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**PROJECT DOCUMENT**

**TAJKISTAN**

**Project Title:** Building Climate Resilience in Agriculture and Water Sectors of Rural Tajikistan (BCRinAW)

**Project Number:** 00114009

**Implementing Partner:** UNDP Tajikistan

**Start Date:** Apr 2019 **End Date:** Mar 2022 **PAC Meeting Date:** 21 Feb 2019

**Brief Description**

The main objective of the project is to build climate resilience in rural areas of Tajikistan by scaling up successful adaptation practices and technologies in *agriculture and water sectors* at the community-based level and facilitating access to new and existing funding opportunities.

Other objectives of the project include (i) support integration of best tested technologies and practices on climate adaptation in rural mountainous areas; (ii) build capacity of local population and generate new knowledge on climate resilient pathways; (iii) facilitate access to funding opportunities through existing “green” credit programs at the community-based level and new investment packages, and (iv) feed-in national climate and sector-based policy by informing about successful cases emerged from bottom-up approach of the project.

The proposed project is in line with priorities of the National Development Strategy until 2030, and corresponds to the Government’s commitments on Paris Agreement on Climate Change and SDG 13 in particular.

<p><b>Contributing to UNDAF and CPD Outcome 6:</b> People in Tajikistan are more resilient to natural and man-made disasters and benefit from improved policy and operational frameworks for environmental protection and management of natural resources.</p> <p><b>Contributing to CPD Output 6.2:</b> Effective institutional, legislative, policy frameworks in place to enhance the implementation of disaster and climate risk management measures at national and sub-national levels</p> <p><b>Contributing to CPD Output 6.3:</b> Strengthened livelihoods through solutions for disaster and climate risk management</p> <p><b>Indicative Output(s) with gender marker<sup>1</sup>:</b> GEN1</p>	<b>Total resources required:</b>	\$ 1,863,979	
	<b>Resources allocated:</b>	<b>Russian Trust Fund</b>	\$831,179
		<b>Parallel Co-Financing through other UNDP projects</b>	\$832,800
		<b>Govt. In-Kind</b>	\$200,000
	<b>Unfunded:</b>		
<b>PAC Meeting Date:</b>	21.02.2019		

Agreed by UNDP Tajikistan

Ms. Prarthna Mehta, UNDP Resident Representative

Signature:

Date: 4/4/2019



<sup>1</sup>:The Gender Marker measures how much a project invests in gender equality and women’s empowerment. Select one for each output: GEN3 (Gender equality as a principle objective); GEN2 (Gender equality as a significant objective); GEN1 (Limited contribution to gender equality); GEN0 (No contribution to gender quality)

N.U.

## ABBREVIATIONS

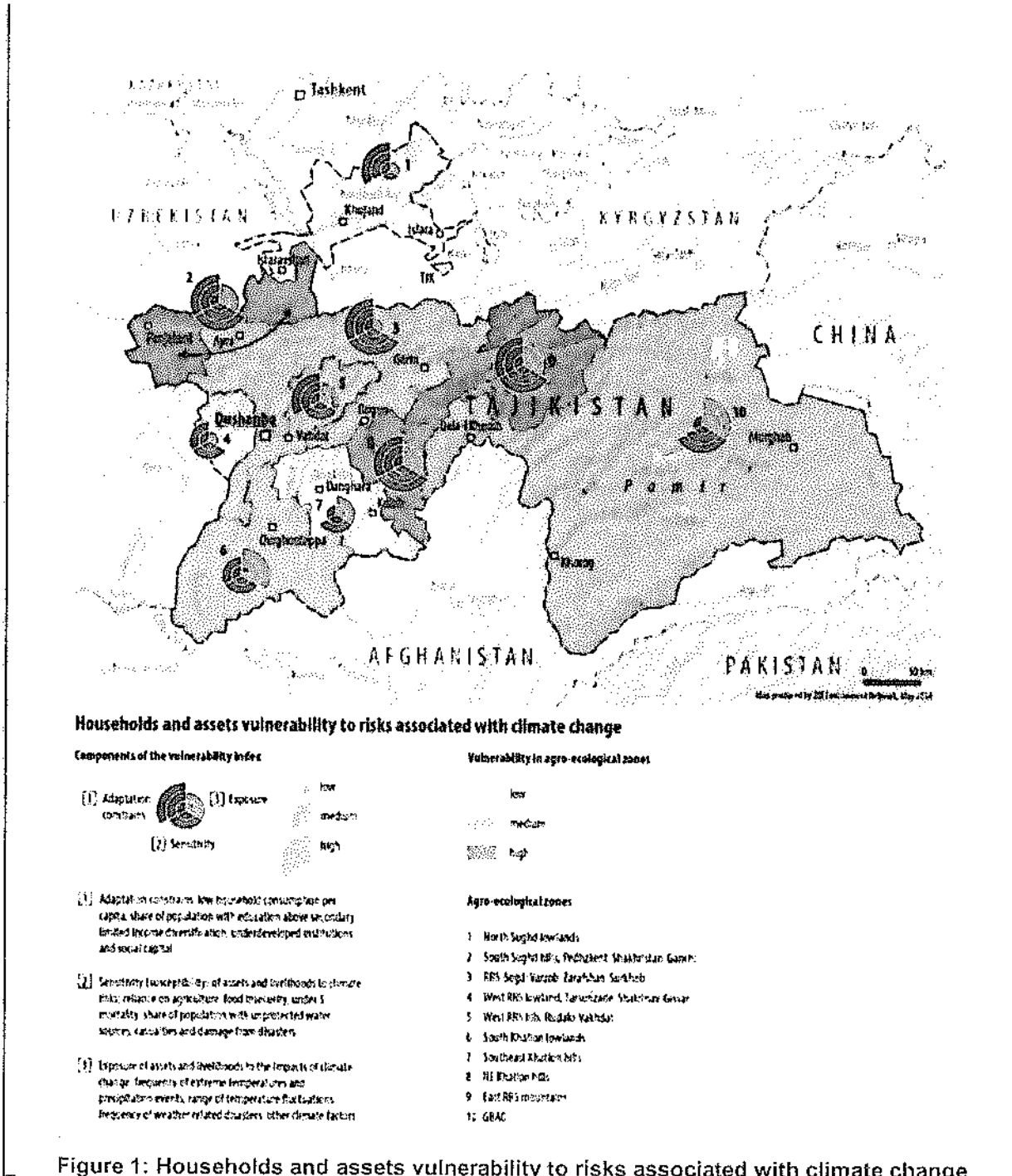
AF	Adaptation Fund
BCRinAW	Building Climate Resilience in Agriculture and Water Sectors
CACILM	Central Asian Countries Initiative for Land Management
CAMP4ASB	Climate Adaptation and Mitigation Programme for Aral Sea Basin
CEP	Committee for Environmental Protection
CPD	Country Programme Document
ELMARL	Environmental Land Management and Rural Livelihoods
EU	European Union
FAO	Food and Agriculture Organization
FBUR	Biennial Update Report
4NC	Fourth National Communication
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Fund
GIZ	Die Deutsche Gesellschaft für Internationale Zusammenarbeit
ICARDA	International Center for Agricultural Research in the Dry Areas
IFAD	International Fund for Agricultural Development
INDC	Intended Nationally Determined Contributions
ISED	International Sustainable Energy Development Centre
LDNF	Land Degradation Neutrality Fund
MDB	Multilateral Development Bank
MEWR	Ministry of Energy and Water Resources
NAP	National Adaptation Program
PACC	Paris Agreement on Climate Change
PPCR	Pilot Programme for Climate Resilience
RTF	Russian Trust Fund
SAH	State Agency on Hydrometeorology
SDG	Sustainable Development Goal
SGP	Small Grants Program
SLM	Sustainable Land Management
SSC	South-South Cooperation
ToC	Theory of Change
TrC	Triangular Cooperation
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WFP	World Food Programme
WOCAT	World Overview of Conservation Approaches and Technologies

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Melting of glaciers, fluctuation of river runoff and its effect on hydropower production and agriculture is few among numerous phenomena of climate change impacts in Tajikistan. While in the past decades the total glacial area was recorded as 6% out of total country's territory, by 2013 this estimate equalled to 5%.

Due to high aridity, Tajikistan is already suffering from low agricultural productivity, water stress, and high losses from natural disasters. While mudflows and droughts seriously impact the agricultural development, avalanches and glacial lake outbursts challenge mountain tourism. For example, the drought of 2001-2002 and 2008 caused a critical drop in crop yields by 30-40% in most dry farming areas<sup>4</sup>.



<sup>4</sup> Second National Communication under UNFCCC (2008); Available at: <http://unfccc.int/resource/docs/natc/tainc2.pdf> Last accessed on June 30, 2018

effective on-farming techniques the project will significantly *enhance natural carbon sinks* and *save water*, avoiding *land degradation* and improve *state of environment*.

