and goats are generally shepherded to high-altitude, summer pastures, returning to low-altitude, village pastures for the winter period <sup>100</sup> . Cattle are often grazed near villages resulting in severe degradation of rangelands through overgrazing <sup>101</sup> . 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 <sup>102</sup> . |
| <b>Energy</b>                  | 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 <sup>103,104</sup> and development of more hydropower plants is a national priority <sup>105</sup> . Large-scale soil erosion and intense climate-induced hydrometeorological events damage hydropower infrastructure, for example through siltation of dams and damage to turbines <sup>106</sup> . The ability to generate hydropower is negatively impacted by climate-induced fluctuations in river discharge.   |
| <b>Genetic plant resources</b> | Tajikistan is an important source of agro-biodiversity and is one of the main countries of origin for cultivated plants worldwide <sup>107</sup> for example the mountainous regions of the country host  |

<sup>89</sup> Third National Communication 2014.

<sup>90</sup> NAPCC 2003.

<sup>91</sup> Third National Communication 2014.

<sup>92</sup> Curtain M. 2001. Environmental profile of Tajikistan. Asian Development Bank (ADB).

<sup>93</sup> Third National Communication 2014.

<sup>94</sup> Ibid.

<sup>95</sup> Fauna and Flora International 2018 “Tajikistan: Wild riches”.

<sup>96</sup> A large part of the remaining forest area is given for long-term use as pasture.

<sup>97</sup> equivalent to almost 29% of its total land area

<sup>98</sup> The Food and Agriculture Organisation of the United Nations (FAO). 2008. Tajikistan: Reducing the Impact of Price Surge and Agriculture Rehabilitation Programme. Appraisal Document.

<sup>99</sup> Third National Communication 2014.

<sup>100</sup> FAO 2008 Tajikistan: Reducing the Impact.

<sup>101</sup> Third National Communication 2014.

<sup>102</sup> Ibid.

<sup>103</sup> approximately 3.6 mln kWh/1 km/year

<sup>104</sup> Third National Communication 2014.

<sup>105</sup> Ibid.

<sup>106</sup> Third National Communication 2014.

<sup>107</sup> UNDP-GEF. 2009. Project title: Sustaining agricultural biodiversity in the face of climate change in Tajikistan: vulnerability and adaptation. [accessed 03.07.2018].

| Service   | Description of threat to service   |
|---|--|
|   | wild plantations of many different species of fruit trees <sup>108,109</sup> . Numerous anthropogenic <sup>110</sup> and natural factors pose a risk to this indigenous plant genetic material <sup>111</sup> . Some of the natural factors exacerbated by climate change include drought, hot and dry winds, extreme frosts, plant diseases, plant pests and soil salination.   |
| <b>Regulating services</b>                                      |  |
| <b>Water purification, water regulation and erosion control</b> | Excessive climate change-induced run-off of water from mountain slopes is causing large-scale soil erosion, including sheet and gully erosion, across the country. This erosion poses considerable risk to Tajikistan's food, water and energy security <sup>112</sup> . Such large-scale soil erosion is affecting water infiltration, percolation and retention and is consequently hampering water purification and regulation services <sup>113</sup> . Inappropriate land-use – such as deforestation, over-grazing and cultivation of steep slopes – further reduces soil function <sup>114</sup> .  |
| <b>Climate regulation; carbon sequestration</b>                 | Although pastures in Tajikistan contribute less plant biomass per unit area than forests, pastures cover ~32% of the total land area <sup>115</sup> 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 <sup>116</sup> . Pastures are particularly vulnerable to climate change-induced degradation that causes reduced vegetation cover, negatively affecting livestock productivity <sup>117</sup> .   |
| <b>Disease regulation</b>                                       | Climatic variability increases the vulnerability of Tajikistan's population to infections and diseases including malaria and typhoid <sup>118,119</sup> . 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 <sup>120</sup> to mitigate these negative effects.   |
| <b>Cultural services</b>  |  |
| <b>Scenic and cultural resources</b>                            | 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. <sup>121</sup> The ancient Silk Road network of the Central Asian region passes through Tajikistan <sup>122,123</sup> , and is a major tourist attraction along with the numerous towns, castles and ruins along the route <sup>124</sup> . 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. |
| <b>Recreation</b>   | Tajikistan's mountainous areas <sup>125</sup> 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 <sup>126</sup> . In 2016, tourism contributed 8.2% to GDP (equating to US\$0.6 billion). The contribution to employment of this  |

<sup>108</sup> In many cases, the distinction between cultivated and wild plants is unclear.

<sup>109</sup> FAO 2008 Country Report.

<sup>110</sup> including deforestation, overgrazing, overharvesting for fuelwood and medicinal purposes, and grubbing of old orchard

<sup>111</sup> FAO 2008 Country Report.

<sup>112</sup> Ibid.

<sup>113</sup> NAPCC 2003.

<sup>114</sup> Third National Communication 2014.

<sup>115</sup> NAPCC 2003.

<sup>116</sup> FAO 2008 Country Report.

<sup>117</sup> Third National Communication 2014.

<sup>118</sup> The transmission of typhoid is increasing, which has been coupled with a reduction in the quality of drinking water especially during intense rainfall events.

<sup>119</sup> Third National Communication 2014.

<sup>120</sup> FAO 2008 Country Report.

<sup>121</sup> 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].

<sup>122</sup> including the areas of Penjikent, Khujand, Istarafshan and Gissar

<sup>123</sup> 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.

<sup>124</sup> Third National Communication 2014.

<sup>125</sup> Third National Communication 2014.

<sup>126</sup> Ibid.



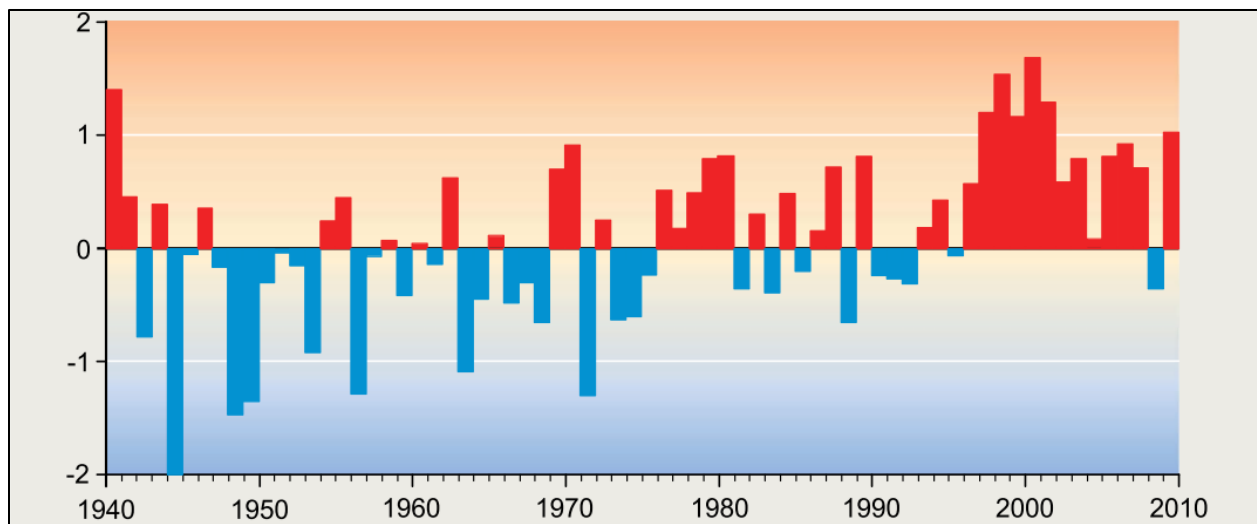
| Service                        | Description of threat to service   |
|--------------------------------|--|
|                                | sub-sector, including jobs indirectly supported by it, was ~21% of total employment (490,500 jobs) <sup>127</sup> . The dependence of nature-based tourism on natural resources renders recreational services particularly vulnerable to the impacts of climate change.  |
| <b>Science and education</b>   | 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 <sup>128</sup> . 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 <sup>129</sup> . 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.   |
| <b>Spiritual and religious</b> | Approximately 90% of Tajikistan’s population is Muslim <sup>130,131</sup> , with the balance comprising several other religions <sup>132</sup> . Despite having been predominantly Muslim since the 10 <sup>th</sup> 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) <sup>133</sup> . 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. |

**Climate change context**

**Observed climate change**

Tajikistan has experienced a considerable warming of its climate since 1950<sup>134</sup> (Figure 5). The most recent warming trend from 1976 to 2010 averaged ~0.15°C per decade in winter and spring, ~0.3°C per decade in summer and ~0.2°C per decade in autumn. From 2001 to 2010, the country experienced the warmest decade in its history (12)<sup>135</sup>. Average temperatures for the decade were: i) 1°C above the long-term average in the foothills (0–1,000 m); ii) 0.8°C above the long-term average in the mid-hills (1,000–2,500 m); and iii) 0.2°C above the long-term average in the highlands (above 2,500 m).<sup>136</sup>

<sup>127</sup> World Travel and Tourism Council (WTTC). 2017. Travel and Tourism: Economic Impact 2017 Tajikistan.  
<sup>128</sup> Third National Communication 2014.  
<sup>129</sup> FAO. 2008. Tajikistan: NFP update.  
<sup>130</sup> with Sunni Muslim comprising ~85% and Shia Muslim comprising ~5%  
<sup>131</sup> 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].  
<sup>132</sup> There are 85 non-Muslim groups registered with Tajikistan’s Department of Religious Affairs at the Ministry of Culture.  
<sup>133</sup> Advantour. 2018. “Tajikistan Rituals”. Available at: <https://www.advantour.com/tajikistan/traditions/wedding-rituals.htm> [accessed 23.07.2018].  
<sup>134</sup> Third National Communication 2014.  
<sup>135</sup> 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](http://www.ijozat.tj/index.php?option=com_content&view=section&id=30&lang=en) [accessed 03.07.2018].  
<sup>136</sup> Third National Communication 2014.



**Figure 5. Illustration of the annual temperature (°C) departure from the average long-term norm for the period 1961–1990 in Tajikistan<sup>137</sup>.**

The temperature changes across Tajikistan have been accompanied by increasingly erratic rainfall (Figure 6) which has resulted in both: i) an increase in rainfall intensity; and ii) longer dry spells.<sup>138</sup> In recent years, the amount of precipitation<sup>139</sup> 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.

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%<sup>140</sup>.

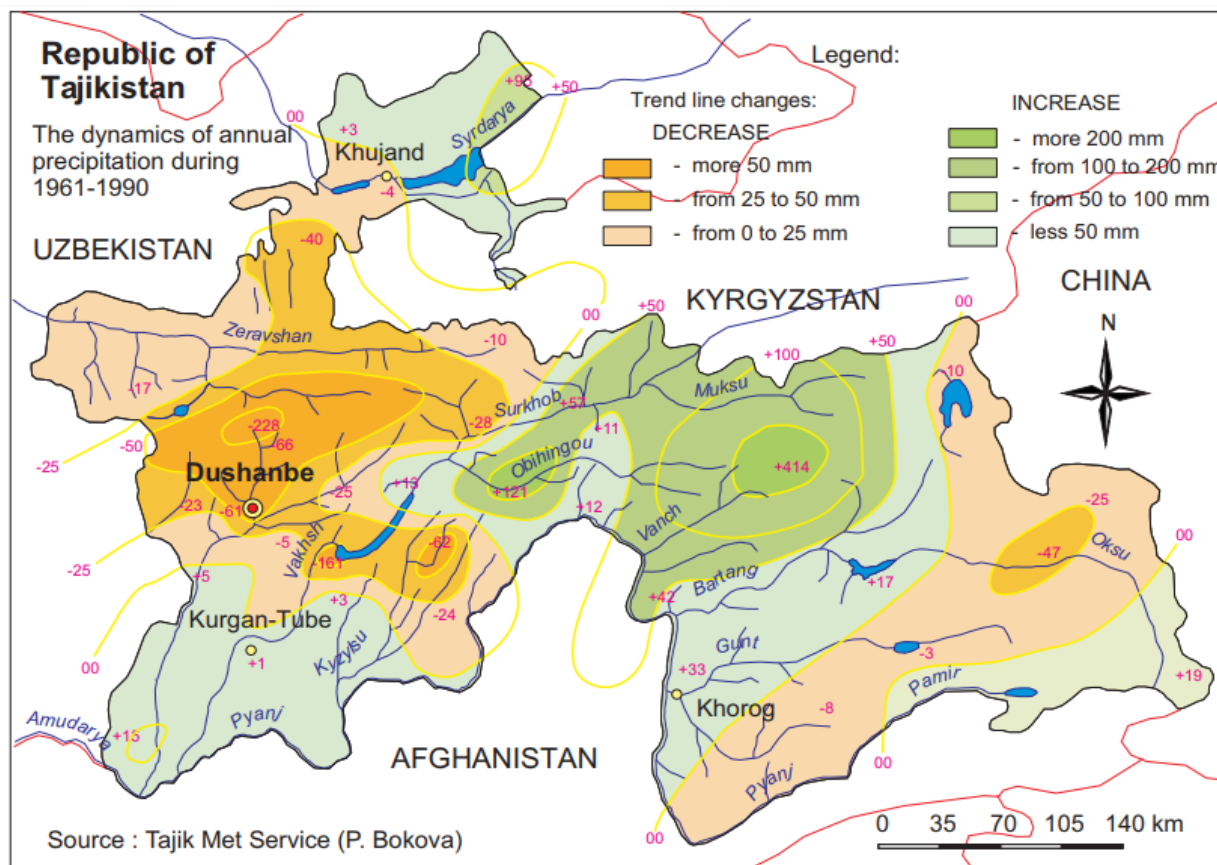
<sup>137</sup> State Agency for Hydrometeorology 2018.

<sup>138</sup> Ibid.

<sup>139</sup> 'Precipitation' refers to the combined amount of rainfall and snowmelt.

<sup>140</sup> NAPCC 2003.





**Figure 6. Changes of mean annual precipitation observed across Tajikistan during 1961–1990<sup>141</sup>.**

The number of days with precipitation (hereafter referred to as ‘rain days’) has decreased across the country since 1961<sup>142</sup>. By contrast, the number of days in which heavy precipitation events have occurred have increased<sup>143</sup>. The decrease in rain days coupled with the increase in heavy precipitation events equates to an increase in rainfall intensity in Tajikistan<sup>144</sup>.

Fewer rain days and increased temperatures have resulted in a greater incidence of intense dry spells across Tajikistan<sup>145</sup>. 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<sup>146</sup>:

- 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.

Severe droughts – those that reduce average crop yields by at least 50% – have been observed once in every<sup>147</sup>:

- 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.

<sup>141</sup> Third National Communication 2014.

<sup>142</sup> Ibid.

<sup>143</sup> Kayumov 2016 Glaciers resources of Tajikistan.

<sup>144</sup> Third National Communication 2014.

<sup>145</sup> World Food Programme (WFP). 2017. Climate Risks and Food Security in Tajikistan: A Review of Evidence and Priorities for Adaptation Strategies.

<sup>146</sup> 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.

<sup>147</sup> FAO 2017 Drought Characteristics and Management.

## Climate risks, impacts and vulnerabilities

As noted previously in this document, Tajikistan is the most vulnerable country to climate change in Central Asia<sup>148</sup>. This vulnerability is attributed to the country's: i) weak social structures; ii) low adaptive capacity; iii) underdeveloped infrastructure; iv) low-income insecurity; v) poor service provision; vi) strong dependence on agriculture; and vii) institutional constraints. Losses from natural hazards currently amount to ~20% of the country's GDP<sup>149</sup> 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<sup>150</sup> (Table 3).

**Table 3 Total countrywide damages caused by climate change and extreme climate events<sup>151</sup>.**

| 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.<sup>152</sup> Together, these effects have increased the rate of topsoil erosion, threatening the food, water and energy security of the country<sup>153</sup>. Approximately 33% of all agricultural losses in the country are currently attributable to climate change and variability<sup>154</sup>. 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<sup>155</sup>.

Glacial melt poses a particularly large risk to the population of Tajikistan, currently averaging ~2 km<sup>3</sup> per year and leading to meltwater flows which often result in large-scale sheet and gully erosion<sup>156</sup>. 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)<sup>157</sup>. These low frequency, high impact hazards are particularly problematic because they are likely to trigger multiple other hazards, such as flash

<sup>148</sup> WFP 2017 Climate Risks and Food Security.

<sup>149</sup> Ibid.

<sup>150</sup> 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).

<sup>151</sup> United Nations Development Programme (UNDP). 2014. Central Asian Multi-Country Programme on Climate Risk Management (CA-CRM). Regional Project Document. Atlas Award ID 59476.

<sup>152</sup> UNDP 2014 CA-CRM.

<sup>153</sup> Third National Communication 2014.

<sup>154</sup> National Human Development Report (NHDR). 2012. Tajikistan: Poverty in the Context of Climate Change. United Nations Development Programme (UNDP), Dushanbe.

<sup>155</sup> Third National Communication 2014.