Having in mind **gender sensitive** circumstances of rural livelihoods in Tajikistan the project's strategy is to assure inclusion of women in its activities. BCRinAW will learn lessons from PPCR and UNDP projects in particular, and complement its efforts in bringing women into a decision making role (determining and implementing adaptation measures, capacity building on handling and maintaining technological infrastructure, etc.) by increasing their involvement in community- and institutional set-up meetings, and supporting their decisions made on financing. **Project approach and selected area**

The proposed project is seen as a **transformation from rural development actions to long-term climate resilient pathways**, using knowledge and capacity generated by current interventions but adding value to addressing emerging risks associated with climate and environmental change. Approach of the project is seen in undertaking both bottom-up and top-down schemes. While community-based interventions are supposed to positively impact on local environment and rural livelihoods, national scale effect will be evident from bringing best practices up-scaled by the project to the decision making process and formulating respective sector-based adaptation plans.

The project is expected to operate in Zeravshan Valley. Main criteria to select this geographic area for project implementation are the following:

First, Zeravshan valley and its mountainous range in particular are considered highly **vulnerable to climate change**<sup>6</sup>.

- **Melting of glaciers and fluctuation in river runoff** are main indicators of climate warming in the valley. During 1927-2010 massive Zeravshan Glacier retreated for as much as 2.5 km, and substantially contributed to the overall tendency of glacial degradation (0.5-0.8% per year) countrywide<sup>7</sup>. High altitudes of Zeravshan valley face extreme air temperature in winter and summer seasons. Intensive floods and mudflows in spring coupled with droughts in summer and autumn add on to the level of extreme climate risks<sup>8</sup>.
- The year 2018 was one of the hottest for Tajikistan. Observations of rural inhabitants showed that with quite limited precipitation in winter, Zeravshan River was hardly replenished, and access to irrigation is a serious challenge for agricultural activities. Due to high air temperatures (July 2018 recorded dozens days in row with T exceeding 40°C) such phenomenon as rock falls became more prominent in the area, bringing risks for life and security.

Second, in Zeravshan Valley, income is mostly generated from **agricultural activities**, which meet one of the criteria of project direction. Crop and cereal cultivation, vineyards and horticulture along with livestock are key development segments of agriculture. However, depressing state of land and environment coupled with climate-induced disasters and water deficiency pose a serious risk to agricultural sustainability. Hence, value of water and land here are considered with a due caution and provides a room for expansion of climate adaptation practices.

Finally, there are a number of UNDP projects on sustainable rural development and social inclusion operational in Zeravshan Valley, and which are funded by Russian Government. This brings a better insight to the overall impact of various interventions in this particular geographic area and adds value to complementarity, cooperation and efficiency of funds used.

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<sup>6</sup> World Bank 2012, Economic and Distributional Impact of Climate Change in Tajikistan; Available at [http://siteresources.worldbank.org/INTECALEA/Resources/1040211-1251905880790/KB50\\_Climate\\_Change\\_Tajikistan.pdf](http://siteresources.worldbank.org/INTECALEA/Resources/1040211-1251905880790/KB50_Climate_Change_Tajikistan.pdf) Last accessed on June 30, 2018 and Third National Communication, 2014

<sup>7</sup> Third National Communication under UNFCCC (2014); Available at: [http://unfccc.int/resource/docs/nato/tiknc3\\_eng.pdf](http://unfccc.int/resource/docs/nato/tiknc3_eng.pdf) Last accessed on June 30, 2018

<sup>8</sup> Data: Government of Tajikistan's Committee of Emergency Situations



### III. RESULTS AND PARTNERSHIPS

#### Expected results

Strategic goal of the project is to reduce vulnerability to climate change and assure long-term sustainable development growth in Tajikistan.

The main objective of the project is to **build climate resilience in rural areas** of Tajikistan by scaling up successful adaptation practices and technologies in *agriculture and water sectors* at the community-based level and facilitating access to new and existing funding opportunities.

The project will operate in 5 selected jamoats of Zeravshan Valley, which were shortlisted during the project development phase.

The overall target of the project is to minimize the level of vulnerability to climate change for at least **30,000** of people directly and **200,000 of population** indirectly by supporting scale-up of best climate adaptation practices in rural areas of Tajikistan. It is expected that out of total direct and indirect beneficiaries, **50% will be women**.

Other expected targets are:

- At least 20% of water is saved in the project demo area by integrating climate-smart irrigation practices
- At least 50% of project beneficiaries report increase in agricultural productivity by 15%, which is resulted from climate resilient measures
- At least 50 project beneficiaries got access to new funding opportunities through existing investment programs at the community-based level

These targets are supposed to safeguard overall development investments in the climate prone areas of the country and promote climate smart interventions in key economic sectors, which combined with adequate policy measures will address climate risks in most vulnerable areas.

#### - **Project components and main activities**

The project foresees a combination of bottom-up and top-down approaches. While community-based interventions aim to up-scale best practices on the ground and receive tangible and measurable results to sustain rural livelihoods in the face of climate change, top-down scheme intends to navigate these practices at the level of national decision-making process.

The project envisages one Component, which will be resulted in **enhanced climate resilience in agriculture and water sectors of rural Tajikistan** and supported by four inter-related outputs. While Output 1.1 showcases replication of best practices and technologies on climate adaptation, Output 1.2 and 1.3 aim to build capacities and knowledge of rural population and explore new funding opportunities for climate resilient pathways, and Output 1.4 link project results to national climate policy.

More details on specific results of each of the Outputs are provided below:

#### - **Output 1.1: The best practices and technologies on climate adaptation in agriculture and water sectors up-scaled**

While most of population in Tajikistan resides in rural areas, and almost half of its formal workforce is concentrated in agriculture, productivity remains low while poverty and food insecurity rates high. Targeting and sustaining a boost in agricultural productivity in poor rural agriculture communities is a national strategic priority, which needs to take into account climate change and variability. This means that any intervention, which aims to increase agricultural production, has to be carefully supplied by a practice or technology to bring a multi-scale benefit to socio-economic and environment developments in the face of climate change.

Overview on practices/ technologies and the projects, where they have been tested and proved to be effective, are provided in **Table 1**, while detailed description of the practice/ technology on climate adaptation is enclosed to **Annex 7**.

Table 1: Overview of best practices and technologies on climate adaptation

Category	Practice/ Technology	Practice/ technology tested on the ground
Restoration/ rehabilitation of degraded land	1. Phytomelioration practices 2. Afforestation of degraded land 3. Agroforestry on poor soils	- ICARDA <sup>16</sup> , CACILM <sup>17</sup> - UNDP <sup>18</sup> , ELMARL <sup>19</sup> , SGP <sup>20</sup> - UNDP
On-farm water efficiency and water saving	4. Water-saving practices such as drip irrigation 5. Water harvesting or retention and temporary storage	- ELMARL, UNDP - ICARDA, CACILM - ICARDA, CACILM
Conservation agriculture and diversification of crops	6. Minimum tillage agriculture 7. Intercropping trees and crops 8. Intensive orchards 9. Greenhouses	- ICARDA - ELMARL, CACILM - ELMARL - ELMARL, Acted <sup>21</sup> - ELMARL, CACILM, UNDP
Climate risk reduction	10. River bank stabilization and protection of windbreaks (trees, shrubs) 11. Mudflow control systems	- PPCR <sup>22</sup> projects - UNDP

Each of the proposed practice has to be accompanied by other solutions to make a combined effect. For example, if one practice aims to reduce climate risks by introducing river bank protection, other practices may foresee traditional horticulture on the sloped area, which, being coupled with drip irrigation technologies will maximize the combined effect on the selected plot. Benefits will result in more stable and productive land, reduced mudflow risks and damage for agricultural yields, regular and efficient water supply and increase in economic profit from fruit and fodder harvest.

Practices will be selected to meet the following criteria:

- 1) Should be of high priority in addressing climate impacts in agriculture and water sectors in the targeted project area (village, jamoat or district); examples include any of the practice from the abovementioned category
- 2) Should be able to show tangible result and have a strong baseline story (e.g. amount of saved water, level of de-risking crops and lands)
- 3) Should meet the agenda of jamoat/district development plans and able to contribute to local economy and trade (income generation, job creation)
- 4) Should demonstrate a cost-effective value and ability to replicate practice in similar agro-ecologic and climatic zone country wide and beyond
- 5) Should be ecologically friendly and demonstrate no adverse impact on the state of environment

It is expected that these practices will be implemented by Dehkan Farms, which given their ownership rights, encounter both female and male farmers. The role of monitor will be played by UNDP Aini Area Office, while the process of validation and appraisal of plots and climate resilient

<sup>16</sup> ICARDA - The International Center for Agricultural Research in the Dry Areas (ICARDA) implements research projects, which are primarily targeting SLM activities in Central Asian countries, including Tajikistan

<sup>17</sup> CACILM – Central Asian Countries Initiative for Land Management initiative, also aims to upscale best practices on SLM and climate resilience in all countries of Central Asia, including Tajikistan

<sup>18</sup> UNDP Tajikistan also showcased a number of in-field projects with best practices on climate adaptation and SLM

<sup>19</sup> ELMARL – Environmental Land Management and Rural Livelihoods Project, one of the joint World Bank, PPCR and GEF initiative, implemented by CEP in 2013-2018 in Tajikistan

<sup>20</sup> SGP – Small Grants Program – also UNDP implemented initiative with small-scale sub-projects to tackle environmental issues through sustainable development. Climate adaptation practices and sustainable land management are amongst the most popular in the program agenda

<sup>21</sup> Acted – international NGO, which operates in Tajikistan, also shared experiences on best tested practices in Zeravshan Valley. Intensive orchards or horticulture is amongst best perceivable and economically viable for rural population

<sup>22</sup> PPCR – Pilot Program for Climate Resilience – projects, which have community-based initiatives and programs with tested practices and initiatives on SLM, on-farm water management and climate adaptation/mitigation country-wide.





Trainings and methods of learning will be planned to meet the requirements of rural populations' level of existing knowledge on climate change, language of instruction and gender equity. A particular focus will be given to interactive coaching and peer-to-peer communication with low-cost budget and long-term knowledge benefits.

It is expected that the proposed project will be able to collect lots of useful data on climate related practices from the field, as well as refer to existing cases of other projects in Zeravshan Valley. Hence, **production of new knowledge flagship products** in a form of working papers and case studies will be a priority for this activity. On-site research and assessments will be key methodological tools to release such products and thus replenish existing climate evidence base. An example of flagship knowledge product will foresee a comprehensive study on "Cost of no-adaptation and economic benefits from climate resilience" for Tajikistan's case, which will further be a reference material for cooperation and resource mobilization.

Media and on-hand audio-visual technologies will be used to assure regular knowledge dissemination among rural population. As it was showcased from ELMARL project, shooting low-budget video with master classes on SLM or on-farm water saving practices made a big impact on people's perception of climate resilience and added a value to replication process. UNDP will explore opportunities to use this experience in the BCRinAW and feed-in its practice to existing knowledge platforms (e.g. slmtj.net, iqlim.tj, tj.undp.org) and global information nets, such as Global Adaptation Network, NAP Global Network, UNDP Knowledge Platform and Communities of Practice and WOCAT.

#### Activities:

- 1.2.1. Conduct capacity needs rapid assessment to determine categories of technical trainings to be planned and delivered; develop training modules with field visits.
- 1.2.2. Plan and deliver on-site trainings in targeted project areas (community-based level).
- 1.2.3. Conduct peer-to-peer site visits around targeted project sites (intra-rayon level).
- 1.2.4. Plan and conduct study tour to Russian Federation (effective adaptation and low-carbon development practices).
- 1.2.5. Conduct an innovative study on "Cost of no-adaptation and economic benefits from climate resilience" and a flagship product.
- 1.2.6. Develop a package of hand-made community video for rural dissemination

#### **Output 1.3: Access to existing and new funding packages facilitated**

Over the past few years, international donor community in Tajikistan is paying an adequate attention to channel investments to rural communities to supporting their climate resilient livelihoods. While small scale grants provide a relatively narrow window for escalating business opportunities, loans stand amongst those investment mechanisms, which are better utilized for start-ups and continuous entrepreneurship. However, main challenges in using loans in Tajikistan are associated with (i) enormously high percentage rate – up to 35% per annum – for standard loan conditions and (ii) low awareness of farmers about more attractive loans, which are subsidized by new climate related programs operational under MDBs' initiatives.

The main objective of this output is to sustain implementation of best practices and technologies on climate adaptation in agriculture and water sectors by facilitating access to existing and new funding packages available under CAMP4ASB<sup>23</sup> and CLIMADAPT<sup>24</sup> Programs (Investment Portfolio of the World Bank and European Bank for Reconstruction and Development respectively) and build capacities in formulating bankable business plans, which are based on experience acquired under BCRinAW.

<sup>23</sup> See more on micro-credit program in the frameworks of CAMP4ASB project at <http://www.camp4asb.tj/uslugi/obshchie-uslovija-kreditnoi-linii> Last accessed on June 28, 2018

<sup>24</sup> See more on CLIMADAPT Credit Program at [www.climadapt.tj](http://www.climadapt.tj) Last accessed on June 28, 2018

- 1.4.3. Contribute to the process of national reporting under UNFCCC (4NC and BUR).  
 1.4.4. Contribute to capacity building programs and knowledge database under NAP process.

- **Resources required to achieve the expected results:**

The below table provides an overview of estimated expenditures under the project by activities and partners' contribution:

Table 2: Project Budget

Component/Activity	Requested budget from RTFD (USD)	UNDP co-funding (USD)	Government contribution (in-kind)
Component 1: Climate resilience in agriculture and water sectors of Tajikistan is significantly enhanced			
Activity 1.1: Up-scale best practices and technologies on climate adaptation in agriculture and water sectors	410,000	395,000	52,500
Activity 1.2: Build capacity, generate and disseminate new knowledge on climate resilient solutions	129,000	116,000	55,000
Activity 1.3: Facilitate access to existing and new funding packages	20,000	55,000	37,500
Activity 1.4: Inform national climate policy about project results	5,000	60,000	55,000
<b>Subtotal Programme:</b>	<b>564,000</b>	<b>626,000</b>	<b>200,000</b>
<b>Project Management</b>	<b>205,610</b>	<b>206,800</b>	<b>-</b>
8% GMS	61,569	-	-
<b>Subtotal Project Management:</b>	<b>831,179</b>	<b>832,800</b>	<b>200,000</b>
<b>TOTAL:</b>		<b>1,663,979</b>	
		<b>TOTAL incl. in-kind:</b>	<b>1,863,979</b>

- **Partnerships and stakeholder engagement**

A stakeholder engagement process is evident at all levels of the project implementation: the project team consulted with a wide range of project stakeholders during the (i) project preparation (National Ministries and Departments, International Development Agencies, MDBs, UN projects) and (ii) formulation of a package with technologies and practices on climate adaptation, particularly for the selected jamoats and pre-determined plots. The same approach will be pursued throughout the project implementation and evaluation: all respective stakeholders will be involved and consulted.

Key national partner of the project will be the Committee for Environmental Protection (CEP) under the Government of the Republic of Tajikistan, which is the governmental entity, leading the national climate policy. The main role of the CEP is to assure a close coordination between all related agencies and departments at the country level throughout the project implementation; key intervention is also seen in informing the decision making process by key achievements and results of BCRinAW. National counterparts at the district level are local authorities and heads of selected jamoats. Along with rural population, they will take a proactive part in validation, appraisal and integration process of plots, technologies and practices.

Main beneficiaries and target group of the project are rural communities of Zeravshan Valley, living in most vulnerable and climate risk-prone geographic sites, whose livelihoods are dependent on agriculture and access to water resources. Women will be approached with a due attention, especially given high male migration rate in Tajikistan, and the burden they are carrying to handle lands and households. Engagement of rural women will be based on lessons learned from UNDP RTDF Project on "Promotion of social and economic opportunities for women and youth in Zeravshan Valley of Tajikistan".

3. Capacity building coupled with access to funding packages (e.g. subsidized loans) for climate resilience will assure sustainability and replication of tested adaptation practices on the ground.

Key risks are linked with operational type of potential shortcomings and are reflected in **Annex 1: Project Risk Log**. Nevertheless there are certain risks, which might challenge the expected results as per ToC and which are not dependent on the project performance. Rather, they are associated with the country based economic circumstances and climate impacts, including (a) male migration and its impact on additional burden for rural women in maintaining technological infrastructure, (b) poverty and limited access to finance resources, and (c) seasonality and shift in vegetation period.

#### - **Triangular Cooperation (SSC/TrC)**

The project is to address sensitive aspects of agricultural development in the climate change context in Tajikistan and identify best practical experience in managing climate risks. In order to facilitate cooperation and elaborate approaches to climate change mitigation and adaptation measures, the project will involve the Russian organization with the corresponding competence and expertise, to assure a close triangular cooperation.

Since 2008 **International Sustainable Energy Development Centre** under the auspices of UNESCO (**ISED**C) has been recognized as one of the Russian leading organizations in providing scientific and methodological support of policies in clean, efficient, affordable and reliable services along with accelerating efforts aimed at mitigation and prevention of negative consequences of climate changes. ISEDC operations have a full conformity with the UN Sustainable Development Agenda in Russia focusing on the SDG 4, 7 and 13.

The intended scope of the project cooperation will include:

- Study tour to ISEDC partners to learn about effective climate mitigation and adaptation practices in energy sectors and/ farming. The tour will provide site visits and an exchange of views on most efficient approaches to building climate resilience in urban and rural settings.
- Meetings or webinars with experts on climate change economics and green investments invited by ISEDC, to facilitate access to climate funding.
- Qualification trainings on climate smart technologies in agriculture and water management focusing on available energy efficient and resource saving techniques provided by ISEDC during the visit to Moscow, Dushanbe/Khujand or online.