<sup>156</sup> 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].

<sup>157</sup> WFP 2017 Climate Risks and Food Security.

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<sup>158</sup>.**

| 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                            |
| <b>Total</b>             | <b>276</b>                                  | <b>202,437,132</b>      | <b>49</b>                    |

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<sup>159</sup>. 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<sup>160,161</sup>. 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<sup>162</sup>. 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<sup>163</sup>.

Many of the households located in the six most vulnerable districts of the BKR 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<sup>164</sup>. 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<sup>165</sup>, 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

<sup>158</sup> Committee for Emergency Services (CoES). 2018. Statistical damages data for 1998–2014. Provided by the UNDP DRMP.

<sup>159</sup> Ibid.

<sup>160</sup> Hydromet 2018 Assessment of KRB, Unofficial document.

<sup>161</sup> Further information concerning the KRB’s vulnerability to extreme climate events is presented under ‘Climate change context’.

<sup>162</sup> 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.

<sup>163</sup> Hydromet 2018 Assessment of Kofirnighan River Basin.

<sup>164</sup> Further information concerning district-specific vulnerability to extreme climate events is presented under district descriptions.

<sup>165</sup> NHDR 2012 Tajikistan: Poverty in the Context of Climate Change.

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**

Climate models, developed during the preparation of the Third National Communication, project a number of negative impacts from climate change<sup>166,167</sup>. Specifically, rising temperatures and an increase in intensity of rainfall events have been predicted (Figure 7).

Average temperatures in Tajikistan are projected to increase by 2.9°C by 2050<sup>168</sup>. By the end of the 21<sup>st</sup> 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.<sup>169</sup> 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<sup>170</sup>. 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.

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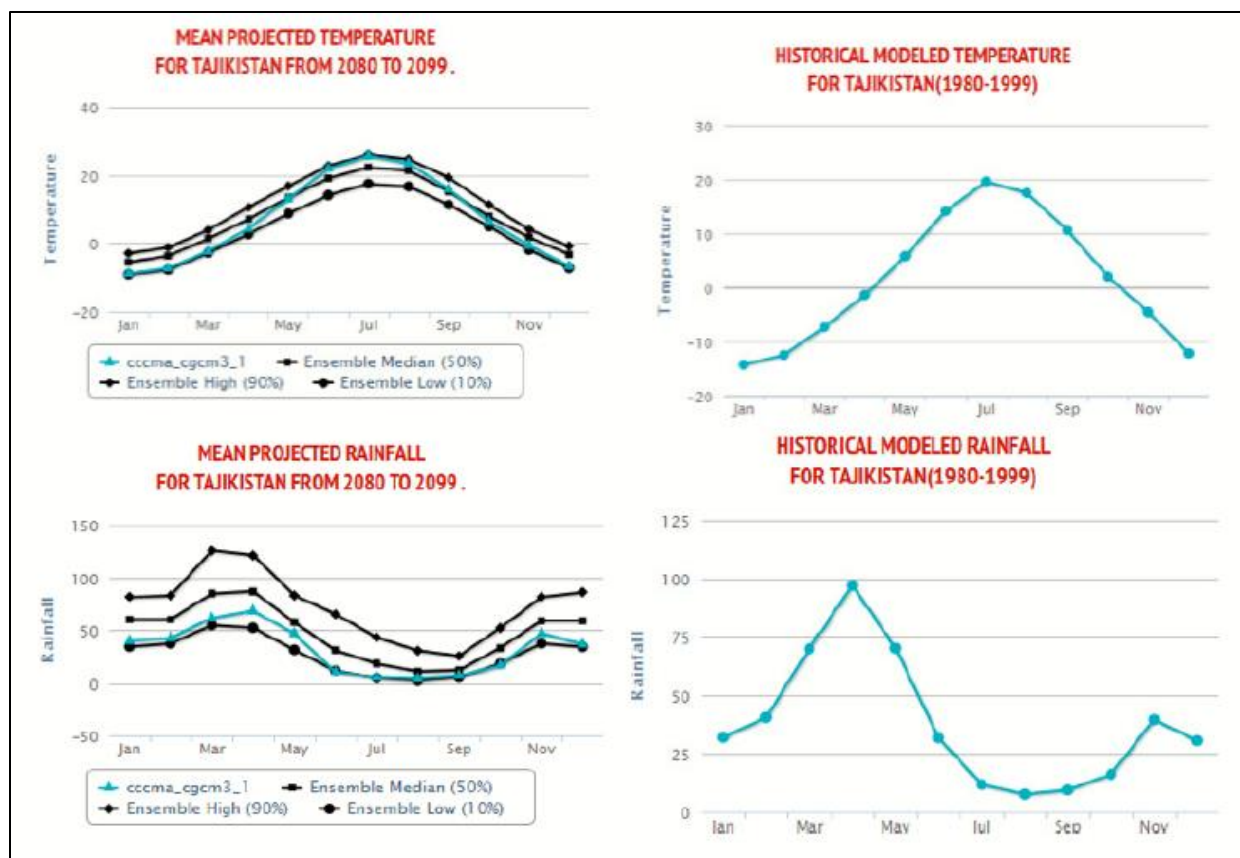
<sup>166</sup> The climatic models used were the CCSM3, ECHAM5 and CSIRO.

<sup>167</sup> WFP 2017 Climate Risks and Food Security.

<sup>168</sup> Third National Communication 2014.

<sup>169</sup> Ibid.

<sup>170</sup> 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.



**Figure 6 Projected mean temperature and rainfall for 2080–2099 against historically-modelled data for 1980–1999<sup>171</sup>.**

No significant change in mean annual precipitation is predicted by 2050 in Tajikistan<sup>172</sup>. However, precipitation patterns will continue to change, resulting in<sup>173</sup>:

- 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<sup>174</sup>. 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<sup>175</sup>.

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

<sup>171</sup> WFP 2017 Climate Risks and Food Security.

<sup>172</sup> Dusik & Sheraliev 2016 Strategic framework for developing and prioritizing climate change adaptation.

<sup>173</sup> WFP 2017 Climate Risks and Food Security.

<sup>174</sup> NCCAS 2016.

<sup>175</sup> World Bank (WB). 2013. Tajikistan – Overview of Climate Change Activities. World Bank. Washington, DC.

## **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<sup>176</sup>. Agricultural yields are predicted to decline by as much as 30% by 2100<sup>177</sup>, which is likely to result in rising food costs<sup>178,179</sup>. This will cause an increase in poverty levels and a decline in food security in the country<sup>180</sup>.

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. Reduced water supplies in the drier regions of the country are expected to result in major economic losses for farmers<sup>181</sup>.

## **Water and energy**

Tajikistan's energy production and transmission are predicted to be negatively impacted from changes to precipitation regimes. Energy and water systems are interconnected and therefore any changes in precipitation amounts 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<sup>182</sup>.

## **Adaptation gaps in Tajikistan**

Currently, there are several 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)<sup>183</sup> and 'Mid-term Development Programme 2016–2020' (MTDP)<sup>184,185</sup>. To address this gap, development of the National Climate Change Adaptation Strategy Tajikistan (NCCAS)<sup>186</sup> 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<sup>187</sup>:

- 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.

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<sup>176</sup> WB 2013 Tajikistan – Overview.

<sup>177</sup> 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.

<sup>178</sup> Heltberg R, Reva A & Zaidi S. 2012. Tajikistan: Economic and Distributional Impact of Climate Change. World Bank Knowledge Brief #50. World Bank. Washington, DC.

<sup>179</sup> World Health Organisation (WHO) Europe. 2009. Protecting health from climate change in Tajikistan. Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

<sup>180</sup> NCCAS 2016.

<sup>181</sup> Ibid.

<sup>182</sup> NCCAS 2016.

<sup>183</sup> National Development Strategy for the Republic of Tajikistan for the period up to 2030 (NDS). 2016. Republic of Tajikistan, Dushanbe.

<sup>184</sup> NDS 2016.

<sup>185</sup> Poverty Reduction Strategy for the Republic of Tajikistan for 2010–2012 (PRS). 2010. Republic of Tajikistan, Dushanbe.

<sup>186</sup> NCCAS 2016.

<sup>187</sup> Ibid.

In addition to the NCCAS, the Agricultural Reform Programme for 2012–2020<sup>188</sup> lists ‘developing agricultural technologies for climate-change adaptation and resilience’ as one of 22 specific objectives in Tajikistan<sup>189</sup>. However, there is little acknowledgement of climate change 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<sup>190</sup>. 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<sup>191</sup>.

The latest version of the PRS, the ‘Living Standards Improvement Strategy of Tajikistan for 2013–2015’ (LSIS)<sup>192</sup>, 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<sup>193</sup>, 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.

Since the early 1990s, climate and agricultural research in Tajikistan has been critically underfunded which has resulted in limited scientific capacity. Financial resources are limited and researchers are poorly remunerated<sup>194</sup>. The

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<sup>188</sup> Agricultural Reform Programme for 2012–2020 of the Republic of Tajikistan. 2012. Ministry of Agriculture, Government of Tajikistan.

<sup>189</sup> 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].

<sup>190</sup> 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.

<sup>191</sup> Water Reform Programme 2015.

<sup>192</sup> Living Standards Improvement Strategy for the Republic of Tajikistan for 2013–2015 (LSIS). 2013. Republic of Tajikistan, Dushanbe.

<sup>193</sup> NDS 2016.

<sup>194</sup> 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.



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.

Moreover, limited recruitment of young researchers has resulted in a cohort of scientific professionals reaching 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<sup>195</sup>.

### 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<sup>196</sup>. 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*<sup>197</sup>. There are now few associations or institutions which support individual farmers, as most present-day state and collective farms work with groups of *dehkan*<sup>198</sup> farmers. A country-wide organisation 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<sup>199</sup>. 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.

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

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<sup>195</sup> CACAARI. 10 February 2017. Meeting of the GFARC Steering Committee. Available at: <http://www.cacaari.org> [accessed 23.07.2018].

<sup>196</sup> World Bank Group (WBG). 2008. Tajikistan: Country Environmental Analysis. Washington, DC.

<sup>197</sup> an extended patriarchal family that serves as an informal mutual support structure

<sup>198</sup> A *dehkan* farm is a term for an individual or family farm in Central Asia.

<sup>199</sup> WBG 2008 Tajikistan: Country Environmental Analysis.



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.

### **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<sup>200</sup>.

#### **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<sup>201</sup>, but does not take an integrated approach to landscape planning and will not include climate risk projections.

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<sup>200</sup> Part II: A, where details on the project components, outcomes, outputs and activities are provided.

<sup>201</sup> 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.

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<sup>202</sup> 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 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

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<sup>202</sup> These three stations are the Tartki and Chinar on the Kofirnighan River and Romit on the Sardai-Miyona River.

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.

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## II. STRATEGY

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<sup>203</sup>) 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:

- 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

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<sup>203</sup> See Part II: A, which gives a project overview and details the components, outcomes, outputs and indicative activities of the project design.

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.

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 iii) 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 in .

### **Component 1. Integrated catchment management to build climate resilience.**

The GoT has initiated a water sector reform<sup>204</sup> 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.

#### **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<sup>205</sup>. 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<sup>206</sup>. 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

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<sup>204</sup> Water Reform Programme 2015.

<sup>205</sup> See Part I: Project Background, on the climate change context in Tajikistan.

<sup>206</sup> scheduled to be completed in 2019

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 surrounding regions; iii) the ongoing assessment for the development of the KRBMP<sup>207</sup>; and iv) water availability in the KRB. The collation of data on water availability will support the assessment of identified climate risks<sup>208</sup> as well as producing the climate change projections that will inform the MHCRMs [Activity 1.1.3<sup>209</sup>].

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,

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<sup>207</sup> scheduled to be completed in 2019

<sup>208</sup> Validation of the identified climate change risks for the KRB is being conducted under Activity 1.1.2.

<sup>209</sup> Use of square brackets is specifically to highlight linkages between outcomes, outputs and activities.

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.

#### Output 1.2. Support provided for upgrading automated weather stations in Kofirnighan River Basin watersheds.

Currently, there are 11 weather stations across the KRB, which equates to an approximate density of one station per 1,000 km<sup>2</sup>. This is regarded as an appropriate density<sup>210,211</sup> according to WMO guidelines<sup>212</sup>. 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<sup>213</sup>.

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.

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

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<sup>210</sup> Third National Communication 2014.

<sup>211</sup> World Meteorological Organization (WMO). 2008. Guide to Meteorological Instruments and Methods of Observation. Seventh Edition, WMO-No. 8.

<sup>212</sup> 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].

<sup>213</sup> 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.

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)<sup>214</sup> 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 Lucerne (*Medicago sativa* L.) and sainfoin (*Onobrychis viciifolia* Scop.)<sup>215</sup>. 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<sup>216</sup>.

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.

*Output 1.3. Integrated catchment management strategy developed for the Kofirniqhan River Basin.*

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 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.

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<sup>214</sup> 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.

<sup>215</sup> 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.

<sup>216</sup> FAO 2008 PGRFA: Country Report.



**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 MHCRCMs [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<sup>217</sup>. From these districts, it is expected that communities in ~100 villages across 14 *jamoats* will benefit from

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<sup>217</sup> Details on these six districts are provided in Part I, where the environmental context of Tajikistan is described.

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.

##### **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<sup>218</sup>. 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

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<sup>218</sup> Vahdat, Varzob, Faizobod, Nosiri Khusrav, Shaartuz and Kabodiyon Districts.

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.

**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 ecosystem 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. Negotiation platforms will be established between buyers, sellers and intermediaries to determine prices and payment methods for the delivery of ecosystem 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<sup>219</sup> 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.

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<sup>219</sup> Refer to the Part I sub-section on the environmental context in Tajikistan for details on these districts.

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 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 consider 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 5](#).

**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            |
| 3   | Rehabilitation/restoration of degraded forest ecosystems making use of <i>saxaul</i> 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               |

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.

Project activities where plant introduction/management is an aspect will follow the guidelines outlined below.

- **Expert input.** Experts (ecological, hydrological and agricultural) will 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 (FFs). These FFs 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. FFs will be advertised through the activities under Outcome 3. Through the provision of FFs, 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 FFs. By including these local experts in the FFs, 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 FFs 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 5](#) 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.

**Output 2.2. Watershed Action Plans developed that promote climate resilience and enhance economic productivity for target communities.**

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]. 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.

**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.**

Several 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<sup>220</sup> 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.

#### **Output 3.1. Existing knowledge management platforms supported for collating information on the planning, implementation and financing of EbA interventions.**

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-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.

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<sup>220</sup> e.g. financial, environment, cultural and aesthetic

**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.

**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).

### **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<sup>221,222</sup> 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 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<sup>223</sup>, or by increasing the overall farm biomass<sup>224</sup>.

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.

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<sup>221</sup> 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.

<sup>222</sup> 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.

<sup>223</sup> e.g. by reducing the use of inorganic fertilisers, agrochemicals, machinery and associated emissions

<sup>224</sup> e.g. by increasing soil carbon stocks or above-ground biomass

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### III. RESULTS AND PARTNERSHIPS

#### Expected Results:

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 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:

- 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.

Table 5 presents the proposed components, expected outcomes, concrete outputs and indicative activities of the project, which are further detailed in the project document.

**Table 5.** Project components, expected outcomes and an outline of concrete outputs.

| Project Components   | Expected Outcomes   | Expected concrete Outputs  |
|--|---|--|
| 1. Integrated catchment management to build climate resilience.  | 1. Catchment management strategy to manage climate risks operationalised at <i>raion</i> (district) and <i>jamoat</i> (sub-district) levels in Kofirnighan River Basin (KRB). | 1.1. Multi-hazard climate risk model developed for target watersheds in the KRB.   |
|  |   | 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 <i>jamoat</i> level to provide technical support for EbA implementation.                    |
|  |   | 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. |
|  |   | 3.2. An impact evaluation framework established to enable effective adaptive management of EbA activities.   |

Partnerships and stakeholder engagement:

During inception phase, the project will prepare a detailed stakeholder engagement plan, and 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.

The table below presents primary stakeholders to be involved in project implementation.

| Stakeholder   | Brief description  |
|---|--|
| <b>Committee of Environmental Protection (CEP)</b>            | <p>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:</p> <ul style="list-style-type: none"> <li>• developing drafts of governmental policies, strategies and action plans for environmental protection as well as implementation;</li> <li>• drafts laws, by-laws and decisions for the protection of the environment;</li> <li>• performs monitoring of the implementation of laws, by-laws, state policies and measures on environmental protection;</li> <li>• oversees the implementation process of all environmental conventions where Tajikistan is a member;</li> <li>• acts as the GEF Focal Point;</li> <li>• acts as the GCF National Designated Authority; and</li> <li>• acts as the Adaptation Fund Focal Point.</li> </ul> |
| <b>State Agency on Hydrometeorology (Hydromet) of the CEP</b> | <p>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:</p> <ul style="list-style-type: none"> <li>• observation and data collection on hydro-, meteorological- and climate-related regimes in Tajikistan;</li> <li>• observation over the extreme weather events and other hydrometeorological disasters in the country;</li> <li>• archiving historic and present data and analyses of the patterns tendencies; and</li> <li>• 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.</li> </ul>       |
| <b>Ministry of Energy and Water Resources (MEWR)</b>          | <p>The MEWR is tasked with the formulation and implementation of national energy- and water-related policies. Particular climate-related activities of the MEWR include:</p> <ul style="list-style-type: none"> <li>• the design, revision and regular update of national strategies for energy and water development;</li> <li>• drafting respective legal documents for the improvement and development of energy and water sector-based projects;</li> <li>• monitoring the implementation of National Development Programs and Action Plans on renewable energy sources; and</li> <li>• participating in the strategic development projects on hydropower plants construction.</li> </ul>  |
| <b>Open Centre under the Department of Geology (DoG)</b>      | <p>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.<sup>225,226</sup></p> <p>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.</p> |
| <b>University of Central Asia (UCA)</b>                       | <p>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, 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</p>  |

<sup>225</sup> 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.