#### - **Communication and knowledge management**

Over the past few years Tajikistan enjoyed large-scale interventions on climate change, including those emerged from PPCR funded initiatives, and supported by GEF and MDBs. However, little had been done to contribute to new knowledge on economics of climate change at the country level, especially given recent tendencies in accelerating funding for adaptation measures at the community-based level. ADB made an attempt to "...evaluating the costs and benefits of implementing adaptation measures to reduce the adverse effects of climate change on energy and water resources in the most vulnerable countries in Central and West Asia, incl. Afghanistan, the Kyrgyz Republic, and Tajikistan" within its regional project<sup>25</sup>. Yet, observations showed that Tajikistan is still lacking updates on *estimated costs for taking no adaptation measures* at all, given such correlated factors, as aggravating exposure to climate risks, poverty, male migration, and low technical capacity and awareness of funding opportunities amongst rural population.

The proposed project is expected to conduct a research based analysis on "Cost of no-adaptation and economic benefits from climate resilience" with a reference to practical cases, emerged from

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<sup>25</sup> More information about the project is found at: [https://www.adb.org/sites/default/files/project-documents/44068/44068-012-tacr-en\\_0.pdf](https://www.adb.org/sites/default/files/project-documents/44068/44068-012-tacr-en_0.pdf) Last accessed on July 27, 2018

- Highlight the role of women and girls/gender roles in community- and institutional set-up meetings, and supporting their decisions made on financing.

Mutual learning and exchanges of experiences within the Project and between partners will be strengthened. DRMP will develop communication plan, outlining key messages, knowledge and communication materials to be produced in line with donor's visibility guidelines.

#### - **Sustainability and Scaling Up**

Sustainability of the project will be seen through multiple angles:

First, integration of climate technologies and practices on climate adaptation and their close link with livelihoods development matches the needs of rural population to gain on resilient and economically viable pathways. Second, given the link of the project to getting access to subsidized loans in the frameworks of CAMP4ASB and CLIMADAPT, it will stimulate population to up-scale the project activities and follow-up on new ideas. UNDP and MDBs partners will collaborate closely to assure the beneficiaries are qualified enough to apply for loans and are equipped with technical skills to perform baseline calculations and monitor the progress – one of the most important prerequisites to getting funds under the respective investment packages.

The project will also help accelerate full proposal development and access to the climate finance in Tajikistan, which is still hampered due to insufficient project preparation funding available, as well as lack of expertise and capacities to develop numerous feasibility studies.

Sustainability will also be assured by productive assets generated by the project. Local population will further use technological systems and supplementary devices along with knowledge and capacity they had acquired, upon the project closure, and keep on contributing to effective land and water management practices.

Finally, enhanced national ownership will also be an essential asset of the project's sustainability. It will be assured by: (i) taking into account decisions made by the beneficiaries on types of technological support they would like to receive through appraisal process, and by (ii) mainstreaming project achievements and results to the climate policy and NAP process at the country level.

## **IV. PROJECT MANAGEMENT**

#### - **Cost Efficiency and Effectiveness**

The project will utilize a portfolio management approach by leveraging activities and partnerships with other initiatives/projects, implemented by UNDP, to ensure cost-efficiency and effectiveness of the resources.

In fact, the proposed BCRinAW project is a direct result of the UNDP RTFD's project "Facilitating Climate Resilience in Tajikistan", which *inter alia* aimed to mobilize investments for climate change initiatives in Tajikistan by developing targeted project proposals under different donor packages. Hence, the new BCRinAW will build on lessons from on-going project on facilitating climate resilience and add value to RTFD allocated resources.

The project will closely collaborate with UNDP on-going initiative on accessing Adaptation Fund's (AF) resources within "*An integrated landscape approach to enhancing the climate resilience of small-scale farmers and pastoralists in Tajikistan*" with the total value of \$US 10M to start its implementation by UNDP Tajikistan across the country in 2019. Partnership with this project foresees support in replication of best practices on topsoil anti-erosion measures and water catchment at the level of villages with a specific focus on targeted project areas in Zeravshan Valley as well as to escalate new knowledge on climate resilient measures from a particular

results (outputs) specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

**UNDP DRMP Project Analyst (100%)** role provides project administration, management and technical support to the Programme Manager as required by the needs of the project.

**UNDP DRMP Administrative/Finance Assistant (AFA) (50%)** cost-shared with other projects under UNDP's respective Programme, will be responsible for all administrative, including human resources, and financial management of the Project in line with UNDP financial rules and regulations. As well, the AFA will provide the required logistical and else administrative support in organizing project related high level meetings and events.

**UNDP DRMP Project Engineer (100%)** cost-shared with other projects, will be responsible for compiling the technical specifications of local technologies and systems (hard components), which will be procured under this project. Within his/her established level of authority, he/she will also be responsible for procurement and contracts management from planning of the tender to handover of the goods and services to target beneficiaries.

**UNDP DRMP Driver(s) (100%)** cost-shared with other will provide driving services and will also ensure safety of staff while on missions.

**International Technical Advisor, 1 part-time consultancy (100%)** role provides technical advice and guidance to development of best practices on climate adaptation, formulation of capacity building packages and delivery of trainings, development of knowledge products and mainstreaming project results to national climate policy.

See **Annex 4: ToRs of key management positions** for more details.

According to the Programme and Operational Policies and Procedures of UNDP, the following Policies are applied for Direct Implementation Modality:

- All Policies and Procedures applicable to UNDP operations (i.e. procurement of goods and services, recruitment of project personnel, training activities, etc).
- All UNDP **Financial Rules and Regulations**:
- o **Financial management:** In the context of DIM modality, the financial software programme - ATLAS will be applied. ATLAS is the management information system which ensures accuracy and transparency of financial information. UNDP country office uses ATLAS to keep track of the financial status of the project at all times, to control expenses, to handle outstanding commitments, to make payments and to monitor the performance of contractors. As such, Atlas is used for both financial management and substantive monitoring.

**Financial reporting:** The financial reporting and control mechanisms used to monitor DIM Project include: 1) Combined Delivery Report (CDR), 2) Project Budget Balance and 3) Project transaction detail report. The Combined Delivery Reporting is mandatory and reflects the expenses and funds utilized on a project. This report is run on a quarterly basis and is signed by UNDP Resident Representative or Country Director on an annually basis. The Project Budget Balance is used to monitor and manage budgetary availability of the Project. The Project transaction detail report is very detailed and is used on a daily basis to monitor daily transactions and expenses.



## VI. MONITORING AND EVALUATION

In accordance with UNDP's programming policies and procedures, the project will be monitored through the following monitoring and evaluation plans:

### Monitoring Plan

Monitoring Activity	Purpose	Frequency	Expected Action	Partners (if joint)	Cost (if any)
Track results progress	Progress data against the results indicators in the RRF will be collected and analyzed to assess the progress of the project in achieving the agreed outputs.	In the frequency required for each indicator	Slower than expected progress will be addressed by project management.	Committee for Environmental Protection (CEP)	500 \$
Monitor and Manage Risk	Identify specific risks that may threaten achievement of intended results. Identify and monitor risk management actions using a risk log. This includes monitoring measures and plans that may have been required as per UNDP's Social and Environmental Standards. Audits will be conducted in accordance with UNDP's audit policy to manage financial risk.	Quarterly	Risks are identified by project management and actions are taken to manage risk. The risk log is actively maintained to keep track of identified risks and actions taken.	Committee for Environmental Protection (CEP)	500\$
Learn	Knowledge, good practices and lessons will be captured regularly, as well as actively sourced from other projects and partners and integrated back into the project.	Annually	Relevant lessons are captured by the project team and used to inform management decisions.	Committee for Environmental Protection (CEP)	800\$
Annual Project Quality Assurance	The quality of the project will be assessed against UNDP's quality standards to identify project strengths and weaknesses and to inform management decision making to improve the project.	Annually	Areas of strength and weakness will be reviewed by project management and used to inform decisions to improve project performance.	Committee for Environmental Protection (CEP)	1000\$
Review and Make Course Corrections	Internal review of data and evidence from all monitoring actions to inform decision making.	Annually	Performance data, risks, lessons and quality will be discussed by the project board and used to make course corrections.	Committee for Environmental Protection (CEP)	500\$
Project Report	A progress report will be presented to the Project Board and key stakeholders, consisting of progress data showing the results achieved against pre-defined annual targets at the output level, the annual project quality rating summary, an updated risk log	Annually, and at the end of the project (final report)		Committee for Environmental Protection (CEP)	1000\$