<sup>226</sup> Central Asian Counties: Geoportal. 2018. Available at: <http://www.cac-geoportal.org/en/index.php/about-us> [accessed 23.07.2018].

|  |   |
|--|---|
|  | <p>Tajikistan was opened, offering five-year undergraduate programmes in Earth and Environmental Sciences (BSc) and Economics (BA).</p> <p>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.</p> |
|--|---|

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:

| 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                |
| <i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i> (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   |

#### Risks:

Assessment of all risks associated with the project has been conducted according to UNDP’s Programme and Operations Policies and Procedures to ensure that financial and project risks are mitigated against. Detailed risk log as well as the associated mitigation strategies identified have been outlined in [Annex 5](#).

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 11](#)<sup>227</sup>.

<sup>227</sup> Part II: K includes a checklist for environmental and social principles for project design.



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 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](#).

#### Gender equality and Women's Empowerment:

Furthermore, measures and techniques that contribute to closing the inequality gap between men and women will be promoted, where possible. 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.

South-South and Triangular Cooperation (SSTrC): Learning opportunities and technology transfer from peer countries will be further explored during project implementation. To present opportunities for replication in other countries, the project will codify good practices and facilitate dissemination through global ongoing South-South and global platforms, such as Africa Solutions Platform, the UN South-South Galaxy knowledge sharing platform and PANORAMA<sup>228</sup>.

In addition, to bring the voice of climate vulnerable communities to global and regional fora, the project will explore opportunities for meaningful participation in specific events where UNDP could support engagement with the global development discourse on climate change. The project will furthermore provide opportunities for regional cooperation with countries that are implementing initiatives on climate change adaptation in geopolitical, social and environmental contexts relevant to the proposed project in Tajikistan.

#### Innovativeness, Sustainability and Potential for Scaling Up

##### **Innovativeness**

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.

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

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<sup>228</sup> <https://panorama.solutions/en>

risk projections because it is in image format. In light of this shortfall, this activity will involve using Intelligent Character Recognition (ICR)<sup>229</sup> 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. In this way, 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, the project addresses climate change adaptation planning at the national level.

### **Sustainability of the project and potential for scaling up**

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<sup>230</sup>, 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 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.

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<sup>229</sup> 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.

<sup>230</sup> such as representatives from international UCA campuses

## IV. PROJECT RESULTS FRAMEWORK

**Table 6 Project Results Framework**

| This project will contribute to the following Sustainable Development Goal (s):           |   |          |   |  |   |
|---|---|----------|---|--|---|
| This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): this |   |          |   |  |   |
|   | Objective and Outcome Indicators  | Baseline | Mid-term Target   | End of Project Target  | Assumptions   |
| <b>Project Objective:</b>   | <p><b>Objective (s):</b> Reduce vulnerability and enhance climate-resilience of small-scale farmers and pastoralists in Tajikistan to respond to the impacts of climate change.</p> <p><b>Indicator (s):</b> Total number of men and women benefitting from reduced vulnerability to climate change<br/>Percentage population of the KRB benefitting from project interventions.</p>  | 0        | By year 3 of the project, 23,000 direct beneficiaries are to be supported by the project, including 12,500 of women   | <p>At least 46,000 people, including 25,000 of women, in ~100 villages across 6 districts benefitting from reduced vulnerability to climate change (i.e. constituting ~5% of population in the Kofirnighan river basin)</p> <p>In total, 828,000 indirect project beneficiaries, including 409,612 women, are expected to benefit from the project</p>                 | 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 community members. |
| <b>Project component 1</b>  |   |          |   |  |   |
| <b>Project Outcome 1</b>  | <p><b>Outcome 1.</b> Catchment management strategy to manage climate risks operationalised at raion (district) and jamoat (sub-district) levels in Kofirnighan River Basin (KRB).</p> <p><b>Indicator 1.</b> Number of staffs trained to respond to impacts of climate-related events (gender disaggregated).</p> <p><b>Source of verification 1.</b></p> <ul style="list-style-type: none"> <li>Monitoring and evaluation reports per intervention site</li> <li>Reports on community consultations/trainings and field visits</li> <li>GIS</li> </ul> | 0        | <p>At least 15 staff from local government at raion and jamoat levels (of which at least 30% are women) trained on integrated catchment management by the mid of the project.</p> <p>At least 50 staff from local government at raion and jamoat levels (of which at least 30% are women) trained on integrated catchment management.</p> | <p>By the mid of the project, at least 30 staff from local government at raion and jamoat levels (of which at least 30% are women) trained on integrated catchment management.</p> <p>By the end of the project, at least 100 staff from local government at raion and jamoat levels (of which at least 30% are women) trained on integrated catchment management.</p> | Training workshops provide staff with the capacity to integrate climate resilience into integrated catchment management.  |
|   | <b>Output 1.1.</b> Multi-hazard climate risk models (MHCRMs) developed for target watersheds in the KRB.  | 0        | Gap analysis conducted for KRB  |  | Gap analysis and MHCRMs will inform the selection of  |

|  |  |  |   |   |   |
|--|--|--|---|---|---|
|  | <p><b>Indicator 1.1</b> Number of risk models developed.</p> <p><b>Source of verification 1.1</b></p> <ul style="list-style-type: none"> <li>• Gap analysis</li> <li>• MHCRMs that detail climate risks for each watershed and target district</li> <li>• Results of studies including data and GIS information</li> </ul>   |  | <p>that details climate risks for all watersheds.</p>   | <p>By the end of the project, at least one MHCRM developed for each watershed in the KRB (and each of six target district).</p>   | <p>vulnerable sites in the target districts as well as the identification of appropriate EbA interventions.</p>   |
|  | <p><b>Output 1.2</b> Providing support for establishing automated weather stations in KRB sub catchments to provide data for refining the multi-hazard climate models [developed under</p> <p><b>Indicator 1.2</b> Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis.</p> <p><b>Source of verification 1.2</b></p> <ul style="list-style-type: none"> <li>• Climate information packages</li> <li>• Interviews with government and local communities</li> </ul>  | <p>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.</p> | <p>Policy- and decision-makers in KRB receive forecasts from Hydromet.</p>  | <p>By the end of the project, policy- and decision-makers in KRB receive forecasts and downscaled national climate information every quarter from Hydromet.</p> <p>By the end of the project, local communities in the project interventions sites receive tailored climate information packages.</p>   | <p>Existing climate information producers are committed to participating in the development and implementation of forecasts and area-specific advisories.</p>   |
|  | <p><b>Output 1.3</b> Integrated catchment management strategy developed for the KRB.</p> <p><b>Indicator 1.3</b> Integrated catchment management strategy developed.<br/>Number of staffs trained (gender disaggregated).<br/>Number of community members trained (gender disaggregated).</p> <p><b>Source of verification 1.3</b></p> <ul style="list-style-type: none"> <li>• Project reports</li> <li>• Monitoring and evaluation reports per intervention site</li> <li>• Reports on community consultations, trainings and surveys</li> <li>• Reports on site/field visits</li> </ul> | <p>0</p>   | <p>By year 3 of the project, at least 30 staff from RBOs and RBCs, along with relevant staff from CEP, Agency for Land Reclamation and Irrigation (ALRI) (of which at least 30% are women) trained on integrated catchment management across all target departments.</p> <p>At least 50 community members in each district (of which 30% are women) trained on identification of suitable EbA</p> | <p>By the end of the project, at least 100 staff from RBOs and RBCs, along with relevant staff from CEP, Agency for Land Reclamation and Irrigation (ALRI) (of which at least 30% are women) trained on integrated catchment management across all target departments.</p> <p>At least 100 community members in each district (of which 30% are women) trained on identification of suitable EbA interventions (600 people in total).</p> | <p>Training workshops provide staff with the capacity to integrate climate resilience into integrated catchment management.</p> <p>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.</p> |

|                            |   |       |   |  |   |
|----------------------------|---|-------|---|--|---|
|                            |   |       | interventions (600 people in total).  |  |   |
|                            | <p><b>Output 1.4</b> Strengthened coordination and training mechanisms for integrated climate-resilient catchment management.</p> <p><b>Indicator 1.4</b> Number of interactions between relevant stakeholders</p> <p><b>Source of verification 1.4</b></p> <ul style="list-style-type: none"> <li>• Meeting reports</li> <li>• Monitoring and evaluation reports</li> <li>• Annual workplans</li> <li>• Meeting minutes and reports</li> </ul>   | 1.4 0 | By year 3 of the project, at least 2 meetings are held per year between different government sectors, RBOs, district authorities etc. | By the end of the project, at least 2 meetings are held per year between different government sectors, RBOs, district authorities etc.       | 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.                                  |
|                            | <p><b>Output 1.5</b> Payment for Ecosystem Services (PES) models to support the long-term financing of integrated catchment management strategy implementation.</p> <p><b>Indicator 1.5</b> Number of PES models developed for the KRB</p> <p><b>Source of verification 1.5</b></p> <ul style="list-style-type: none"> <li>• Policy brief on PES model</li> <li>• Meeting reports</li> <li>• Monitoring and evaluation reports</li> </ul>   | 0     | By year 3 of the project, at least 1 PES model developed and at least one policy brief submitted to government detailing the model.   | By the end of the project, at least 1 PES model developed and at least one policy brief submitted to government detailing the model.         | 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.                                  |
| <b>Project Component 2</b> |   |       |   |  |   |
| <b>Outcome 2</b>           | <p><b>Outcome 2.</b> An integrated approach to building climate resilience of agro-ecological landscapes operationalised at a village level.</p> <p>Indicator 2. Number of people practising climate change adaptation technologies (gender disaggregated).</p> <p>Total number of men and women benefitting from reduced vulnerability to climate change</p> <p>Source of verification 2.</p> <ul style="list-style-type: none"> <li>• Registers of project beneficiaries at each site</li> <li>• Site visits</li> <li>• Community surveys.</li> </ul> | 0     | By year 3 of the project, 23,000 direct beneficiaries are to be supported by the project, including 12,500 of women.                  | At least 600 people (100 per district), of which at least 30% will be women, are implementing EbA interventions for climate risk management. | Community members continue to practice adaptation technologies once they have been trained and provided with the necessary equipment.   |
|                            | <p><b>Output 2.1</b> Agro-ecological extension services supported at the jamoat level to provide technical support for EbA implementation.</p> <p><b>Indicator 2.1</b> Number of extension service provider developed.</p> <p><b>Source of verification 2.1</b></p> <ul style="list-style-type: none"> <li>• Annual workplans</li> <li>• Workshop reports</li> </ul>  | 0     | By year 3 of the project, at least 1 private extension service provider in each target KRB district supported                         | At least 1 private extension service provider in each target KRB district supported  | 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. |

|                            |  |  |   |   |  |
|----------------------------|--|--|---|---|--|
|                            | <ul style="list-style-type: none"> <li>Monitoring and evaluation reports</li> </ul>  |  |   |   |  |
|                            | <p><b>Output 2.2</b> Watershed Action Plans (WAPs) developed that promote climate resilience and enhance economic productivity for target communities.</p> <p><b>Indicator 2.2</b> Number of WAPs developed.</p> <p><b>Source of verification 2.2</b></p> <ul style="list-style-type: none"> <li>Annual workplans developed for the WAPs</li> <li>Monitoring and evaluation reports</li> </ul>   | 0  | By year 3 of the project, at least 1 WAP developed in at least 7 of the 14 target jamoats                           | By the end of the project, at least 1 WAP developed in each of the 14 target jamoats.   | None of the jamoats have overlapping watersheds in the project area.   |
|                            | <p><b>Output 2.3</b> EbA interventions implemented in target watersheds by local communities.</p> <p><b>Indicator 2.3</b> Number of hectares of land with EbA activities implemented at project sites in each district</p> <p><b>Source of verification 2.3</b></p> <ul style="list-style-type: none"> <li>Monitoring and evaluation reports per intervention site</li> <li>Reports on community consultations/trainings and field visits</li> <li>GIS</li> </ul>  | 0  | By year 3 of the project, at least 125 ha of land in each district undergoing EbA implementation (750 ha in total). | At least 250 ha of land in each district undergoing EbA implementation (1,500 ha in total).   | All communities surrounding project intervention sites are committed to participating in project activities and taking up/adopting climate-resilient techniques and practices.   |
| <b>Project component 3</b> |  |  |   |   |  |
| <b>Outcome 3</b>           | <p><b>Outcome 3.</b> Existing knowledge management platforms supported for integrated catchment management and EbA.</p> <p><b>Indicator 3.</b> Knowledge management centre strengthened through the support of project activities</p> <p><b>Source of verification 3.</b></p> <ul style="list-style-type: none"> <li>Reports and training materials</li> <li>Monitoring and evaluation reports</li> </ul>  | 0  | By year 3 of the project at least 1 knowledge centre has been strengthened.   | By the end of the project at least 1 knowledge centre has been strengthened.  | Strengthening existing knowledge management centres promotes local knowledge sharing and raises awareness among communities.   |
|                            | <p><b>Output 3.1.</b> Existing knowledge management platforms supported for collating information on the planning, implementation and financing of EbA interventions.</p> <p><b>Indicator 3.1</b> Existing knowledge centre/ platforms/ hubs in Tajikistan are supported and include information and data on KRB and specifically climate risk information.</p> <p><b>Source of verification 3.1</b></p> <ul style="list-style-type: none"> <li>Meeting/workshop reports</li> <li>Minutes from forum meetings</li> </ul> | Climate change research is not coordinated within the KRB and across Tajikistan. Knowledge generated through projects is not collated, shared or disseminated. | By year 3 of the project at least 1 knowledge centre has been strengthened.   | By the end of the project at least 1 knowledge centre has been strengthened.  | 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. |
|                            | <p><b>Output 3.2.</b> An impact evaluation framework (IEF) to enable effective adaptive management of EbA activities.</p> <p><b>Indicator 3.2</b> Evaluation of EbA interventions in target sites conducted.</p>   | Several projects have undertaken activities on climate change adaptation within Tajikistan. However, none of   | Bi-annually, regular monitoring of EbA interventions in target sites conducted.                                     | 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. | Community members will be more aware of EbA interventions in and surrounding their communities. By conducting the IEF,   |

|  |   |   |  |  |   |
|--|---|---|--|--|---|
|  | <p><b>Source of verification 3.2</b></p> <ul style="list-style-type: none"> <li>• Site visits</li> <li>• Data collection</li> <li>• Community consultation</li> <li>• Data analysis of EbA impacts</li> </ul> | <p>these activities have been evaluated according to their impacts for communities.</p> |  |  | <p>awareness on the benefits of EbA interventions will be raised.</p> |
|--|---|---|--|--|---|

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## V. MONITORING AND EVALUATION (M&E) PLAN

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.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the [UNDP POPP](#) and [UNDP Evaluation Policy](#). The UNDP Country Office is responsible for ensuring full compliance with all UNDP project monitoring, quality assurance, risk management, and evaluation requirements.

Additional mandatory AF-specific M&E requirements will be undertaken in accordance with the AF Monitoring Policy and the AF Evaluation Policy and other relevant AF policies. The costed M&E plan included below, and the Monitoring plan in Annex, will guide the AF-specific M&E activities to be undertaken by this project.

In addition to these mandatory UNDP and AF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report.

Additional AF monitoring and reporting requirements:

Inception Workshop and Report: A project inception workshop will be held within 60 days of project endorsement, with the aim to:

- a. Familiarize key stakeholders with the detailed project strategy and discuss any changes that may have taken place in the overall context since the project idea was initially conceptualized that may influence its strategy and implementation.
- b. Discuss the roles and responsibilities of the project team, including reporting lines, stakeholder engagement strategies and conflict resolution mechanisms.
- c. Review the results framework and monitoring plan.
- d. Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the AF OFP and other stakeholders in project-level M&E.
- e. Update and review responsibilities for monitoring project strategies, including the risk log; SESP report, Social and Environmental Management Framework and other safeguard requirements; project grievance mechanisms; gender strategy; knowledge management strategy, and other relevant management strategies.
- f. Review financial reporting procedures and budget monitoring and other mandatory requirements and agree on the arrangements for the annual audit.
- g. Plan and schedule Project Board meetings and finalize the first-year annual work plan.



h. Formally launch the Project.

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 5<sup>231</sup>](#)), 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.
- **Bi-annual project quality assurance.** A project quality assessment shall be conducted every two years through the corporate Project Quality Assurance (QA) system. The project will be assessed against programming quality standards to identify project and weaknesses and to inform management decision making to improve the project.
- **Knowledge management:** The project team will ensure extraction and dissemination of lessons learned and good practices to enable adaptive management and upscaling or replication at local and global scales. Results will be disseminated to targeted audiences through relevant information sharing fora and networks. The project will contribute to scientific, policy-based and/or any other networks as appropriate (e.g. by providing content, and/or enabling participation of stakeholders/beneficiaries)

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 6<sup>th</sup> 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.
- **Final Report:** The project's terminal AF PPR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.
- **Agreement on intellectual property rights and use of logo on the project's deliverables and disclosure of information:** To accord proper acknowledgement to the AF for providing grant funding, the AF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications

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<sup>231</sup> Annex 4 includes the detailed Environmental and Social Management Framework (ESMF) for the project.

developed by the project, and project hardware. Any citation on publications regarding projects funded by the AF will also accord proper acknowledgement to the AF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy and the AF policy on public involvement.

[Table 7](#) outlines the monitoring and evaluation plan, the purpose of each M&E activity and the respective complementary actions.

**Table 7 Monitoring and Evaluation Plan and Budget**

| AFM&E requirements   | Responsible Parties   | Indicative costs (US\$) | Time frame  |
|--|---|-------------------------|---|
| Inception Workshop   | Implementing Partner<br>Project Manager   | \$3,000                 | Within 60 days of CEO endorsement of this project.              |
| Inception Report   | Project Manager   | None                    | Within 90 days of CEO endorsement of this project.              |
| Monitoring of indicators in project results framework        | Project Manager will oversee national institutions/agencies charged with collecting results data. | \$35,000                | Annually prior to AF PPR. This will include AF core indicators. |
| AF Project Performance Report (PPR)                          | Regional Technical Advisor<br>UNDP Country Office<br>Project Manager                              | None                    | Annually typically between June-August                          |
| Monitoring of social and environmental risks                 | Project Safeguards Officer  | \$10,000                | On-going.   |
| Monitoring of stakeholder engagement plan                    | Project Stakeholder Engagement Officer  | \$10,000                | On-going.   |
| Monitoring of gender action plan                             | Project Gender Officer  | \$10,000                | On-going.   |
| Project Board Meetings                                       | Implementing Partner<br>Project Manager   | \$4,000                 | Annually.   |
| Reports of Project Board Meetings                            | Implementing Partner<br>Project Manager   | None                    | Annually.   |
| Lessons learned and knowledge generation                     | Project Manager   | \$10,000                | Annually.   |
| Supervision missions   | UNDP Country Office   | None                    | Annually  |
| Oversight missions   | UNDP/GEF/AF RTA and UNDP Directorate on Vertical Funds  | None                    | Troubleshooting as needed                                       |
|  |   |                         |   |
| Independent Mid-term Review (MTR) and management response    | UNDP Evaluation Specialists and independent evaluation consultants.                               | \$28,000                | add   |
|  |   |                         |   |
| Independent Terminal Evaluation (TE) and management response | UNDP Evaluation Specialists and independent evaluation consultants.                               | \$28,000                | add   |
| Translation of MTR and TE reports into English               | UNDP Country Office   | \$4,160                 |   |
| Audit  | Appointed auditors for project audits   | \$5,000                 | Annually or other frequency as per UNDP Audit policies.         |
| <b>TOTAL indicative COST</b>                                 |   | <b>\$147,160</b>        |   |

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## VI. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

### Roles and responsibilities of the project's governance mechanism:

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.

**Implementing Partner:** The Implementing Partner for this project is the Committee for Environmental Protection (CEP) under the Government of the Republic of Tajikistan<sup>232</sup>.

The CEP 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 will be nationally implemented (NIM), in line with the Standard Basic Assistance Agreement (SBAA, 1993) and the UN Development Assistance Framework (UNDAF) 2016-2021 between the UN and the Government of Tajikistan, as well as Country Programme Document 2016-2021 between UNDP and the Government of Tajikistan.

The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document.

The Implementing Partner is responsible for executing this project. Specific tasks include:

\* Project planning, coordination, management, monitoring, evaluation and reporting. This includes providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.

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<sup>232</sup> The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document.

- \* Risk management as outlined in this Project Document;
- \* Procurement of goods and services, including human resources;
- \* Financial management, including overseeing financial expenditures against project budgets;
- \* Approving and signing the multiyear workplan;
- \* Approving and signing the combined delivery report at the end of the year; and,
- \* Signing the financial report or the funding authorization and certificate of expenditures.

As MIE, UNDP will be 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. UNDP's responsibility will also include: 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. UNDP will retain ultimate accountability for the effective implementation of the project.

As Implementing Partner, the CEP will be fully accountable to UNDP for successfully managing and delivering project outputs. 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 CEP 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. The UNDP and Government of Tajikistan acknowledge and agree that those services are not mandatory and will be provided only upon Government request. 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 6). As 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. Eligible Direct Project Costs should not be charged as a flat percentage. They should be calculated based on estimated actual or transaction-based costs and should be charged to the direct project costs account codes: 64397 – 'Services to projects - CO staff' and 74596 – 'Services to projects - GOE for CO'.

**Project Steering Committee (PSC):** Ministry of Agriculture, Ministry of Energy and Water Resources (MEWR), 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 (PSC).

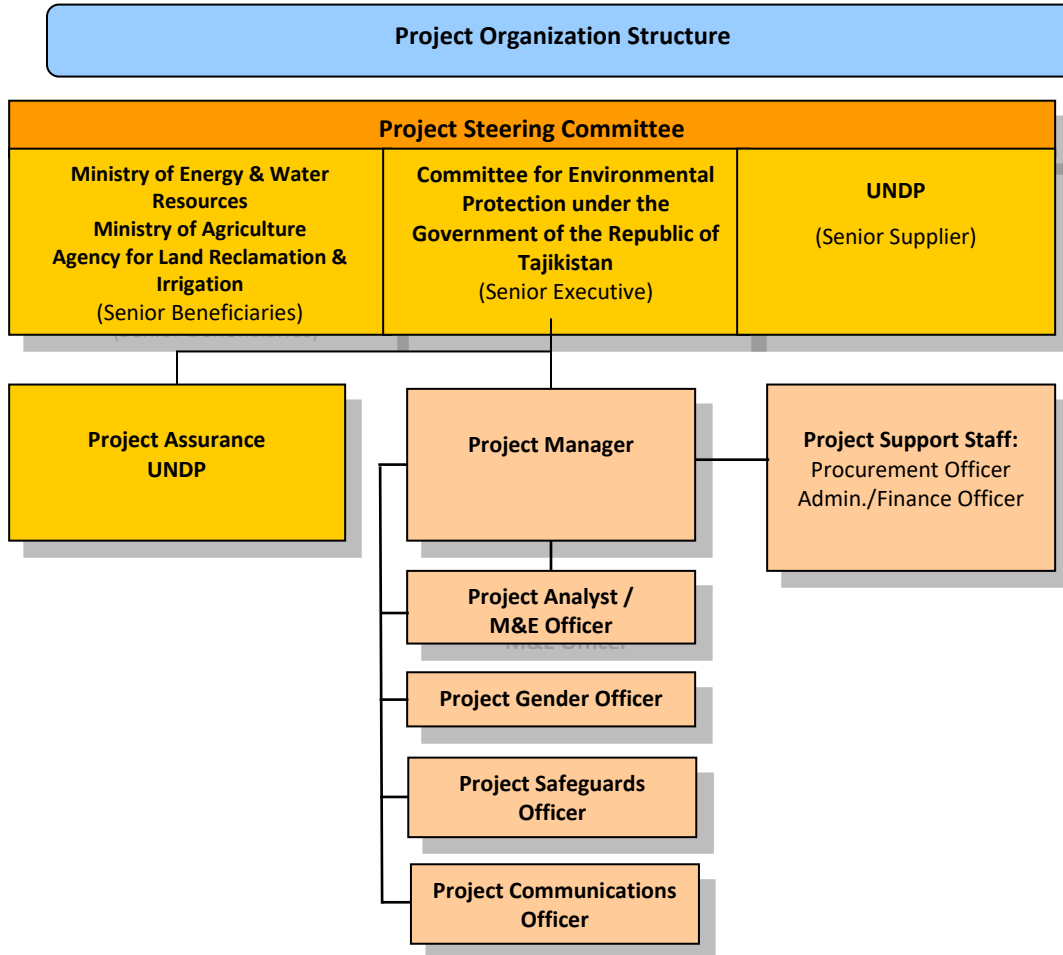
The PSC will be convened by CEP and will serve as the project's coordination and decision-making body. The PSC meetings will be chaired by the NPD. It will meet according to necessity, but not less than once in 6 months, to review progress, approve work plans and approve major deliverables. The PSC is 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.

**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.

**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 order to ensure UNDP’s ultimate accountability, PSC decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the PSC, the UNDP Resident Representative (or their designate) will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.

Specific responsibilities of the PSC include:

- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
- Address project issues as raised by the project manager;
- Provide guidance on new project risks, and agree on possible mitigation and management actions to address specific risks;
- Agree on project manager’s tolerances as required, within the parameters set by UNDP-AF, and provide direction and advice for exceptional situations when the project manager’s tolerances are exceeded;
- Advise on major and minor amendments to the project within the parameters set by UNDP-AF;
- Ensure coordination between various donor and government-funded projects and programmes;

- Ensure coordination with various government agencies and their participation in project activities;
- Track and monitor co-financing for this project;
- Review the project progress, assess performance, and appraise the Annual Work Plan for the following year;
- Appraise the annual project performance report, including the quality assessment rating report;
- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project;
- Review combined delivery reports prior to certification by the implementing partner;
- Provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
- Address project-level grievances;
- Approve the Mid-term Review and Terminal Evaluation reports and corresponding management responses;
- Review the final project report package during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

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), M&E Officer, Admin. Finance Officer, and Procurement Officer, who will be located at Committee for Environmental Protection under the Government of the Republic of Tajikistan. The project staff will be recruited using standard UNDP recruitment procedures. The PM will, with the support of the M&E Officer, Admin. Finance Officer, and Procurement Officer, 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 and Project Steering Committee 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.

## VII. FINANCIAL PLANNING AND MANAGEMENT

The total cost of the project is **US\$ 9,996,441** (including Total Direct Cost and Implementing Entity Fee). This is financed through Adaptation Fund (AF). UNDP is responsible for the oversight of the AF resources.

### **Estimated disbursement schedule with time-bound 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) |
|---------------------------------------|-----------------------------------|---------------------|---------------------|---------------------|---------------------|--------------------------------|
| <b>Scheduled date</b> (tentative)     | 1-Mar-2020                        | 1-Mar-2021          | 1-Mar-2022          | 1-Mar-2023          | 1-Mar-2024          |                                |
| <b>Project funds</b>                  | 541,000                           | 3,965,310           | 2,433,500           | 1,261,500           | 236,000             | 8,437,310                      |
| <b>Project Execution Cost</b>         | 185,500                           | 141,500             | 176,500             | 131,500             | 141,000             | 776,000                        |
| <b>Implementing Entity fee (8.5%)</b> | 350,304                           | 209,447             | 133,110             | 71,043              | 19,227              | 783,131                        |
| <b>Total</b>                          |                                   |                     |                     |                     |                     | <b>9,996,441</b>               |

**Implementing Partner (IP) request for UNDP to provide country support services:** The Implementing Partner has requested UNDP to provide support services in the amount of **USD\$132,000** for the full duration of the project. The **request letter** (signed by the AF and the IP) and the [signed letter of agreement](#) between UNDP and the Implementing Partner detailing these support services are included in Annex 6. To ensure the strict independence required by the AF and in accordance with the UNDP Internal Control Framework, these execution services should be delivered independent from the AF-specific oversight and quality assurance services (i.e. not done by same person to avoid conflict of interest).

**Budget Revision and Tolerance:** As per UNDP requirements outlined in the UNDP POPP, the PSC will agree on a budget tolerance level for each plan under the overall annual work plan allowing the project manager to expend up to the tolerance level beyond the approved project budget amount for the year without requiring a revision from the PSC. Should the following deviations occur, the Project Manager and UNDP Country Office will seek the approval of the UNDP-AF team to ensure accurate reporting to the AF: a) Budget re-allocations among components in the project with amounts involving 10% of the total project grant or more; b) Introduction of new budget items/or components that exceed 5% of original AF allocation.

Any over expenditure incurred beyond the available project budget amount will be absorbed by non-AF resources (e.g. UNDP TRAC or cash co-financing).

**Audit:** The project will be audited as per UNDP Financial Regulations and Rules and applicable audit policies. Audit cycle and process must be discussed during the Inception workshop.

**Project Closure:** Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP. On an exceptional basis only, and if there is no increase of the project budget, one extension of the operational closure date beyond the initial duration of the project may be approved by the UNDP-AF Directorate. However, all costs incurred to close the project must be included in the project closure budget and reported as final project commitments presented to the Project Board during the final project review. The only costs a project may incur following the final project review are those included in the project closure budget.

**Operational completion:** The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation Report (that will be available in English) and the corresponding management response, and the end-of-project review Project Board meeting. **Operational closure must happen with 3 months of posting the TE report to the UNDP ERC.** The Implementing Partner through a PSC decision will notify the UNDP Country Office when operational closure has been completed. At this time, the relevant parties will have already agreed and confirmed in writing on the arrangements for the disposal of any equipment that is still the property of UNDP.



Transfer or disposal of assets: In consultation with the Implementing Partner and other parties of the project, UNDP is responsible for deciding on the transfer or other disposal of assets. Transfer or disposal of assets is recommended to be reviewed and endorsed by the project board following UNDP rules and regulations. Assets may be transferred to the government for project activities managed by a national institution at any time during the life of a project. In all cases of transfer, a transfer document must be prepared and kept on file. The transfer should be done before Project management Unit (team) complete their assignments.

Financial completion (closure): The project will be financially closed when the following conditions have been met: a) the project is operationally completed or has been cancelled; b) the Implementing Partner has reported all financial transactions to UNDP; c) UNDP has closed the accounts for the project; d) UNDP and the Implementing Partner have certified a final Combined Delivery Report (which serves as final budget revision).

The project will be financially completed **within 6 months of operational closure or after the date of cancellation.** Between operational and financial closure, the implementing partner will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the UNDP-AF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office.

Refund to AF: Should a refund of unspent funds to the AF be necessary, this will be managed directly by the UNDP-AF Directorate in New York. No action is required at CO level on the actual refund from UNDP project to the AF.