## VII. MULTI-YEAR WORK PLAN

EXPECTED OUTPUTS	PLANNED ACTIVITIES	Planned Budget by Year (USD)			RESPONSIBLE PARTY	PLANNED BUDGET		
		2018	2019	2020		Funding Source	Budget Description	Amount
<p><b>Outcome 1: Climate resilience in agriculture and water sectors of Tajikistan is significantly enhanced</b></p> <p><b>Baseline:</b></p> <p>1.1 High level of vulnerability of the local population of target districts to climate change;</p> <p>1.2 Lack of irrigation water in target areas;</p> <p>1.3 Agriculture productivity reduced due to climate change impact;</p> <p>1.4 Limited access to funding opportunities in target areas.</p> <p>Gender marker: GEN1</p> <p><b>Indicators:</b></p> <p>1.1. Level of vulnerability to climate change minimized for at least # of people directly, with 20% out of them being women</p> <p>1.2. % of water is saved in the project demo area by integrating climate-smart irrigation practices</p> <p>1.3. (% of project beneficiaries increase in agricultural productivity by 15%, which is resulted from climate resilient measures</p> <p>1.4. # of project beneficiaries</p>	<p><b>Output 1.1. The best practices and technologies on climate adaptation in agriculture and water sectors up-scaled</b></p> <p><b>Actions:</b></p> <p>1.1.1. Validate pre-determined project sites and finalize the selection of climate resilient practices</p> <p>1.1.2. Conduct a joint baseline study and rapid vulnerability assessment to develop (a) monitoring plan and (b) action plan on adaptation in selected villages of the targeted project sites</p> <p>1.1.3. Perform a participatory rural appraisal of selected practices on climate adaptation (agriculture and water sectors) in targeted villages</p> <p>1.1.4. Activate up-scaling process of validated practices in targeted villages</p> <p>1.1.5. Conduct final evaluation and impact effect of integrated practices</p> <p><b>Output 1.2. Capacities built, new knowledge on climate resilient solutions generated and disseminated</b></p> <p><b>Actions:</b></p> <p>1.2.1. Conduct capacity needs rapid assessment to determine categories of technical trainings to be planned and delivered; develop training modules with field visits</p>	10,000 (2,000 women)	38,000 (7,600 women)	20,000 (4,000 women)	UNDP	RTFD	72100 Contractual Services-Companies	360,000
							71300 Local Consultants/Firm	20,000
							71620 Local travel	5,000
							72145 Workshops	5,000
							71200 International Consultants	15,000
							71600 International travel	2,000
							71605 DSA of int. Consultant	3,000
							72145 Workshops	15,000
							71300 Local Consultants/Firm	15,000
							71620 Local travel	9,000
							71600 International travel	10,000
					UNDP	RTFD	72100 Contractual Services-Companies (ICSED)	50,000



1993. All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner."

This project will be implemented by UNDP in Tajikistan 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.

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## X. RISK MANAGEMENT

UNDP as the Implementing Partner will comply with the policies, procedures and practices of the United Nations Security Management System (UNSMS.)

UNDP as the Implementing Partner will undertake all reasonable efforts to ensure that none of the [project funds]<sup>26</sup> [UNDP funds received pursuant to the Project Document]<sup>27</sup> 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). This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

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>).

UNDP as the Implementing Partner will: (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.

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.

UNDP as the Implementing Partner will ensure that the following obligations are binding on each responsible party, subcontractor and sub-recipient:

- a. Consistent with the Article III of the SBAA [*for the Supplemental Provisions to the Project Document*], the responsibility for the safety and security of each responsible party, subcontractor and sub-recipient and its personnel and property, and of UNDP's property in such responsible party's, subcontractor's and sub-recipient's custody, rests with such responsible party, subcontractor and sub-recipient. To this end, each responsible party, subcontractor and sub-recipient shall:
  - i. 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;
  - ii. assume all risks and liabilities related to such responsible party's, subcontractor's and sub-recipient's security, and the full implementation of the security plan.

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<sup>26</sup> To be used where UNDP is the Implementing Partner

<sup>27</sup> To be used where the UN, a UN fund/programme or a specialized agency is the Implementing Partner

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.

- g. Each contract issued by the responsible party, subcontractor or sub-recipient 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 it shall cooperate with any and all investigations and post-payment audits.
- h. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project or programme, 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.

Each responsible party, subcontractor and sub-recipient shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to its subcontractors and sub-recipients and that all the clauses under this section entitled "Risk Management Standard Clauses" are adequately reflected, *mutatis mutandis*, in all its sub-contracts or sub-agreements entered into further to this Project Document.

## ANNEX 1. PROJECT RISK LOG

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Mngt response
1	Determination and appraisal of best practices and technologies on climate adaptation may take longer time than expected	07/2018	Operational	The occurrence of the risk will delay implementation of the project  P=3 I=3	Timely planning of project activities and close interactions with potential beneficiaries is to be monitored and corrective measures will be performed to avoid any delay of the project implementation
2	Some crosscutting activities on knowledge production and informing the climate policy, which are interlinked with other UNDP projects, may be delayed or re-scheduled	07/2018	Operational	The occurrence of the risk will reduce the project impact  P=3 I=3	Timely planning of correspondent activities are to be agreed with respective UNDP project managers by the end of calendar year to prevent any omittance or delay of the project implementation
3	Lack of capacities of key beneficiaries on integrating best available practices or technology on climate adaptation may result in additional on-hand trainings	07/2018	Technical	The occurrence of the risk will reduce the project impact  P=3 I=3	The project team (based in the Aini project area) will closely monitor the implementation process and if necessary additional consultation services will be delivered to those in capacity needs

measures. No harmful impact of the practices on the state of environment in the selected project area is expected.

**Part B. Identifying and Managing Social and Environmental Risks**

<p><b>QUESTION 2: What are the Potential Social and Environmental Risks?</b> <i>Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any “Yes” responses).</i></p>	<p><b>QUESTION 3: What is the level of significance of the potential social and environmental risks?</b> <i>Note: Respond to Questions 4 and 5 below before proceeding to Question 6</i></p>	<p><b>QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?</b></p>		
<p><b>Risk Description</b></p>	<p><b>Impact and Probability (1-5)</b></p>	<p><b>Significance (Low, Moderate, High)</b></p>	<p><b>Comments</b></p>	<p><i>Description of assessment and management measures as reflected in the Project design. If ESI/ or SESA is required note that the assessment should consider all potential impacts and risks.</i></p>
<p>No social or environmental risks have been identified in the project; hence, this table is not applicable.</p> <p>Risk 1: Women, as right holders may not have the capacity to claim their rights</p>	<p>I = P =</p>	<p>NA</p>		
<p><b>QUESTION 4: What is the overall Project risk categorization?</b></p>				
<p>Select one (see <b>SESP</b> for guidance)</p>			<p><b>Comments</b></p>	
<p>Low Risk <input checked="" type="checkbox"/></p>			<p>The project is not likely to involve significant social or environmental risks.</p>	
<p>Moderate Risk <input type="checkbox"/></p>				
<p>High Risk <input type="checkbox"/></p>				

Final Sign Off

<b>Signature</b>	<b>Date</b>	<b>Description</b>
QA Assessor Nargizakhon Usmanova, Programme Analyst		UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.
QA Approver Mubin Rustamov, ARR Programme		UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have "cleared" the SESP prior to submittal to the PAC.
PAC Chair Sanja Bojanic, DRR UNDP Tajikistan		UNDP chair of the PAC. In some cases, PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

accessing environmental goods and services?	
<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?	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
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?	No
1.6 Does the Project involve harvesting of natural forests, plantation development, or reforestation?	No
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?	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?	No
<b>Standard 2: Climate Change Mitigation and Adaptation</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)?	No
5.3	Is there a risk that the Project would lead to forced evictions? <sup>30</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)?	No
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	<p>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)?</p> <p><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></p>	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

<sup>30</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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### **ANNEX 3. PROJECT QUALITY ASSURANCE REPORT**

(To be attached once LPAC is conducted)

- Keep abreast of the disaster related challenges and climate-induced risks and priorities as well as the socio-economic conditions and trends as they relate to the disaster risks, and assess their impact on the programme;
- Contribute to the formulation of Country Programme Strategy (CPS) and Country Programme Action Plan (CPAC) and lead the development of programme and project documents, as well as their biennium reviews and updates;
- Develop a portfolio of pipeline project proposals and concepts, and closely monitor the programme and project implementation progress and results;
- Coordinate all activities related to disaster risk reduction, recovery and response to crises;
- Conduct periodic programme monitoring field visits and provide technical and operational support and guidance to the personnel working on projects, as required;
- Manage the annual TRAC allocations and ensure most effective use of TRAC resources;
- Coordinate the project and programme development and implementation with other on-going UNDP CO programmes and projects, in order to build synergies and coherence with other programmes and projects, at levels of design, implementation, monitoring and evaluation, as well as reporting;
- Ensure timely and accurate submission of project progress reports in line with UNDP corporate requirements and donor requirements;
- Ensure the quality of outputs and results with optimal monitoring mechanisms; establish effective monitoring, information and reporting systems for all projects implemented under DRMP umbrella.