## VIII. TOTAL BUDGET AND WORK PLAN

**Table 8 Total Budget and Work Plan**

| TOTAL BUDGET AND WORK PLAN  |  |  |  |                              |                                    |                              |                                     |                        |                        |                        |                        |                        |             |                  |        |    |
|---|--|--|--|------------------------------|------------------------------------|------------------------------|-------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------|------------------|--------|----|
| Atlas Award (Proposal) ID:  |  |  | 113350                                       |                              |                                    |                              | Atlas Project (Output) ID:          |                        |                        | 111538                 |                        |                        |             |                  |        |    |
| Atlas Proposal or Award Title:  |  | An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan |  |                              |                                    |                              |                                     |                        |                        |                        |                        |                        |             |                  |        |    |
| Atlas Business Unit   |  | TJK10  |  |                              |                                    |                              |                                     |                        |                        |                        |                        |                        |             |                  |        |    |
| Atlas Primary Output Project Title  |  | An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan |  |                              |                                    |                              |                                     |                        |                        |                        |                        |                        |             |                  |        |    |
| UNDP-GEF PIMS No.   |  | 6219   |  |                              |                                    |                              |                                     |                        |                        |                        |                        |                        |             |                  |        |    |
| Implementing Partner  |  | Committee for Environmental Protection (CEP)   |  |                              |                                    |                              |                                     |                        |                        |                        |                        |                        |             |                  |        |    |
| Component   | Outcome  | Atlas Activity (Outputs)   | Atlas Implementing Agent (Responsible Party) | Atlas Fund ID                | Donor Name                         | Atlas Budgetary Account Code | ATLAS Budget Account Description[3] | Amount Year 2020 (USD) | Amount Year 2021 (USD) | Amount Year 2022 (USD) | Amount Year 2023 (USD) | Amount Year 2024 (USD) | Total (USD) | See Budget Note: |        |    |
| Component 1. Integrated catchment management to build climate resilience.   | Outcome 1. Catchment management strategy to manage climate risks operationalised at raion (district) and jamoat (sub-district) levels in Kofirnighan River Basin | Output 1.1. Multi-hazard climate risk model developed for vulnerable watersheds in the Kofirnighan River Basin.            | NIM  | 62040                        | AF                                 | 71200                        | International Consultants           | 36,500                 |                        |                        |                        |                        | 36,500      | 1                |        |    |
|   |  |  |  |                              |                                    | 71300                        | Local consultants                   | 25,000                 |                        |                        |                        | 25,000                 | 2           |                  |        |    |
|   |  |  |  |                              |                                    | 71300                        | Local consultants                   | 10,000                 | 10,000                 |                        |                        | 20,000                 | 3           |                  |        |    |
|   |  |  |  |                              |                                    | 72300                        | Materials & Goods                   | 40,000                 |                        |                        |                        | 40,000                 | 4           |                  |        |    |
|   |  |  |  |                              |                                    | Total Activity 1.1. (output) |                                     | 111,500                | 10,000                 | 0                      | 0                      | 0                      | 121,500     |                  |        |    |
|   |  | Output 1.2. Support provided for upgrading automated weather stations in Kofirnighan River Basin watersheds.               | NIM  | 62040                        | AF                                 | 71200                        | International Consultants           | 23,500                 |                        |                        |                        |                        |             | 23,500           | 5      |    |
|   |  |  |  |                              |                                    | 71300                        | Local consultants                   | 10,000                 | 10,000                 | 10,000                 |                        |                        | 30,000      | 6                |        |    |
|   |  |  |  |                              |                                    | 71300                        | Local consultants                   | 10,000                 |                        |                        |                        | 10,000                 | 7           |                  |        |    |
|   |  |  |  |                              |                                    | 72100                        | Contractual Services - Companies    |                        |                        | 10,000                 | 10,000                 | 10,000                 | 30,000      | 8                |        |    |
|   |  |  |  |                              |                                    | 72300                        | Materials & Goods                   | 70,000                 | 70,000                 | 70,000                 |                        | 210,000                | 9           |                  |        |    |
|   |  |  |  |                              |                                    | 72400                        | Communic & Audio Visual Equip       |                        | 15,000                 | 5,000                  | 5,000                  | 5,000                  | 30,000      | 10               |        |    |
|   |  |  |  |                              |                                    | 74500                        | Miscellaneous Expenses              | 20,000                 | 10,000                 | 10,000                 | 10,000                 | 10,500                 | 60,500      | 11               |        |    |
|   |  | Total Activity 1.2. (output)   |  | 133,500                      | 105,000                            | 105,000                      | 25,000                              | 25,500                 | 394,000                |                        |                        |                        |             |                  |        |    |
|   |  | Output 1.3. Integrated catchment management strategy developed for the Kofirnighan River Basin                             | NIM  | 62040                        | AF                                 | 71200                        | International Consultants           |                        |                        | 69,000                 |                        |                        |             |                  | 69,000 | 12 |
|   |  |  |  |                              |                                    | 71200                        | International Consultants           | 23,500                 |                        |                        |                        |                        | 23,500      | 13               |        |    |
|   |  |  |  |                              |                                    | 71300                        | Local Consultants                   | 6,000                  | 14,000                 |                        |                        | 20,000                 | 14          |                  |        |    |
|   |  |  |  |                              |                                    | 71300                        | Local Consultants                   |                        | 20,000                 | 20,000                 |                        | 40,000                 | 15          |                  |        |    |
|   |  |  |  |                              |                                    | 75700                        | Training, Workshops and Conference  |                        |                        | 10,000                 | 15,000                 | 25,000                 | 16          |                  |        |    |
|   |  |  |  |                              |                                    | 75700                        | Training, Workshops and Conference  | 10,000                 | 10,000                 |                        |                        | 20,000                 | 17          |                  |        |    |
|   |  |  |  |                              |                                    | 75700                        | Training, Workshops and Conference  | 15,000                 | 15,000                 |                        |                        | 30,000                 | 18          |                  |        |    |
|   |  |  |  |                              |                                    | 75700                        | Training, Workshops and Conference  | 38,000                 | 28,000                 | 28,000                 |                        | 94,000                 | 19          |                  |        |    |
|   |  | Total Activity 1.3. (output)   |  | 92,500                       | 156,000                            | 58,000                       | 15,000                              | 0                      | 321,500                |                        |                        |                        |             |                  |        |    |
|   |  | Output 1.4. Strengthened coordination and training mechanisms for integrated climate-resilient catchment management.       | NIM  | 62040                        | AF                                 | 75700                        | Training, Workshops and Conference  | 10,000                 | 10,000                 |                        |                        |                        |             | 20,000           | 20     |    |
|   |  |  |  |                              |                                    | 75700                        | Training, Workshops and Conference  | 25,000                 |                        | 25,000                 |                        |                        | 50,000      | 21               |        |    |
| Total Activity 1.4. (output)  |  |  |  |                              |                                    | 35,000                       | 10,000                              | 25,000                 | 0                      | 0                      | 70,000                 |                        |             |                  |        |    |
| Output 1.5. Payment for Ecosystem Services models to support the long-term financing of integrated catchment management strategy implementation | NIM  | 62040  | AF   | 71300                        | Local Consultants                  | 20,000                       | 20,000                              |                        |                        |                        |                        | 40,000                 | 22          |                  |        |    |
|   |  |  |  | 71600                        | Travel                             | 10,000                       | 10,000                              | 10,000                 | 10,000                 |                        | 40,000                 | 23                     |             |                  |        |    |
|   |  |  |  | 75700                        | Training, Workshops and Conference |                              | 25,000                              |                        |                        | 25,000                 | 24                     |                        |             |                  |        |    |
|   |  |  |  | Total Activity 1.5. (output) |                                    | 30,000                       | 55,000                              | 10,000                 | 10,000                 | 0                      | 105,000                |                        |             |                  |        |    |
| Total Outcome 1 (output subtotal)   |  | 402,500  | 336,000                                      | 198,000                      | 50,000                             | 25,500                       | 1,012,000                           |                        |                        |                        |                        |                        |             |                  |        |    |
| Subtotal Component 1  |  | 402,500  | 336,000                                      | 198,000                      | 50,000                             | 25,500                       | 1,012,000                           |                        |                        |                        |                        |                        |             |                  |        |    |

| Component  | Outcome   | Atlas Activity (Outputs)  | Atlas Implementing Agent (Responsible Party)  | Atlas Fund ID  | Donor Name | Atlas Budgetary Account Code | ATLAS Budget Account Description[3] | Amount Year 2020 (USD)  | Amount Year 2021 (USD)           | Amount Year 2022 (USD) | Amount Year 2023 (USD) | Amount Year 2024 (USD) | Total (USD)               | See Budget Note: |        |    |
|--|---|---|---|--|------------|------------------------------|-------------------------------------|---|----------------------------------|------------------------|------------------------|------------------------|---------------------------|------------------|--------|----|
| Component 2. Ecosystem-based Adaptation, including Climate smart Agriculture and Sustainable Land Management, in agro-ecological landscapes. | Outcome 2. An integrated approach to building climate resilience of agro-ecological landscapes operationalised at a village level | Output 2.1. Agro-ecological extension services supported at the jamaot level to provide technical support for EbA implementation.               | NIM   | 62040  | AF         | 72100                        | Contractual Services - Companies    |   | 300,000                          | 20,000                 | 20,000                 | 20,000                 | 360,000                   | 25               |        |    |
|  |   |   |   |  |            | 72100                        | Contractual Services - Companies    |   | 90,000                           | 90,000                 | 90,000                 | 90,000                 | 360,000                   | 26               |        |    |
|  |   |   |   |  |            | 75700                        | Training, Workshops and Conference  |   |                                  | 30,000                 |                        | 30,000                 | 27                        |                  |        |    |
|  |   |   |   |  |            | Total Activity 2.1. (output) |                                     | 0   | 390,000                          | 140,000                | 110,000                | 110,000                | 750,000                   |                  |        |    |
|  |   | Output 2.2. Watershed Action Plans (WAPs) developed that promote climate resilience and enhance economic productivity for target communities.   | NIM   | 62040  | AF         | 71300                        | Local Consultants                   |   | 30,000                           |                        |                        |                        |                           | 30,000           | 28     |    |
|  |   |   |   |  |            | 71300                        | Local Consultants                   |   | 30,000                           |                        |                        |                        | 30,000                    | 29               |        |    |
|  |   |   |   |  |            | 71300                        | Local Consultants                   |   | 40,000                           |                        |                        |                        | 40,000                    | 30               |        |    |
|  |   |   |   |  |            | 71400                        | Contractual Services - Individuals  | 21,000  | 21,000                           | 21,000                 | 21,000                 | 21,000                 | 105,000                   | 31               |        |    |
|  |   |   |   |  |            | 71400                        | Contractual Services - Individuals  | 15,000  | 15,000                           | 15,000                 | 15,000                 | 15,000                 | 75,000                    | 32               |        |    |
|  |   |   |   |  |            | 74200                        | Audio Visual&Print Prod Costs       |   | 2,310                            |                        |                        |                        | 2,310                     | 33               |        |    |
|  |   |   |   |  |            | 74200                        | Audio Visual&Print Prod Costs       |   | 12,000                           |                        |                        |                        | 12,000                    | 34               |        |    |
|  |   |   |   |  |            | 74200                        | Audio Visual&Print Prod Costs       |   | 10,000                           |                        |                        |                        | 10,000                    | 35               |        |    |
|  |   |   |   |  |            | 75700                        | Training, Workshops and Conference  |   | 21,000                           |                        |                        |                        | 21,000                    | 36               |        |    |
|  |   |   |   |  |            | Total Activity 2.2. (output) |                                     | 36,000  | 181,310                          | 36,000                 | 36,000                 | 36,000                 | 325,310                   |                  |        |    |
|  |   | Output 2.3. EbA interventions implemented in target watersheds by local communities   | NIM   | 62040  | AF         | 71600                        | Travel                              | 15,000  | 15,000                           | 15,000                 | 14,000                 | 15,000                 | 74,000                    | 37               |        |    |
|  |   |   |   |  |            | 72100                        | Contractual Services - Companies    |   | 154,000                          | 13,500                 | 13,500                 | 13,500                 | 194,500                   | 38               |        |    |
|  |   |   |   |  |            | 72100                        | Contractual Services - Companies    |   | 2,814,000                        | 2,000,000              | 1,000,000              |                        | 5,814,000                 | 39               |        |    |
|  |   |   |   |  |            | 75700                        | Training, Workshops and Conference  |   | 14,000                           |                        |                        |                        | 14,000                    | 40               |        |    |
|  |   |   |   |  |            | 75700                        | Training, Workshops and Conference  | 20,000  | 20,000                           | 18,000                 | 18,000                 | 15,000                 | 91,000                    | 41               |        |    |
|  |   |   |   |  |            | 75700                        | Training, Workshops and Conference  |   | 20,000                           |                        |                        |                        | 20,000                    | 42               |        |    |
|  |   | Total Activity 2.3. (output)  |   | 35,000   | 3,037,000  | 2,046,500                    | 1,045,500                           | 43,500  | 6,207,500                        |                        |                        |                        |                           |                  |        |    |
|  |   | Total Outcome 2 (output subtotal)   |   | 71,000   | 3,608,310  | 2,222,500                    | 1,191,500                           | 189,500   | 7,282,810                        |                        |                        |                        |                           |                  |        |    |
|  |   | Subtotal Component 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 Kofirnighan River Basin | Outcome 3. Existing knowledge management platforms supported for integrated catchment management and EbA. | Output 3.1. Existing knowledge management platforms supported for collating information on the planning, implementation and financing of EbA interventions | NIM        | 62040                        | AF                                  | 72100   | Contractual Services - Companies | 20,000                 | 20,000                 | 12,000                 | 19,000                    | 20,000           | 91,000 |    |
|  |   |   |   |  |            |                              |                                     | Total Activity 3.1. (output)  |                                  | 20,000                 | 20,000                 | 12,000                 | 19,000                    | 20,000           | 91,000 |    |
|  |   |   |   |  |            |                              |                                     | Output 3.2. An impact evaluation framework established to enable effective adaptive management of EbA activities. | NIM                              | 62040                  | AF                     | 71200                  | International Consultants | 36,500           |        |    |
|  |   |   |   | 71600  | Travel     | 1,000                        | 1,000                               |   |                                  |                        |                        | 1,000                  | 1,000                     | 1,000            | 5,000  | 44 |
| 74500  | Miscellaneous Expenses  |   |   | 10,000   |            |                              |                                     |   |                                  |                        |                        |                        | 10,000                    | 45               |        |    |
| Total Activity 3.2. (output)   |   |   |   | 47,500   | 1,000      | 1,000                        | 1,000                               | 1,000   | 51,500                           |                        |                        |                        |                           |                  |        |    |
| Total Outcome 3 (output subtotal)  |   | 67,500  | 21,000  | 13,000   | 20,000     | 21,000                       | 142,500                             |   |                                  |                        |                        |                        |                           |                  |        |    |
| Subtotal Component 3   |   | 67,500  | 21,000  | 13,000   | 20,000     | 21,000                       | 142,500                             |   |                                  |                        |                        |                        |                           |                  |        |    |

|                             |                                     |      |       |    |  |                                    |                |                  |                  |                  |                |                  |                |
|-----------------------------|-------------------------------------|------|-------|----|--|------------------------------------|----------------|------------------|------------------|------------------|----------------|------------------|----------------|
| Component 4:                | Outcome 4.<br>Project<br>Management | UNDP | 62040 | AF | 71400                                    | Contractual Services - Individuals | 30,000         | 30,000           | 30,000           | 30,000           | 30,000         | 150,000          | 46             |
|                             |                                     |      |       |    | 71400                                    | Contractual Services - Individuals | 18,000         | 18,000           | 18,000           | 18,000           | 18,000         | 90,000           | 47             |
|                             |                                     |      |       |    | 71400                                    | Contractual Services - Individuals | 22,000         | 22,000           | 22,000           | 22,000           | 22,000         | 110,000          | 48             |
|                             |                                     |      |       |    | 71400                                    | Contractual Services - Individuals | 15,000         | 15,000           | 15,000           | 15,000           | 15,000         | 75,000           | 49             |
|                             |                                     |      |       |    | 71600                                    | Travel                             | 7,000          | 7,000            | 7,000            | 7,000            | 7,000          | 35,000           | 50             |
|                             |                                     |      |       |    | 72300                                    | Materials & Goods                  | 60,000         |                  |                  |                  |                | 60,000           | 51             |
|                             |                                     |      |       |    | 72400                                    | Communic & Audio Visual Equip      | 2,500          | 2,500            | 2,500            | 2,500            | 2,500          | 12,500           | 52             |
|                             |                                     |      |       |    | 73100                                    | Rental & Maintenance-Premises      | 5,000          | 5,000            | 5,000            | 5,000            | 5,000          | 25,000           | 53             |
|                             |                                     |      |       |    | 73400                                    | Vehicle running cost               | 5,000          | 5,000            | 5,000            | 5,000            | 2,500          | 22,500           | 54             |
|                             |                                     |      |       |    | 74100                                    | Professional Services              | 1,000          | 1,000            | 1,000            | 1,000            | 1,000          | 5,000            | 55             |
|                             |                                     |      |       |    | 74100                                    | Professional Services              |                |                  | 28,000           |                  |                | 28,000           | 56             |
|                             |                                     |      |       |    | 74100                                    | Professional Services              |                |                  |                  |                  | 28,000         | 28,000           | 57             |
|                             |                                     |      |       |    | 75700                                    | Training, Workshops and Conference | 3,000          |                  |                  |                  |                | 3,000            | 58             |
|                             |                                     |      |       |    | 74596                                    | Direct Project Costs               | 17,000         | 36,000           | 43,000           | 26,000           | 10,000         | 132,000          | 59             |
|                             |                                     |      |       |    | <b>Total Outcome 4 (output subtotal)</b> |                                    |                |                  |                  |                  |                | <b>185,500</b>   | <b>141,500</b> |
| <b>Subtotal Component 4</b> |                                     |      |       |    |  |                                    | <b>185,500</b> | <b>141,500</b>   | <b>176,500</b>   | <b>131,500</b>   | <b>141,000</b> | <b>776,000</b>   |                |
| <b>TOTAL PROJECT COST</b>   |                                     |      |       |    |  |                                    | <b>726,500</b> | <b>4,106,810</b> | <b>2,610,000</b> | <b>1,393,000</b> | <b>377,000</b> | <b>9,213,310</b> |                |

**Table 9 Summary of Funds:**<sup>233</sup>

|              | Amount<br>Year 1 | Amount<br>Year 2 | Amount<br>Year 3 | Amount<br>Year 4 | Amount<br>Year 5 | Total            |
|--------------|------------------|------------------|------------------|------------------|------------------|------------------|
| AF           | 788,253          | 4,455,889        | 2,831,850        | 1,511,405        | 409,045          | 9,996,441        |
| <b>TOTAL</b> | <b>788,253</b>   | <b>4,455,889</b> | <b>2,831,850</b> | <b>1,511,405</b> | <b>409,045</b>   | <b>9,996,441</b> |

Budget notes:

<sup>233</sup> Summary table should include all financing of all kinds: AF financing, cofinancing, cash, in-kind, etc...