*Strategic Planning, Resource Mobilization and Liaison with Stakeholders:*

- Develop strategic directions of the DRM programme with an associated plan for the consideration of the DRM Programme Steering Committee; ensure that regular meetings of DRM Programme Steering Committee (PSC) take place, and report periodically to the PSC on the status of programme and project implementation;
- Develop fundraising strategy for UNDP's Disaster Risk Management Programme, on the basis of strategic options available, and at the same time targeting diversification of funding sources;
- Develop a strategy for the Disaster Risk Management Programme to assume donor coordination function in relevant programmatic area.
- Participate in the development of strategies, methodologies and identification of new innovative approaches for improving delivery of results;
- Develop and oversee the implementation of the CO early recovery and crisis response strategy;
- Coordinate programme activities with relevant donors and stakeholders at the national level under the overall supervision of the UNDP Senior Management and in close collaboration with the Programme Unit, to contribute to achievement of overall country programme objectives;
- Be proactive and work closely with the Programme Unit in advising response to opportunities for resource mobilization and fundraising, including conceptualization and drafting of proposals;

- Demonstrated capacities to develop and implement project management, financial accountability and reporting systems under challenging circumstances;
- Extensive knowledge and solid understanding of 'capacity issues' in international development contexts;
- Ability to effectively communicate the complex technical information both orally and in writing. Skills in effectively facilitating meetings involving a variety of different stakeholders, from government officials, NGOs, representatives from the international community and rural communities;
- Fluency in English, Russian and Tajik is a must.

### **3. Reporting Modalities**

The Project Analyst will report to UNDP DRMP Manager.

### **4. Competencies, skills and expertise**

- University degree in Environment, Social Science, Sociology, Development Studies or other relevant field;
- At seven years of working experience with international organizations in climate change, environmental management, disaster risk management and emergency response operations;
- Strong analytical skills, initiative and self-starter;
- Strong networking and coordination skills, and demonstrated ability to liaise and involve partners including government officials, scientific institutions, NGOs and private sector;
- Good presentations skills;
- Striving to keep job knowledge up-to-date through constant learning;
- Demonstration of good knowledge of IT applications, especially spreadsheets and presentations;
- Demonstration of in-depth understanding and knowledge of the project management cycle;
- Strong interpersonal skills with ability to work under pressure and to establish and maintain effective work relationships with people of different national and cultural backgrounds;
- High sense of responsibility, attention to detail, willingness to take initiative, excellent communication skills and team spirit;
- Written and verbal fluency of English, Russian and Tajik languages;
- Affinity with the mandate and role of the United Nations.

- Provide required technical and advisory support to DRMP in overall climate resilient efforts and disaster risk reduction and recovery interventions in country;
- Perform other duties as may be required by UNDP DRMP Management.

### **3. Institutional Arrangement**

- The Engineer will be directly supervised by DRM Programme Manager; reporting lines are the same
- UNDP Aini Office will provide working facilities, including: workplace, computer, means of communication (internet and telephone) and logistical and admin support, when needed for organization of meetings, trainings and in-country travel;

### **4. Qualifications, skills and expertise**

- University degree in civil engineering or relevant subject with proven record of successful implementation of various large to small scale infrastructure works in the country;
- Good knowledge and familiarity with DRR /DRM concepts and rural livelihoods solutions;
- Minimum of 10 years working experience as an engineer with international organizations, governmental or private construction companies;
- Excellent knowledge of procurement rules and procedures of UN in general and UNDP in particular;
- Good knowledge of Microsoft Office applications and ability to operate standard office equipment;
- Good knowledge of specialized software, such as AutoCAD and ArchiCad;
- Fluency in Russian and Tajik languages, (written and verbal), knowledge of English is an advantage;
- High sense of responsibility, attention to detail, willingness to take initiative, excellent communication skills, team spirit and willingness to make commitment to overall Programme objectives;
- Affinity with the mandate and role of the United Nations.

- Ensure that regular inventory checks are conducted and verify all programme assets with UNDP's Atlas system. Ensure that all assets in UNDP custody (vehicles, computers, etc.) are properly maintained and inventory records are kept safely;
- Ensure that UNERT warehouse assets are managed properly: stock checks undertaken on a monthly basis and reported accordingly;
- Manage HR related record keeping system (contracts, attendance records/leave records, travel authorizations, medical certificates, etc.);
- Provide supervision of Admin./Warehouse Assistant and drivers, set up of office transportation schedule;
- Support knowledge building and knowledge sharing in the programme (participation in the learning sessions for the projects staff on administration and finance; sharing of gained knowledge with the project staff to ensure that administrative, procurement and finance processes are implemented in line with UNDP procedures).

Programme:

- Assist the Programme Manager in development of project proposals by preparing indicative budgets;
- Verify availability of funds for project activities, recommending and effecting necessary budget line changes; prepare expenditure and budget forecasts for each quarter and prepare draft budget revisions as required;
- Assist in preparation of AWP, project budget revisions and administrative arrangements as required by UNDP procedures; prepare budget forecasts and check financial records, conformity of expenditures with work plans; follow up on activities, and monitor advance balances of resources disbursed;
- Establish and maintain up-to-date monitoring systems for project budgets, donor funding, subcontracts, etc. and provide regular status reports to the programme management, as needed;
- Ensure the timely preparation of financial reports to donors in accordance with the donor reporting schedule and in the line with specific requirements of each donor;
- Provide backstopping during absence of project colleagues;
- Perform other duties as assigned by Programme Manager.

### **3. Reporting Modalities**

The Finance/Administrative Associate will report to UNDP DRM Programme Manager.

### **4. Competencies, skills and expertise**

- University degree in Economics, Management or other relevant field;
- At least 5 years work experience with an international organization in the field of finance management and administration;
- Strong computer skills, especially spread sheets;
- Strong analytical skills and ability to develop and apply financial monitoring systems;

**Programme:** UNDP Disaster Risk Management Programme

**Post Title:** Driver (100%)

**Type of appointment:** Service Contract

### **1. Objective**

Under the direct supervision of DRMP Administrative and Finance Associate, and overall guidance of DRMP Programme Manager, driver will be responsible for providing timely and accurate driving services to support implementation of DRMP activities.

### **2. Scope of work**

The incumbent will have following duties and responsibilities:

- Drive office vehicles for the transport of authorized personnel and delivery and collection of correspondence, supplies and other items;
- Drive staff and officials to and from the airport and facilitates immigration and custom formalities as required;
- Drive office vehicles on official missions, project site visits and any location inside and outside Tajikistan as required;
- Responsible for the day-to-day maintenance and upkeep of the assigned vehicle, including daily checking of oil, water, battery, tires, etc., perform minor repairs and notify the Logistics Assistant in need of other repairs and regular maintenance service. Keep the vehicle clean and presentable at all time;
- Maintain daily logs of official trips, including daily mileage, fuel consumption, oil and filter change, etc;
- Adhere at all times to national traffic regulations, put safety of passengers first and ensure that all steps required by rules and regulations are taken in case of accident;
- Maintain radio contact at all times when on duty;
- Be on standby during weekends when any staff or visitor leaves the city/country or arrives into the city/country.
- Be on standby when there is a social function or other events which take place after normal working hours.
- Perform any other duties may be required by DRM Programme Manager to implement the programme activities.

### **3. Competencies, skills and expertise**

- Secondary education and valid driving license compulsory. Diploma or certificate in automotive mechanics is an asset.
- At least two years of previous experience in working for international organizations as driver and/or at least five years of recent experience as driver for national organizations.
- Must have diagnostic, electrical and mechanical experience.
- Strong sense of responsibility, reliability, maturity and team spirit are important assets.
- Good knowledge of Tajik and Russian. Basic English is an asset.
- Affinity with the mandate and role of the United Nations.



- **Postgraduate** or other advanced university degree in the fields of environmental management, climate change, energy or other relevant fields.

*II. Years of Experience:*

- At least 10 years of demonstrated working experience in the field of natural resource management and climate change;
- At least 3 years of working experience in a similar professional role (i.e. technical advisor and/or expert);
- Professional experience in developing project outputs and technical guidance of the project implementation

*III. Competencies:*

- Knowledge and practical experience of the political, social and environmental factors and issues related to natural resources, climate change mitigation in Central Asia, preferably in Tajikistan;
- Skills in facilitation and development of multi-stakeholder workshops and broad-based consultative processes/ programmes/project documents on disaster risk reduction/management, climate change mitigation and/or any other environment related discipline;
- An independent, reliable, responsible self-motivator able work under pressure;
- Excellent communication, team-building and diplomatic skills to develop partnerships;
- Familiarity with UNDP programming policies, templates and requirements;
- Proficiency in English, excellent analytical and drafting skills; knowledge of written and spoken local language (preferably Russian) is a must.

**5. Payment**

Payments are based upon output, i.e. upon delivery of the services specified in the TOR that contributed to the overall project deliverables as stated above under "Expected Deliverables.

## 5. Minimum Qualifications

### II. Academic Qualifications

- **Postgraduate** or other advanced university degree in the fields of agriculture, environmental management, climate change, energy or other relevant fields.