## All Years

| Budget Note No.           | Clarification of the budget items/ Justification of the estimated costs   | Total Indicative Proposed Cost |
|---------------------------|---|--------------------------------|
| <b>Outcome 1</b>          |   |                                |
| 1                         | International consultant (US\$650 * 50 days + US\$4,000 expenses)   | \$ 36,500.00                   |
| 2                         | National Consultant   | \$ 25,000.00                   |
| 3                         | National Consultant (US\$200 *100)  | \$ 20,000.00                   |
| 4                         | GIS Data  | \$ 40,000.00                   |
| <b>Total Activity 1.1</b> |   | <b>121,500.00</b>              |
| 5                         | International consultant (IT expert - US\$650 * 30 days + US\$4,000 expenses)   | \$ 23,500.00                   |
| 6                         | National Consultant (For training local community members to receive advisories - US\$200 * 150 days)                               | \$ 30,000.00                   |
| 7                         | National Consultant (US\$200 *50 days)  | \$ 10,000.00                   |
| 8                         | Contract for disseminating regular advisories via SMS   | \$ 30,000.00                   |
| 9                         | Materials and inputs (US\$70,000 per station * 3 stations)  | \$ 210,000.00                  |
| 10                        | Basic phones + airtime for 100 community representatives  | \$ 30,000.00                   |
| 11                        | Miscellaneous   | \$ 60,500.00                   |
| <b>Total Activity 1.2</b> |   | <b>394,000.00</b>              |
| 12                        | International Consultant (Catchment management expert @US650 for 100 days + US\$4,000 expenses)                                     | \$ 69,000.00                   |
| 13                        | International Consultant (Training expert on integrated catchment management, US\$ 650 for 30 days + US\$ 4,000 expenses)           | \$ 23,500.00                   |
| 14                        | National Consultant (To assist International Consultant and continue training workshops in Year 2, US\$200 for 100 days)            | \$ 20,000.00                   |
| 15                        | National Consultant (US\$200 for 200 days)  | \$ 40,000.00                   |
| 16                        | Workshops (10 district-level workshops and 3 national-level workshops)  | \$ 25,000.00                   |
| 17                        | Training materials  | \$ 20,000.00                   |
| 18                        | Training workshops (6 3-day workshops @US\$5,000 per workshop)  | \$ 30,000.00                   |
| 19                        | Training materials, trainings (assume US\$10,000 for training materials, 2 trainings per year per jamoat at US\$1,000 per training) | \$ 94,000.00                   |
| <b>Total Activity 1.3</b> |   | <b>321,500.00</b>              |
| 20                        | Workshops for CEP and other relevant government staff   | \$ 20,000.00                   |
| 21                        | Workshops for RBOs, RBCs, districts and <i>jamoats</i> . Assume 1 workshop in each district + 2 workshops in Dushanb                | \$ 50,000.00                   |
| <b>Total Activity 1.4</b> |   | <b>70,000.00</b>               |
| 22                        | National Consultants (Environmental economist and policy experts, US\$200 * 200 days)   | \$ 40,000.00                   |
| 23                        | Travel to project sites including monitoring costs  | \$ 40,000.00                   |
| 24                        | Workshops at district and national level (12 district-level workshop, 3 national-level workshops)                                   | \$ 25,000.00                   |
| <b>Total Activity 1.5</b> |   | <b>105,000.00</b>              |

| All Years        |  |                                |
|------------------|--|--------------------------------|
| Budget Note No.  | Clarification of the budget items/ Justification of the estimated costs  | Total Indicative Proposed Cost |
|                  | <b>Total Activity 1.5</b>  | <b>105,000.00</b>              |
| <b>Outcome 2</b> |  |                                |
| 25               | 100 villages, assume US\$3,000 per plot plus US\$200 for upkeep per annum  | \$ 360,000.00                  |
| 26               | 100 villages, assume US\$900 per field school per annum  | \$ 360,000.00                  |
| 27               | 6 District-level trainings @ US\$5,000 per training  | \$ 30,000.00                   |
|                  | <b>Total Activity 2.1</b>  | <b>750,000.00</b>              |
| 28               | National Consultant (Watershed expert @ US\$200 for 150 days)  | \$ 30,000.00                   |
| 29               | National Consultant (Communications expert @ US\$200 for 150 days)   | \$ 30,000.00                   |
| 30               | National consultants (US\$200 * 200 days)  | \$ 40,000.00                   |
| 31               | Field staff (3 @ US7,000 p.a.)   | \$ 105,000.00                  |
| 32               | Project Engineer   | \$ 75,000.00                   |
| 33               | Mapping materials  | \$ 2,310.00                    |
| 34               | Translation services   | \$ 12,000.00                   |
| 35               | Printing & Miscellaneous   | \$ 10,000.00                   |
| 36               | Community meetings (Meetings to be held across multiple villages; assume 3 meetings per <i>jamoat</i> , US\$500 per meeting) | \$ 21,000.00                   |
|                  | <b>Total Activity 2.2</b>  | <b>325,310.00</b>              |
| <b>Outcome 3</b> |  |                                |
| 37               | Travel to project sites including monitoring costs   | \$ 74,000.00                   |
| 38               | 14 Nurseries, US\$10,000 to establish, US\$1,000 upkeep per annum  | \$ 194,500.00                  |
| 39               | Inputs for 100 villages to implement EbA - assume US\$60,000 per village   | \$ 5,814,000.00                |
| 40               | Training for Nursery staff   | \$ 14,000.00                   |
| 41               | Conduct 2 workshops per year per <i>jamoat</i> to provide technical support on EPs   | \$ 91,000.00                   |
| 42               | Conduct 1 workshop per <i>jamoat</i> on developing community monitoring plans  | \$ 20,000.00                   |
|                  | <b>Total Activity 2.3</b>  | <b>6,207,500.00</b>            |
|                  | Contract for knowledge management centre - database maintenance, knowledge dissemination)                                    | \$ 91,000.00                   |
|                  | <b>Total Activity 3.1</b>  | <b>91,000.00</b>               |
| 43               | International consultant (US\$650 * 50 days + US\$4,000 expenses)  | \$ 36,500.00                   |
| 44               | Travels including monitoring costs   | \$ 5,000.00                    |
| 45               | Miscellaneous  | \$ 10,000.00                   |
|                  | <b>Total Activity 3.2</b>  | <b>51,500.00</b>               |
| <b>Outcome 4</b> |  |                                |
| 46               | Project Manager  | \$ 150,000.00                  |
| 47               | Project Administrative/Finance Assistant   | \$ 90,000.00                   |
| 48               | Project Analyst  | \$ 110,000.00                  |
| 49               | Project Assistant  | \$ 75,000.00                   |
| 50               | Field travel including monitoring of project sites (US\$500 per person per trip, 14 trips per annum)                         | \$ 35,000.00                   |
| 51               | Vehicles (1 field vehicle + 1 vehicle for the PM)  | \$ 60,000.00                   |
| 52               | Communic & Audio Visual Equip  | \$ 12,500.00                   |
| 53               | Rental & Maintenance-Premises  | \$ 25,000.00                   |
| 54               | Vehicle running cost   | \$ 22,500.00                   |
| 55               | Audit  | \$ 5,000.00                    |
| 56               | Mid-term review  | \$ 28,000.00                   |
| 57               | Terminal review  | \$ 28,000.00                   |
| 58               | Inception workshop   | \$ 3,000.00                    |
| 59               | DPC  | \$ 132,000.00                  |
|                  | <b>Total Project Management</b>  | <b>776,000.00</b>              |
|                  | <b>TOTAL PROJECT BUDGET</b>  | <b>\$ 9,213,310.00</b>         |

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## **IX. LEGAL CONTEXT**

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of (country) and UNDP, signed on (date). All references in the SBAA to “Executing Agency” shall be deemed to refer to “Implementing Partner.”

This project will be implemented by [name of entity] (“Implementing Partner”) in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations or UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

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## **X. RISK MANAGEMENT**

1. Consistent with the Article III of the SBAA *[or the Supplemental Provisions to the Project Document]*, the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:
  - a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
  - b) assume all risks and liabilities related to the Implementing Partner's security, and the full implementation of the security plan.
2. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner's obligations under this Project Document.
3. The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via [http://www.un.org/sc/committees/1267/aq\\_sanctions\\_list.shtml](http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml).
4. The Implementing Partner acknowledges and agrees that UNDP will not tolerate sexual harassment and sexual exploitation and abuse of anyone by the Implementing Partner, and each of its responsible parties, their respective sub-recipients and other entities involved in Project implementation, either as contractors or subcontractors and their personnel, and any individuals performing services for them under the Project Document.
  - (a) In the implementation of the activities under this Project Document, the Implementing Partner, and each of its sub-parties referred to above, shall comply with the standards of conduct set forth in the Secretary General's Bulletin ST/SGB/2003/13 of 9 October 2003, concerning "Special measures for protection from sexual exploitation and sexual abuse" ("SEA").
  - (b) Moreover, and without limitation to the application of other regulations, rules, policies and procedures bearing upon the performance of the activities under this Project Document, in the implementation of activities, the Implementing Partner, and each of its sub-parties referred to above, shall not engage in any form of sexual harassment ("SH"). SH is defined as any unwelcome conduct of a sexual nature that might reasonably be expected or be perceived to cause offense or humiliation, when such conduct interferes with work, is made a condition of employment or creates an intimidating, hostile or offensive work environment.
5. a) In the performance of the activities under this Project Document, the Implementing Partner shall (with respect to its own activities), and shall require from its sub-parties referred to in paragraph 4 (with respect to their activities) that they, have minimum standards and procedures in place, or a plan to develop and/or improve such standards and procedures in order to be able to take effective preventive and investigative action. These should include: policies on sexual harassment and sexual exploitation and abuse; policies on whistleblowing/protection against retaliation; and complaints, disciplinary and investigative mechanisms. In line with this, the Implementing Partner will and will require that such sub-parties will take all appropriate measures to:
  - i. Prevent its employees, agents or any other persons engaged to perform any services under this Project Document, from engaging in SH or SEA;
  - ii. Offer employees and associated personnel training on prevention and response to SH and SEA, where the Implementing Partner and its sub-parties referred to in paragraph 4 have not put in



place its own training regarding the prevention of SH and SEA, the Implementing Partner and its sub-parties may use the training material available at UNDP;

- iii. Report and monitor allegations of SH and SEA of which the Implementing Partner and its sub-parties referred to in paragraph 4 have been informed or have otherwise become aware, and status thereof;
  - iv. Refer victims/survivors of SH and SEA to safe and confidential victim assistance; and
  - v. Promptly and confidentially record and investigate any allegations credible enough to warrant an investigation of SH or SEA. The Implementing Partner shall advise UNDP of any such allegations received and investigations being conducted by itself or any of its sub-parties referred to in paragraph 4 with respect to their activities under the Project Document, and shall keep UNDP informed during the investigation by it or any of such sub-parties, to the extent that such notification (i) does not jeopardize the conduct of the investigation, including but not limited to the safety or security of persons, and/or (ii) is not in contravention of any laws applicable to it. Following the investigation, the Implementing Partner shall advise UNDP of any actions taken by it or any of the other entities further to the investigation.
- b) The Implementing Partner shall establish that it has complied with the foregoing, to the satisfaction of UNDP, when requested by UNDP or any party acting on its behalf to provide such confirmation. Failure of the Implementing Partner, and each of its sub-parties referred to in paragraph 4, to comply of the foregoing, as determined by UNDP, shall be considered grounds for suspension or termination of the Project.
6. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (<http://www.undp.org/ses>) and related Accountability Mechanism (<http://www.undp.org/secu-srm>).
  7. The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.
  8. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.
  9. The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds. The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.
  10. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at [www.undp.org](http://www.undp.org).
  11. If an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programmes in accordance with UNDP's regulations, rules, policies and procedures. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties',

subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution.

12. The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

13. UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other agreement. Recovery of such amount by UNDP shall not diminish or curtail the Implementing Partner's obligations under this Project Document.

Where such funds have not been refunded to UNDP, the Implementing Partner agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the Implementing Partner for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

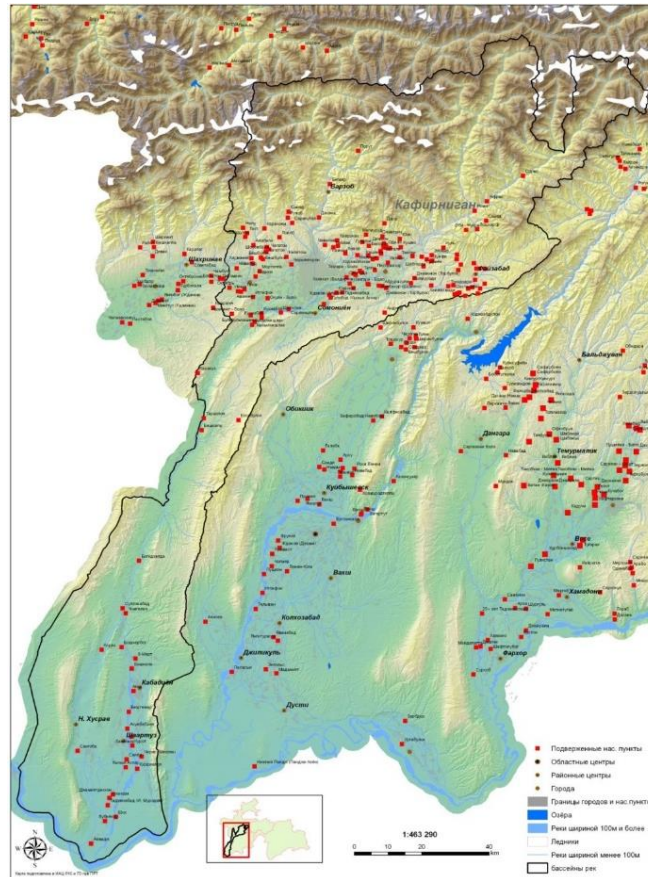
14. Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.
15. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.
16. The Implementing Partner shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, *mutatis mutandis*, in all sub-contracts or sub-agreements entered into further to this Project Document.

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## **XI. MANDATORY ANNEXES**

1. Project Map and geospatial coordinates of the project area
2. Multiyear Workplan
3. Monitoring Plan
4. UNDP Social and Environmental Screening Procedure
5. UNDP Atlas Risk Log
6. Overview of technical consultancies/subcontracts
7. Terms of Reference for Technical services to be provided by UNDP, the Project Board, Project Manager, Chief Technical Advisor and other positions as appropriate
8. Signed letter from the Implementing Partner and AF Focal Point requesting UNDP Support Services (if required on exceptional basis)
9. Signed LOA between UNDP and IP requesting UNDP Support Services (if required on exceptional basis)
10. Social and Environmental Screening Procedure (SESP)
11. Environmental Social Management Framework (ESMF) if required.
12. Gender Analysis and Gender Action Plan
13. Procurement Plan – for first year of implementation especially
14. AF focal area specific annexes (e.g. METT, GHG calculations, target landscape profile, feasibility study, other technical reports)
15. Additional agreements: such as cost sharing agreements, project cooperation agreements signed with NGOs (where the NGO is designated as the “executing entity”), letters of financial commitments etc.
16. GEF, Adaptation Fund and/or LDCF/SCCF Core indicators (see template below)
17. GEF/AF Taxonomy (see template below)

## Annex 1: Project map and Geospatial Coordinates of project sites



**Figure 7 Map of Kofirnighan River Basin (outlined in black) indicating the most vulnerable communities to extreme climate events. Communities are indicated by a red dot.**

## Annex 2: Multi Year Work Plan

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 |
| <b>Component 1.<br/>Integrated catchment management to build climate resilience.</b>  | 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. |        |    |    |    |        |    |    |    |        |    |    |    |        |    |    |    |        |    |    |    |
| <b>Component 2.<br/>Ecosystem-based Adaptation, including Climate smart Agriculture and Sustainable Land Management, in agro-ecological landscapes.</b> | Output 2.1. Agro-ecological extension services supported at the <i>jamoat</i> 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.           |        |    |    |    |        |    |    |    |        |    |    |    |        |    |    |    |        |    |    |    |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
|   | Output 2.3. EbA interventions implemented in target watersheds by local communities.  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Component 3.<br/>Knowledge management on building climate resilience through integrated catchment management and EbA in the Kofirnighan River Basin.</b> | 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.   | ■ | ■ | ■ | ■ |   |   |   | ■ |   |   |   | ■ |   |   | ■ |   |   |   |   |   |   | ■ |  |

## Annex 3: Monitoring Plan

This Monitoring Plan and Budget of this project document will both guide monitoring and evaluation at the project level for the duration of project implementation.