### IV. Years of Experience:

- At least 10 years of demonstrated working experience in the field of sustainable agriculture, livelihoods development and natural resource management;
- At least 3 years of working experience in a similar professional role (i.e. technical advisors);
- Professional experience in working with local communities and integrating climate resilient practices in agriculture and water sector

### V. Competencies:

- Knowledge and practical experience of the climate smart agriculture and climate resilient practices relevant to mountainous areas of Central Asia, preferably in Tajikistan;
- Skills in facilitation and development of multi-stakeholder communication, performing capacity building exercises and trainings;
- An independent, reliable, responsible self-motivator able work under pressure;
- Excellent communication, team-building and diplomatic skills to develop partnerships;
- Familiarity with UNDP programming policies, templates and requirements;
- Excellent analytical and drafting skills;
- Proficiency in English and Russian, knowledge of written and spoken Tajik is a must.

## 6. Payment

Payments are based upon output, i.e. upon delivery of the services specified in the TOR that contributed to the overall project deliverables as stated above under "Expected Deliverables.

		<ul style="list-style-type: none"> <li>analyses of the patterns tendencies; Serves as a National Focal Point under the UNFCCC and provides technical support and policy advice to the Committee of Environmental Protection for its implementation process and represents the Government of Tajikistan in UNFCCC negotiations;</li> <li>Serves as National Focal Point under IPCC.</li> </ul>	<p>complement activities on climate change.</p>
<p><b>Ministry of Economic Development and Trade (MEDT)</b></p>	<p>Department of macroeconomic analysis and forecast</p>	<ul style="list-style-type: none"> <li>Oversees the system of state economic planning and forecasting and facilitating the effective implementation of socio-economic development priorities in Tajikistan. One of the main tasks of the Ministry is to develop and implement economic development programs and strategies of the Republic of Tajikistan with the aim of reducing poverty and stabilizing socio-economic conditions.</li> <li>Representatives of the Ministry head the editing group to prepare the country's National Development Strategy (NDS) and National Development Action Plan (2016-2030) and the Living Standards Improvement Strategy (until 2015);</li> <li>MEDT to be included as a main governmental body for mainstreaming climate change into key national policies and strategies as reflected in NDS 2016-2030.</li> </ul>	<ul style="list-style-type: none"> <li>MEDT produces macroeconomic data and long-term economic development forecasts, which are to be used in Country Development analysis of the project proposal.</li> <li>MEDT is to be informed about the project results to report nationally on Agenda 2030 and SDG-13 in particular. MEDT is also responsible for overseeing the implementation of the Districts and Oblasts Development Program. The proposed project, tackling Zeravshan Valley, is to contribute to tracking the development progress and reporting.</li> </ul>
<p><b>Ministry of Agriculture (MoA)</b></p>	<p>General overview</p>	<ul style="list-style-type: none"> <li>Ministry is responsible for implementing sectoral strategies and activities in the agricultural sector, and thus oversees a significant segment of the economy that is vulnerable to climate change.</li> <li>Ministry develops, creates and coordinates agricultural and regional policy, strategic plans, state and sectoral programs in the agricultural sector.</li> <li>Ministry also oversees the work of the Academy of Agricultural Sciences, which serves as the scientific and coordination centre for agrarian science in Tajikistan.</li> <li>Scope of interventions of the Academy of Agricultural Sciences is directly relevant to adaptation, as it conducts research on cotton, wheat, barley, and legume crops, including</li> </ul>	<ul style="list-style-type: none"> <li>MoA through its PIU implements a number of climate-related projects, which can complement to information exchange, coordination of sector-based interventions on climate change, etc.</li> <li>MoA through its PIU is also tackling the issues of drought and climate-resistant crop seeds and addresses pest outbreaks; the Ministry is also responsible for assuring the value chain approach of agribusiness and keeps good relations with the scientific and research institutions of agricultural development in Russian Federation.</li> </ul>

<b>Ministry of Transport</b>	General overview	<p>especially credits and loans.</p> <ul style="list-style-type: none"> <li>▪ Implements the national policies on transport communication and infrastructure;</li> <li>▪ Assured EIA are performed for the big investment projects in the sector of transport to assure air quality and climate change are taken into account.</li> </ul>	<p>PSC and provide advice on MRV arrangement and financial support.</p> <ul style="list-style-type: none"> <li>▪ Representatives of the Ministry to be involved in the assessment phase, when the project team has to determine potential sites for project interventions, especially given the expertise of transport/communication specialists to work in disaster-prone areas (Zeravshan Valley).</li> <li>▪ MoT is to be involved in formulation of targeted trainings on preparedness for climate-induced disasters.</li> </ul>
<b>Agency of Forestry under the Government of the Republic of Tajikistan</b>	General overview	<ul style="list-style-type: none"> <li>▪ Formulates improvement, amendments to the forestry sector reform and implements policies on afforestation and reforestation;</li> <li>▪ Monitors policies and regulations for protection of wood material from illegal cuttings.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Representatives of the Agency of Forestry are to be involved in preparation of training modules and practices on joint forest management.</li> <li>▪ Aof is to be involved as experts to select climate-resistant varieties of trees and sustain agro-forestry in most vulnerable zones of Zeravshan Valley.</li> </ul>
<b>Committee of Emergency Situation and Civil Defense under the Government of the Republic of Tajikistan (CESCD)</b>	General overview	<ul style="list-style-type: none"> <li>▪ The Committee is the government agency that is tasked with disaster risk reduction and response, which covers climate-induced natural disasters.</li> <li>▪ CESCD conducts reviews and analysis of disaster risk assessment in light of climate change, and it has a department that focuses on evacuation and re-settlement.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Representatives of the Committee of Emergency Situations and Civil Defense to be involved and consulted at the level of determination of most vulnerable sites in Zeravshan Valley</li> <li>▪ CoESCD is to be involved to the research on climate change impacts on natural hazards.</li> </ul>
<b>Agency on statistics under the President of the Republic of Tajikistan</b>	General overview	<p>The Committee is the main official data provider in the Republic of Tajikistan.</p> <ul style="list-style-type: none"> <li>▪ Collects, processes, analyses and disseminates statistic data related to the economy, demography, and social life;</li> <li>▪ Establishes and manages the databases and statistical registries on national level, setting down statistical methodologies, maintenance collaboration in the domain of the statistics, communication with the beneficiaries, etc.</li> <li>▪ Collects, process, analyses and disseminates statistical data related to the transport, housing and communal services and</li> </ul>	<ul style="list-style-type: none"> <li>▪ AoS is to be involved to data collection on jamoats and districts, as well as information about socio-economic parameters;</li> <li>▪ AoS is to be potentially considered as a partner to the baseline assessment study and M&amp;E assignments.</li> </ul>

		<p>support rural livelihoods in a sustainable way by introducing nature resource management scheme.</p> <ul style="list-style-type: none"> <li>▪ EU budgeted more EUR 110M for 2014-2020 to support the rural development sector and implements the following directions: <ul style="list-style-type: none"> <li>▪ <b>Component 1:</b> Institutional capacity development</li> <li>▪ TA service contract (4 mln) and FAO project (5 mln)</li> <li>▪ <b>Component 2:</b> Sustainable water and natural resource management and protection</li> <li>▪ Consortium of NGOs (10 mln) and WB (16 mln)</li> </ul> </li> <li>▪ GIZ has its climate change department within its country office in Tajikistan. At the same time, it has a regional program on natural resource management (based in Bishkek), which operates sub-regional thematic projects in Central Asia. Most of the interventions in mountain areas of CA target ecosystem-based adaptation, land and forest management, carbon sequestration, data management and climate policies</li> </ul>	<p>and natural resources management and protection in upper catchments of the target sub-basin</p> <ul style="list-style-type: none"> <li>▪ BCRinAW will learn good lessons from the existing projects and navigate to knowledge products, which are to be accessed in the nearest future. Consortium will participate in any of BCRinAW interventions dedicated to best practices and technologies on climate smart agriculture and water saving techniques, stakeholder engagement process and capacity building.</li> </ul>
<p><b>GIZ</b></p>	<p>General overview</p>		<ul style="list-style-type: none"> <li>▪ To be involved as international informants to contribute to information exchange on climate change in Tajikistan during the coordination and stakeholder engagement processes both at the level of policy making and on the ground. On the other hand, GIZ can learn from BCRinAW on best practices in ZV to support its interventions in this area and inform on EbA, which GIZ is leading on now in Central Asia.</li> </ul>
<p><b>Multilateral Development Banks (MDBs)</b></p>	<p>General overview</p> <p>World Bank projects</p>	<p>Over the past few years, MDBs' investments to enhance a climate resilient development in Tajikistan have been increased. Most of the funds are allocated through the PPCR (Pilot Program for Climate Resilience) of CIF (Climate Investment Fund), Global Environment Facility (GEF), International Development Agency (IDA), Asian Development Bank allocations, DFID and other sources.</p> <ul style="list-style-type: none"> <li>▪ <b>WB:</b> Central Asia Hydromet. Modernization Project or CAHMP (total: \$27.7M), aims to improve the accuracy and timeliness of hydromet services in Central Asia, with particular focus on Kyrgyz Republic and Republic of Tajikistan.</li> <li>▪ <b>WB:</b> Environmental Land Management and Rural Livelihoods – ELMARL (total cost \$17.68M), which aims to improve farming,</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>ELMARL:</b> to share best practices on climate adaptation and ELM, lessons learned on micro-funding and channeling SLM knowledge hub (SLM TJ) to have a greater effect on awareness and capacity of the rural population.</li> <li>▪ <b>CAMP4ASB:</b> to have a closer cooperation on Component 3 (Facilitate access to existing and new funding packages) within the scope of CAMP4ASB climate investments.</li> <li>▪ <b>CLIMADAPT:</b> to have a closer cooperation on Component 3 (Facilitate access to existing and new funding packages) within the scope of CLIMADAPT investments on SLM in particular.</li> </ul>