| Monitoring  | Indicators   | Targets   | Data source/Collection Methods/Mean of verification  | Frequency                                    | Responsible for data collection | Assumptions   |
|---|--|---|--|--|---------------------------------|---|
| <b>Project Objective:</b><br>Reduce vulnerability and enhance climate-resilience of small-scale farmers and pastoralists in Tajikistan to respond to the impacts of climate change        | <b>Indicator 1:</b> Total number of men and women benefitting from reduced vulnerability to climate change           | The total number of direct project beneficiaries by the end of the project will be 46,000; including 25,000 women and girls.<br><br>The total number of indirect beneficiaries by the end of the project will equal 828,000 people, including 409,612 women and girls.  | <ul style="list-style-type: none"> <li>Project annual reports</li> <li>Project mid-term and final evaluations</li> </ul>   | Annually<br>Reported in DO tab of the AF PPR | Project Manager                 | Community members continue to practice adaptation technologies once they have been trained and provided with the necessary equipment. |
|   | <b>Indicator 2:</b> Percentage population of the KRB benefitting from project interventions.                         | Expected: ~5%   | <ul style="list-style-type: none"> <li>Project annual reports</li> <li>Project mid-term and final evaluations</li> </ul>   | At mid-term<br>At project end                | Project Manager                 | Community members continue to practice adaptation technologies once they have been trained and provided with the necessary equipment. |
| <b>Project Outcome 1:</b><br>Catchment management strategy to manage climate risks operationalised at raion (district) and jamoat (sub-district) levels in Kofirnighan River Basin (KRB). | <b>Indicator 3:</b> Number of staffs trained to respond to impacts of climate-related events (gender disaggregated). | 1. By the end of the project, at least 30 staff at the district level (of which at least 30% are women) trained on integrated catchment management.<br><br>2. By the end of the project, at least 100 staff (of which at least 30% are women) at the jamoat level trained on integrated catchment management. | <ul style="list-style-type: none"> <li>Attendance registers from training workshops</li> <li>Workshop reports</li> <li>Interviews with selected staff members of relevant ministries</li> <li>Monitoring and evaluation reports per intervention site</li> <li>Reports on community consultations/trainings and field visits</li> <li>GIS</li> </ul> | as needed                                    | Project Manager                 | Training workshops provide staff with the capacity to integrate climate resilience into integrated catchment management               |
| <b>Project Outcome 2:</b> An integrated approach to building climate resilience of agro-ecological landscapes operationalised at a village level.   | <b>Indicator 4:</b> Number of people practising climate change adaptation technologies (gender disaggregated).       | At least 600 people (100 per district), of which at least 30% will be women, are implementing EbA interventions for climate risk management.  | <ul style="list-style-type: none"> <li>Registers of project beneficiaries at each site</li> <li>Site visits</li> <li>Community surveys.</li> </ul>   | as needed                                    | Project Manager                 | Community members continue to practice adaptation technologies once they have been trained and provided with the necessary equipment. |
|   | <b>Indicator 5:</b> Total number of men and women benefitting from reduced vulnerability to climate change           | At least 46,000 people in ~100 villages across 6 districts benefitting from reduced vulnerability to climate change   |  |  |                                 |   |

| Monitoring  | Indicators   | Targets  | Data source/Collection<br>Methods/Means of verification   | Frequency | Responsible for<br>data collection | Assumptions   |
|---|--|--|---|-----------|------------------------------------|---|
| <b>Project Outcome 3:</b><br>Existing knowledge management platforms supported for integrated catchment management and EbA. | <b>Indicator 6:</b> Knowledge management centre strengthened through the support of project activities | By the end of the project at least 1 knowledge centre has been strengthened. | <ul style="list-style-type: none"> <li>• Reports and training materials</li> <li>• Monitoring and evaluation reports</li> </ul> | as needed | Project Manager                    | Strengthening existing knowledge management centres promotes local knowledge sharing and raises awareness among communities |



## Annex 4: UNDP’s Social and Environmental Screening Procedure (SESP)

| <b>Checklist Potential Social and Environmental Risks</b>  |  | <b>Answer<br/>(Yes/No)</b> |
|--|--|----------------------------|
| <b>Principles 1: Human Rights</b>  |  |                            |
| 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? <sup>234</sup>   | 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                         |
| <b>Principle 2: Gender Equality and Women’s Empowerment</b>  |  |                            |
| 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?<br><i>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</i> | No                         |
| <b>Principle 3: Environmental Sustainability:</b> Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below |  |                            |
| <b>Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management</b>   |  |                            |
| 1.1  | Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services?<br><i>For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes</i>  | No                         |
| 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                         |

<sup>234</sup> 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.

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| 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?<br><i>For example, construction of dams, reservoirs, river basin developments, groundwater extraction</i>  | 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?<br><i>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.</i> | No  |
| <b>Standard 2: Climate Change Mitigation and Adaptation</b>        |  |     |
| 2.1  | Will the proposed Project result in significant <sup>235</sup> 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)?<br><i>For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding</i>  | No  |
| <b>Standard 3: Community Health, Safety and Working Conditions</b> |  |     |
| 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  |
| 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  |

<sup>235</sup> In regards to CO<sub>2</sub>, '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.]

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| 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  |
| <b>Standard 4: Cultural Heritage</b>             |   |     |
| 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  |
| <b>Standard 5: Displacement and Resettlement</b> |   |     |
| 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? <sup>236</sup>   | 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  |
| <b>Standard 6: Indigenous Peoples</b>            |   |     |
| 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)?<br><br><i>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.</i> | No  |
| 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  |

<sup>236</sup> 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.

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| 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  |
| <b>Standard 7: Pollution Prevention and Resource Efficiency</b> |   |     |
| 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?<br><br><i>For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol</i> | 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  |

The full fledged environmental and social management framework (ESMF) has been developed for the project in accordance with rules and procedures of Adaptation Fund was developed within the scope of the project design and complemented by UNDP's Social and Environmental Standards (SES) utilizing the UNDP Social and Environmental Screening Procedure (SESP), with a Moderate Risk project rating.

As 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, the 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. The full text of ESMF is available as an Annex 4. Environmental and Social Management Framework (ESMF) to the Project Proposal for Tajikistan, "An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan", available at: [https://www.adaptation-fund.org/wp-content/uploads/2019/06/AFB.PPRC\\_24-25.9-Proposal-for-Tajikistan.pdf](https://www.adaptation-fund.org/wp-content/uploads/2019/06/AFB.PPRC_24-25.9-Proposal-for-Tajikistan.pdf)

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. The preliminary analysis and screening process (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.

These potential impacts are summarized and discussed in the table below, as well as potential mitigation measures.

| Activity/ Risk   | Potential Social and Environmental Impact   | Potential Project Benefit   | Mitigation measures   | Monitoring   |
|--|---|---|---|--|
| <p>Changes in pasture and livestock management practices and reforestation measures (grazing control, rotational grazing, livestock exclusion zones, rehabilitation and restoration of forest ecosystems).</p> | <p>Project activities could potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups.</p> | <p>Improved livelihoods, health and well-being of target communities. Specifically:</p> <ul style="list-style-type: none"> <li>• Increased pasture productivity and carrying capacity;</li> <li>• Increased provision of food and fodder;</li> <li>• Increased nutrition for local community;</li> <li>• Increased provision of fuel-wood and timber;</li> <li>• Protected crops and livestock from extreme climatic conditions;</li> <li>• Increased bio-diversity conservation;</li> <li>• Increased soil moisture;</li> <li>• Slowed water run-off;</li> </ul> | <p>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).</p> <p>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.</p> <p>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</p> | <p>Mid-term review, project monitoring missions.</p> |

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|   |   |  | <p>from other communities, districts and/or regions. <i>Jamoat</i> 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.</p> <p>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.</p> <p>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).</p> |  |
| 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 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 <i>dehkan</i> and corporate farms  | 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; |

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|   |  | <p>The overall potential benefit will be: Improved and protected livelihoods, health and well-being of target communities.<br/>Specifically:</p> <ul style="list-style-type: none"> <li>• Reduced forest degradation;</li> <li>• Increased bio-diversity conservation;</li> <li>• Increased water infiltration;</li> <li>• Increased above-ground biomass (increased plant survival);</li> <li>• Protected crops and livestock from extreme climatic conditions;</li> <li>• Reduced slope instability and risk of minor mudslides and landslides;</li> <li>• Slowed water run-off;</li> <li>• Increased soil moisture;</li> <li>• Reduced soil loss;</li> </ul> | <p>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.</p> <p>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.</p> <p>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.</p> | Mid-term review.  |
| 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. | <p>The project will promote rehabilitation and restoration of degraded and overgrazed pasturelands.</p> <p>The overall potential benefit will be: improved livelihoods of livestock owners through increased pasture productivity and carrying capacity.</p>  | <p>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:</p> <ul style="list-style-type: none"> <li>• Geo-botanical survey of summer pasturelands;</li> <li>• Study productivity dynamics of fodder producing summer pasturelands;</li> <li>• Development of recommendations for improvement of summer pasturelands in mountainous areas through sowing effective fodder plans.</li> </ul>   | <p>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;</p> <p>Mid-term review.</p> |

|                                     |  |  |  |  |
|-------------------------------------|--|--|--|--|
|                                     |  | <p>Specifically:</p> <ul style="list-style-type: none"> <li>• Increased water infiltration;</li> <li>• Increased above-ground biomass (increased plant survival);</li> <li>• Increased bio-diversity conservation;</li> <li>• Protected crops and livestock from extreme climatic conditions;</li> <li>• Reduced slope instability and risk of minor mudslides and landslides;</li> <li>• Slowed water run-off;</li> <li>• Increased soil moisture;</li> <li>• Reduced soil loss;</li> <li>• Off-site benefits: reduced downstream siltation, flooding and groundwater river pollution.</li> </ul> |  |  |
| 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.  | <p>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.</p> <p>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.</p> | Mid-term review;<br>Capacity building workshops;<br>Project monitoring missions. |



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| <p>Harvesting of forest resources by local communities</p>  | <p>Unsustainable community harvesting of forest resources may adversely affect project forest areas.</p>                    | <p>The project will support rehabilitation/restoration of degraded forest ecosystems in areas affected by adverse climatic events. Reforestation activities are designed to also enhance biodiversity and ecosystem 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 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.</p> | <p>The project will aim to prevent and mitigate aggressive harvesting practices through a wider awareness campaign among communities at <i>Jamoat</i> 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 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-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.</p> | <p>Mid-term review;<br/>Capacity building workshops;<br/>Project monitoring missions.</p> |
| <p>Some of the expected outcomes of the project, particularly the forest restoration component, are</p> | <p>The project is directly addressing climate change vulnerabilities and adaptation capacities in the Kofirnighan river</p> | <p>The project's designed activities directly support implementation of ecosystem-based adaptation, including</p>  | <p>The project will aim to build climate resilience through development of catchment management strategy to manage and operationalize climate risks at district and <i>Jamoat</i> levels in Kofirnighan river basin.</p>   | <p>Use of climate risk management tools and assessments;<br/>Mid-term reviews;</p>        |

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| sensitive to potential impacts of climate change                        | 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. | 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. | <p>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 occurring.</p> <p>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 Kofirnighan River Basin Management Plans to make informed decisions on EbA activities.</p> | Project monitoring missions.                  |
| 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. |

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| <p>Pest control measures and agricultural support may involve potential use of pesticides</p>   | <p>There may be a risk of application of pesticides that may have a negative effect on the environment or human health</p>   | <p>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.</p>   | <p>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 <i>Jamoat</i> level to provide technical support for EbA implementation.</p> <p>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.</p>  | <p>Mid-term review;<br/>Project monitoring missions.</p>   |
| <p>Duty-bearing ministries/agencies and local authorities do not have sufficient expertise and technical/material resources to meet their obligations in the Project.</p> | <p>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.</p> <p>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.</p> | <p>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.</p> | <p>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 <i>Jamoats</i> (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.</p> <p>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.</p> | <p>Capacity building workshops;<br/>Exchange visits to related sites where partner projects have been implemented;<br/>Mid-term review;<br/>Project monitoring missions;</p> |
| <p>Potentially affected stakeholders, in particular marginalized groups, could potentially be excluded from fully participating</p>                                       | <p>Limitations may exist in the capacities of local stakeholders, in particular poor and vulnerable groups, to participate</p>   | <p>Marginalized groups in project area of Kofirnighan river basin can be considered poor and vulnerable population that potentially include those</p>   | <p>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</p>  | <p>Inception assessments;<br/>Mid-term review;<br/>Consultation workshops;<br/>Project monitoring missions.</p>  |

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| <p>in decisions that may affect them.</p>                | <p>effectively in decision making that can affect them.<br/>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.</p> | <p>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.</p> <p>The project will implement a number of measures and actions that will benefit these groups.</p> | <p>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.</p> <p>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.</p> |  |
| <p>Women may be excluded from decision-making or not</p> | <p>Due to high level of male labor outmigration from rural communities,</p>   | <p>Project activities will be designed and implemented so that all genders are: (a)</p>   | <p>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</p>   | <p>Gender assessment;<br/>Use of disaggregated and measurable indicators</p> |

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| <p>adequately participate in the design/ implementation of the project.</p> <p>As a result, they may have unequal access to resources and/ or access to opportunities and benefits.</p> | <p>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.</p> | <p>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.</p> | <p>not suffer disproportionate adverse effects as per UNDP Gender Mainstreaming Strategy.</p> <p>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.</p> <p>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.</p> <p>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.</p> | <p>related to gender equality and women's empowerment;<br/>Capacity building workshops;<br/>Mid-term review;<br/>Project monitoring missions.</p> |
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## Annex 5: UNDP Risk Log

| # | Description   | Date Identified | Risk Category | Impact & Probability               | Risk Treatment / Management Measures  | Risk Owner      |
|---|---|-----------------|---------------|------------------------------------|---|-----------------|
| 1 | Disagreement amongst stakeholders regarding demonstration of site selection.  | May 2019        | Operational   | P=Not likely (1)<br>I=Low (1)      | -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.<br>-There will be a participatory approach to project activities, particularly with intervention site selection.  | Project Manager |
| 2 | High turnover of staff members in executing and implementing agencies may negatively impact on project deliverables.                                  | May 2019        | Strategic     | P=Likely (3)<br>I=Low–medium (1-2) | - Proposed project will build partnerships between government and non-government agencies to ensure continuity.   | Project Board   |
| 3 | Loss of government support may result in lack of prioritisation of proposed project activities.   | May 2019        | Political     | P=Not likely (1)<br>I=Low (1)      | -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.  | Project Board   |
| 4 | Institutional capacities and relationships are not sufficient to provide effective solutions to climate problems that are complex and multi-sectoral. | May 2019        | Strategic     | P=Likely (3)<br>I=Medium (3)       | -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 the management of <i>inter alia</i> water, land use, natural resources and pastures.   | Project Manager |
| 5 | Capacity constraints of local institutions may limit the ability to undertake the interventions implementation.                                       | May 2019        | Strategic     | P=Likely (3)<br>I=Medium (3)       | -Human resource capacity will be developed in all targeted regions and villages.<br>-Collaboration and exchange between local institutions and regional/international research institutes will be initiated.<br>-Integrated Catchment Management Specialist will work closely with the Programme Manager to ensure timely delivery of project outputs.  | Project Manager |
| 6 | Priority interventions implemented are not found to be cost-effective.  | May 2019        | Financial     | P=Not likely (1)<br>I=Low (1)      | -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.<br>-Interventions to be selected for the EbA shortlist will be chosen based on their previous success and results in the country. | Project Manager |
| 7 | Lack of commitment/buy-in from local communities may result in failure of intervention sites.   | May 2019        | Operational   | P=Likely (3)<br>I=Medium (3)       | -Stakeholder engagement plan will be developed during the inception phase.<br>Community stakeholders will continue to be consulted with throughout the project inception and implementation phase.  | Project Manager |

|   |   |          |               |                              |  |                 |
|---|---|----------|---------------|------------------------------|--|-----------------|
| 8 | Current and predicted climate variability and/or extreme climate events result in poor results for EbA interventions. | May 2019 | Environmental | P=Likely (3)<br>I=Medium (3) | <ul style="list-style-type: none"> <li>-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.</li> <li>-Drought- and flood-resilient species will be used, as well as indigenous species wherever possible.</li> <li>-Techniques to assist plant growth particularly in the seedling/sapling phases and to reduce risk of damage from extreme climate events will be used.</li> <li>- Species will be planted in appropriate seasons to reduce risk of hazard impact.</li> <li>- Ensuring diversity in selected seeds and crops will reduce this risk.</li> </ul> | Project Manager |
| 9 | Trees and other species planted by the project are cut down by the communities for fuelwood.                          |          | Operational   | P=Likely (3)<br>I=Medium (3) | <ul style="list-style-type: none"> <li>-Community involvement and awareness raising will be undertaken to avoid this risk.</li> <li>-Species chosen for planting will be beneficial as fruiting trees rather than as fuelwood.</li> </ul>  | Project Manager |

## **Annex 6: Standard Letter of Agreement between UNDP and the Government for the provision of support services**

Dear Mr. Bahodur Sheralizoda,

1. Reference is made to consultations between officials of the Committee for Environmental Protection under the Government of **Tajikistan** (hereinafter referred to as “CEP”) and officials of UNDP with respect to the provision of support services by the UNDP Country Office for nationally managed project titled “**An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan**”, PIMS 6219, Project ID: **00111538**, (hereinafter referred to as “the Project”). UNDP and CEP hereby agree that the UNDP Country Office may provide such support services at the request of CEP, 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 CEP 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 project:

- (a) Identification and/or recruitment of project personnel;
- (b) Identification and recruitment of international experts and consultants;
- (c) Procurement of goods and services, for the amount above US\$ 50,000;
- (d) Facilitation of international travel, payment of daily subsistence allowances and settlement of travel claims pertaining to international travel (F10).

4. The procurement of goods and services and the recruitment of project 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 project, the annex to the 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 CEP shall retain overall responsibility for the nationally managed 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 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 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 CEP and UNDP on the terms and conditions for the provision of support services by the UNDP Country Office for nationally managed projects.

Yours sincerely,

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Signed on behalf of UNDP  
*Pratibha Mehta*  
*UNDP Resident Representative*

For the Committee for Environmental Protection  
under the Government of the Republic of Tajikistan:

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Mr. Bahodur Sheralizoda  
Chairman of the Committee for Environmental Protection under the Government of the Republic of Tajikistan  
[Date]

## Annex 1. Project Document

### Annex 2. Description of UNDP Country Office support services and UNDP fees

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<br>(insert description)   | Schedule for the<br>provision of the<br>support services | Cost to UNDP of<br>providing such<br>support services<br>(where appropriate) | Amount and<br>method of<br>reimbursement of<br>UNDP (where<br>appropriate) |
|--|--|--|--|
| <b>1. Human Resources</b>  |  |  |  |
| 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):   |  |  | 0.00   |
| <i>Payroll validation, disbursement</i>  | Annual fee per employee per year)                        | 157.04   | 5,653.44   |
| <i>Extension, promotion, entitlements</i>  |  | 134.6  | 3,499.60   |
| Performance evaluation   |  | 134.6  | 4,845.60   |
| <i>Leave monitoring</i>  |  | 22.43  | 807.48   |
| <i>Leave monitoring - Absence data management in Atlas only</i>  |  | 5.7  | 205.20   |
| l) Staff HR & Benefits Administration & Management ( <i>one time fee, per staff. Services incl. contract issuance, benefits enrollment, payroll setup - this price applies to the separation process as well</i> ) |  | Yearly   | 205.66   |
| Total, HR:   |  |  | <b>22,344.17</b>   |
| <b>2. Finance</b>  |  |  |  |

|  |                         |        |                  |
|--|-------------------------|--------|------------------|
| 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:  |                         |        | <b>38,943.52</b> |
| <b>3. Procurement</b>  |                         |        |                  |
| 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            |
| - <i>Issue PO</i>  | 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:  |                               |        | <b>63,805.68</b>  |
| <b>4. Admin Support</b>  |                               |        |                   |
| 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:  |                               |        | <b>6,906.63</b>   |
| <b>Total DPC</b>   |                               |        | <b>132,000.00</b> |

#### 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 four 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 workflows. In addition, for each meeting of the Project Steering Committee, the Project Manager will prepare a full status report on project activities, 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%) |
|--|---|-----------------|
| <b>Identification, Sourcing and Screening of Ideas</b> | <p>Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF).</p> <p>Engage in upstream policy dialogue related to a potential application to the AF.</p> <p>Verify soundness &amp; potential eligibility of identified idea for AF.</p>  | \$ 39,157       |
| <b>Feasibility Assessment / Due Diligence Review</b>   | <p>Provide up-front guidance on converting general idea into a feasible project/programme.</p> <p>Source technical expertise in line with the scope of the project/programme.</p> <p>Verify technical reports and project conceptualization.</p> <p>Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against AF requirements.</p> <p>Determination of execution modality and local capacity assessment of the national executing entity.</p> <p>Assist in identifying technical partners. Validate partner technical abilities. Obtain clearances from AF.</p> | \$ 117,470      |

|                                      |   |               |
|--------------------------------------|---|---------------|
| <b>Development &amp; Preparation</b> | <p>Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project/programme.</p> <p>Source technical expertise in line with the scope of the project/programme needs.</p> <p>Verify technical reports and project conceptualization.</p> <p>Verify technical soundness, quality of preparation, and match with AF expectations.</p> <p>Negotiate and obtain clearances by AF. Respond to information requests, arrange revisions etc.</p>   | \$ 156,626.20 |
| <b>Implementation</b>                | <p>Technical support in preparing TORs and verifying expertise for technical positions.</p> <p>Provide technical and operational guidance project teams.</p> <p>Verification of technical validity / match with AF expectations of inception report.</p> <p>Provide technical information as needed to facilitate implementation of the project activities.</p> <p>Provide advisory services as required.</p> <p>Provide technical support, participation as necessary during project activities.</p> <p>Provide troubleshooting support if needed. Provide support and oversight missions as necessary.</p> <p>Provide technical monitoring, progress monitoring, validation and quality assurance throughout.</p> <p>Allocate and monitor Annual Spending Limits based on agreed work plans.</p> <p>Receipt, allocation and reporting to the AFB of financial resources.</p> <p>Oversight and monitoring of AF funds. Return unspent funds to AF.</p> | \$ 352,409    |
| <b>Evaluation and Reporting</b>      | <p>Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting.</p> <p>Participate in briefing / debriefing.</p> <p>Verify technical validity / match with AF expectations of all evaluation and other reports</p>   | \$ 117,470    |

|              |  |            |
|--------------|--|------------|
|              | Undertake technical analysis, validate results, and compile lessons. |            |
|              | Disseminate technical findings                                       |            |
| <b>Total</b> |  | \$ 783,131 |

## **Annex 7: Terms of References for Key Project Staff**

### **Project Manager**

#### Background

The Project Manager (PM) will be selected based on the competitive recruitment, conducted in line with UNDP rules and procedures. The PM will be responsible for the overall management of the Project, including the mobilisation of all project inputs, supervision over project staff, consultants and sub-contractors.

#### Duties and Responsibilities

- Manage the overall conduct of the project.
- Plan the activities of the project and monitor progress against the approved workplan.
- Execute activities by managing personnel, goods and services, training and low-value grants, including drafting terms of reference and work specifications, and overseeing all contractors' work.
- Monitor events as determined in the project monitoring plan, and update the plan as required.
- Provide support for completion of assessments required by UNDP, spot checks and audits.
- Manage requests for the provision of UNDP financial resources through funding advances, direct payments or reimbursement using the FACE form.
- Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports.
- Monitor progress, watch for plan deviations and make course corrections when needed within project board-agreed tolerances to achieve results.
- Ensure that changes are controlled, and problems addressed.
- Perform regular progress reporting to the project board as agreed with the board, including measures to address challenges and opportunities.
- Prepare and submit financial reports to UNDP on a quarterly basis.
- Manage and monitor the project risks – including social and environmental risks - initially identified and submit new risks to the Project Board for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log;
- Capture lessons learned during project implementation.
- Prepare revisions to the multi-year workplan, as needed, as well as annual and quarterly plans if required.
- Prepare the inception report no later than one month after the inception workshop.
- Ensure that the indicators included in the project results framework are monitored annually in advance of the AF PPR submission deadline so that progress can be reported in the AF PPR.
- Prepare the AF PPR;
- Assess major and minor amendments to the project within the parameters set by UNDP-AF;
- Monitor implementation plans including the gender action plan, stakeholder engagement plan, and any environmental and social management plans;
- Monitor and track progress against the AF Core indicators.
- Support the Mid-term review and Terminal Evaluation process.

#### Required skills and expertise

- A university degree (MSc or PhD) in a subject related to natural resource management or environmental sciences.
- At least 5 years of demonstrable project/programme management experience.
- At least 5 years of experience working with ministries, national or provincial institutions that are concerned with natural resource and/or environmental management.



### Competencies

- Strong leadership, managerial and coordination skills, with a demonstrated ability to effectively coordinate the implementation of large multi-stakeholder projects, including financial and technical aspects.
- Ability to effectively manage technical and administrative teams, work with a wide range of stakeholders across various sectors and at all levels, to develop durable partnerships with collaborating agencies.
- Ability to administer budgets, train and work effectively with counterpart staff at all levels and with all groups involved in the project.
- Ability to coordinate and supervise multiple Project Implementation Units in their implementation of technical activities in partnership with a variety of subnational stakeholder groups, including community and government.
- Strong drafting, presentation and reporting skills.
- Strong communication skills, especially in timely and accurate responses to emails.
- Strong computer skills, in particular mastery of all applications of the MS Office package and internet search.
- Strong knowledge about the political and socio-economic context related to climate change adaptation, sustainable natural resource management, environmentally sustainable livelihoods and associated issues;
- Excellent command of English.

### **Project Monitoring and Evaluation Officer / Project Analyst**

Under the overall supervision and guidance of the Project Manager, the M&E Officer will have the responsibility for project monitoring and evaluation. The M&E Officer will work closely with the Communications Officer on knowledge management aspects of the project. Specific responsibilities will include:

- Monitor project progress and participate in the production of progress reports ensuring that they meet the necessary reporting requirements and standards;
- Ensure project's M&E meets the requirements of the Government, the UNDP Country Office, and the Adaptation Fund; develop project-specific M&E tools as necessary;
- Oversee and ensure the implementation of the project's M&E plan, including periodic appraisal of the Project's Theory of Change and Results Framework with reference to actual and potential project progress and results;
- Oversee/develop/coordinate the implementation of the stakeholder engagement plan;
- Oversee and guide the design of surveys/ assessments commissioned for monitoring and evaluating project results;
- Facilitate mid-term and terminal evaluations of the project; including management responses;
- Facilitate annual reviews of the project and produce analytical reports from these annual reviews, including learning and other knowledge management products;
- Support project site M&E and learning missions;
- Visit project sites as and when required to appraise project progress on the ground and validate written progress reports.

The Project M&E Officer will be recruited based on the following qualifications:

- Master's degree, preferably in the field of environmental or natural resources management;
- At least five years of relevant work experience preferably in a project management setting involving multi-lateral/ international funding agency. Previous experience with UN project will be a definite asset;
- Significant experience in collating, analysing and writing up results for reporting purposes;
- Very good knowledge of results-based management and project cycle management, particularly with regards to M&E approach and methods. Formal training in RBM/ PCM will be a definite asset;
- Knowledge and working experience of the application of gender mainstreaming in international projects;
- Understanding of climate change adaptation, sustainable natural resource management, environmentally sustainable livelihoods and associated issues;

- Very good inter-personal skills;
- Proficiency in computer application and information technology.
- Excellent language skills in English (writing, speaking and reading).

#### **Procurement Officer**

Under the guidance and supervision of the Project Manager, Procurement Officer will carry out the following tasks:

- Assist to the Project Manager in designing the Procurement Action Plan for the project;
- Contribute to design of the Requests for Quotations, Requests for Proposals, Invitation to Bids, including Terms of References for recruiting short- and long-term consultancies and for the project related activities;
- Management of procurement processes, in full compliance with UNDP rules and procedures;
- Maintenance of the procurement related documents;
- Liaising with the selected vendor on procurement of solicited items;
- Implement proper handover of procured equipment and services.

The Procurement Officer will be recruited based on the following qualifications:

- University degree in a relevant subject area;
- At least three years of work experience preferably in a project on climate change adaptation, sustainable natural resource management, environmentally sustainable livelihoods and associated issues;
- Previous experience with UN project will be a definite asset;
- Very good inter-personal skills;
- Proficiency in the use of computer software applications especially MS Word and MS Excel.
- Excellent language skills in English (writing, speaking and reading).

#### **Project Admin./Finance Officer**

Under the guidance and supervision of the Project Manager, the Project Admin./Finance Officer will have the following specific responsibilities:

- Conduct, under close supervision of the Project Manager, project related procurement of goods and services, in accordance with UNDP rules and regulations;
- Keep records of project funds and expenditures, and ensure all project-related financial documentation are well maintained and readily available when required by the Project Manager;
- Review project expenditures and ensure that project funds are used in compliance with the Project Document and GoI financial rules and procedures;
- Validate and certify FACE forms before submission to UNDP;
- Provide necessary financial information as and when required for project management decisions;
- Provide necessary financial information during project audit(s);
- Review annual budgets and project expenditure reports, and notify the Project Manager if there are any discrepancies or issues;
- Consolidate financial progress reports submitted by the responsible parties for implementation of project activities;
- Liaise and follow up with the responsible parties for implementation of project activities in matters related to project funds and financial progress reports.

The Project Admin./Finance Officer will be recruited based on the following qualifications:

- University degree in accounting/ financial management;

- At least five years of relevant work experience preferably in a project management setting involving multi-lateral/ international funding agency. Previous experience with UNDP or UN project will be a definite asset;
- Proficiency in the use of computer software applications particularly MS Excel;
- Excellent language skills in English (writing, speaking and reading).

**Project Gender Officer (part-time, consultancy contract)**

Under the overall supervision and guidance of the Project Manager, the Gender Officer will have the responsibility for the implementation of the Gender Action Plan. The Gender Officer will work closely with the M&E Officer, Safeguards Officer and Communications Officers on related aspects of project implementation, reporting, monitoring, evaluation and communication. Specific responsibilities will include:

- Monitor progress in implementation of the project Gender Action Plan ensuring that targets are fully met and the reporting requirements are fulfilled;
- Oversee/develop/coordinate implementation of all gender-related work;
- Review the Gender Action Plan annually, and update and revise corresponding management plans as necessary;
- Work with the M&E officer and Safeguards Officer to ensure reporting, monitoring and evaluation fully address the gender issues of the project;

The Project Gender Officer will be recruited based on the following qualifications:

- Master’s degree in gender studies, gender and development, environment, sustainable development or closely related area.
- Demonstrated understanding of issues related to gender and sustainable development; at least 5 years of practical working experience in gender mainstreaming, women’s empowerment and sustainable development in relevant Country/Region/Area of Work;
- Proven experience in gender issues in Country/Region/Area of Work
- Previous experience with UN projects will be a definite asset;
- Demonstrated understanding of the links between sustainable development, social and gender issues;
- Experience in gender responsive capacity building;
- Experience with project development and results-based management methodologies is highly desired/required;
- Excellent analytical, writing, advocacy, presentation, and communications skills.
- Excellent language skills in English (writing, speaking and reading).

**Project Safeguards Officer (consultancy contract, part-time)**

Under the overall supervision and guidance of the Project Manager, the Environmental and Social Safeguards Officer will have the responsibility for the implementation of the environmental and social management plan/framework. The Safeguards Officer will work closely with the M&E Officer and Communications Officers on related aspects of project reporting, monitoring, evaluation and communication. Specific responsibilities will include:

- Monitor progress in development/implementation of the project ESMP/ESMF ensuring that UNDPs SES policy is fully met, and the reporting requirements are fulfilled;
- Oversee/develop/coordinate implementation of all safeguard related plans;
- Ensure social and environmental grievances are managed effectively and transparently;
- Review the SESP annually, and update and revise corresponding risk log; mitigation/management plans as necessary;
- Ensure full disclosure with concerned stakeholders;
- Ensure environmental and social risks are identified, avoided, mitigated and managed throughout project implementation;

- Work with the M&E officer to ensure reporting, monitoring and evaluation fully address the safeguard issues of the project;

The Project Safeguards Officer will be recruited based on the following qualifications:

- University degree in a relevant subject area, preferably in the field of community development or natural resource / environmental management;
- An environmental and safeguards qualification (certificate, demonstrated experience)
- At least three years of relevant work experience of communications for project or programme implementation, ideally involving international donors. Previous experience with UN projects will be a definite asset;
- Previous experience in developing and implementing environmental and social safeguard strategies for organizations or projects
- Very good inter-personal skills
- Proficiency in computer application and information technology.
- Excellent language skills in English (writing, speaking and reading).

#### **Project Communications Officer (part-time, consultancy contract)**

Under the overall supervision and guidance of the Project Manager, the Communications Officer will have the responsibility for leading knowledge management outputs in Component 4 and developing the project communications strategy at the project outset and coordinating its implementation across all project components. The Communications Officer will work closely with the M&E Officer on knowledge management aspects of the project. Specific responsibilities will include:

- Develop a project communications strategy / plan, incorporate it with the annual work plans and update it annually in consultation with project stakeholders; coordinate its implementation
- Coordinate the implementation of knowledge management outputs of the project;
- Coordinate and oversee the implementation of public awareness activities across all project components;
- Facilitate the design and maintenance of the project website/webpages and ensure it is up-to-date and dynamic;
- Facilitate learning and sharing of knowledge and experiences relevant to the project;

The Project Communications Officer will be recruited based on the following qualifications:

- University degree in a relevant subject area;
- At least three years of relevant work experience of communications work for project or programme implementation, ideally involving international donors. Previous experience with UN projects will be a definite asset;
- Previous experience in developing and implementing communications strategies for organizations or projects
- Strong professional working capacity to use information and communications technology, specifically including website design and desk top publishing software
- Understanding of climate change adaptation, sustainable natural resource management, environmentally sustainable livelihoods and associated issues;
- Very good inter-personal skills
- Excellent language skills in English (writing, speaking and reading).