<p><b>UNDP</b></p>	<p>General overview</p> <p><b>Communities Program</b> (projects on sustainable economic growth and rural livelihoods)</p> <p><b>Disaster Risk Management Program</b> (projects on natural and manmade disasters and response measures)</p> <p><b>Energy and Environment Program</b> (projects on sustainable nature resource management, climate change and renewable energy)</p> <p><b>Small Grants Program</b> (projects on climate change at the community based level)</p> <p><b>First Biennial Update and Fourth National Communication under the UNFCCC (1BUR and 4NC)</b></p>	<p>UNDP has a series of relevant programs with a target to ensure a sustainable and climate-resilient development in Tajikistan.</p> <ul style="list-style-type: none"> <li>▪ Communities program target the community-based development and has a number of projects (e.g. UNEP/UNDP Poverty and Environment Initiative) tackling sustainable nature resource management;</li> <li>▪ Energy and Environment program and Small Grants Program, operational under EEP, implement a number of projects on climate change, environmental policies, integrated water resources management, energy efficiency and renewable energy sources.</li> <li>▪ Disaster Risk Management Program supports the interventions on enhancing climate and manmade natural disaster reduction and response measures. Recently, DRMP initiated a process to develop national action plan to reduce disaster risks.</li> <li>▪ A new initiative on Tajikistan's NAP process is also a niche for the BCRinAW project, which will support the process of decision making to integrate climate adaptation actions into sector-based policy development.</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>CP projects:</b> to be a key implementing entity on the ground and assure strong collaboration with direct/indirect beneficiaries, local authorities and stakeholders; providing engineering and M&amp;E services, assistance and technical support.</li> <li>▪ <b>CP projects:</b> to assure replication of best community-based practices on adaptation to climate change and sustainable development; contribute to field assessments and periodic studies.</li> <li>▪ <b>CP projects:</b> to assure a strong link with Component 3 (Facilitate access to existing and new funding packages) within "Green Loan" initiative in Zeravshan.</li> <li>▪ <b>DRMP projects:</b> to guide the project in terms of management, budgeting and finance accounting, assure technical support on climate risk reduction, and liaison with national counterparts (public and private partners)</li> <li>▪ <b>EEP projects:</b> to share lessons learned on climate smart practices and measures applied and tested within its projects with the proposed initiative and provide technical support to respective studies and assessments.</li> <li>▪ <b>SGP projects:</b> to learn lessons and best practices on climate resilience and SLM projects implemented by SGP on the ground.</li> <li>▪ <b>1BUR and 4NC:</b> to have a strong link with 1BUR and 4NC on integrating the proposed project results into decision making process and meeting the commitments of Tajikistan under the UNFCCC and address national climate and development priorities.</li> </ul>
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The project interventions are to take place in the village of Darg and envisage traditional horticulture on sloped areas (terracing) with intercropping method to grow perennial crops and fodder for the livestock. Construction of water reservoir and establishment of drip irrigation system will be solutions for irrigation of the practice, while added value will be assured by Japan Funded DRMP project on Strengthening Disaster Risk Reduction and Response Capacities in Tajikistan. The project intends to construct mudflow pass-way in the village of Darg to reduce a risk of climate induced disasters in the area.

### **Kuhistoni Mascho**

Kuhistoni Mascho is located in upper stream of Zeravshan and Turkestan mountain ranges, and occupies the territory 3723,3 sq. km. The region is featured with dry and cold climate, with its average annual temperature being as low as +9C. There are two jamoats in Kuhistoni Mascho – Ivan Tojik and Langar, with the total population of 24,894 people.

The assessment showed that out of two jamoats in Kuhistoni Mascho, Langar stays outside of the international project support, especially on promoting climate risk reduction measures and climate smart agriculture.

### **Langar Jamoat**

More than 10.5 thousand of people living in 21 villages of Langar Jamoat with as much as 50% of them being women. Agriculture is the main type of economic activity, where almost 90% of people are employed. Out of all occupied irrigated lands, more than 90% is planted with potato. The district is well known with its famous variety of potato which is traded off in Khujand and Dushanbe central markets. However, climate change is becoming a serious threat to agricultural productivity. In 2018, the abnormally high air temperature provoked expansion of potato diseases, which had never before seen by local farmers. Mudflows and rockfalls are frequent phenomenon occurring in mountain areas. Yet, with the increased air temperature, the level of water is rising and becoming a serious threat for agricultural development and human safety. While in 2015, water level of Zeravshan River washed off 6 ha of croplands and 14 ha of forests; in 2018 25 ha of croplands faced the damage. The most vulnerable villages of Langar, are Madrushkat, Istoshon, Paldorak, Rog, Vodif and Dakhavz, which are located along the river.

Preliminary assessment showed that potential activity for the mentioned villages is to **perform enhanced embankment measures** to reduce climate induced river discharges and prevent further impacts on agriculture and croplands. Estimated length of exposed river banks is 10 km. However, the project will select those zones along 10 km of river, which require an urgent reaction. In addition, the project will promote climate and pest-resistant varieties of potato seeds, which will be introduced on protected terrain. Since potato is the agro-produce with economic value, it is important to safeguard traditional means of potato harvesting.

### **Pendjikent District**

The total area of Pendjikent District is 3.67 thousand sq. km, which is equal to 14.4% of the Sogd Oblast. The total population of the district is 284.3 thousand people with almost 50% of them being women. Rural population is 85% out of total number of inhabitants. There are 15 jamoats in Pendjikent District, including the city of Pendjikent (41.830 people).

Agriculture is the main economic sector of Pendjikent District. Primary agricultural production is based on growing wheat, vegetables and potato; people are also making income from maintaining horticulture, caring for livestock and sericulture.

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## **ANNEX 7. DESCRIPTION OF PRACTICES AND TECHNOLOGIES ON CLIMATE ADAPTATION**

### **I. Category I: Restoration/ rehabilitation of degraded land**

#### **I.1. Phytomelioration practices**

##### Description of the technology

The widespread cultivation of only cotton and wheat for a long time causes a depletion of the soil and reduction of yields. After harvesting the grain, cropland is virtually unprotected, and vulnerable to quick salinization due to summer heat, the high evaporation.

One of the best options to solve the problem of salinization and soil degradation is to protect it with vegetative cover, which is the introduction of annual legumes in existing cotton-wheat rotation – i.e. application of combined and intermediate crops. This method is used without breaking the sowing requirements of major crops, (wheat, cotton, etc.) to solve the problem of irrational use of land and water, secondary salinization and reduction of soil productivity.

The essence of technology is the introduction of legumes into the existing crop rotation (cotton, wheat). Intermediate methods consist of sowing legume-cereal mixture in the autumn-winter period between planting the main crop (cotton), and of a combined crop of alfalfa under a winter wheat cover.

Combined seeding – when there are crops of different families in the same area where one culture, in this case the alfalfa, occupies the space between the main crop - winter wheat. Sowing is carried out in the second half of February - beginning of March. Intermediate plants are grown in the time free from the main cultivation of crop rotation culture. They are used primarily for livestock fodder in various forms, as well as green manure.

##### Benefits

The proposed system enables rotation without reducing the area under the main crop (wheat) and has the following advantages:

- Improves soil fertility;
- Increases the production of feed;
- Improves ameliorative condition;
- Increases the productivity of irrigated hectare.

Intermediate crop, especially the use of legume-cereal mixture in the autumn-winter and early spring periods, allows to:

- Increases the fertility of the soil, drained the first standing cotton;
- Increases the production of feed;
- Creates conditions for the accumulation of moisture and accumulation of winter precipitation.

##### Estimates

Economic analysis of field experiments has shown that the use of phytomelioration for land reclamation is not only beneficial from an environmental point of view, but also beneficial for economic reasons.



irrigation is applied and trees are sustained by groundwater (WOCAT).

The conversion of degraded cropland to tree plantations increased soil total N stocks in the upper 20 cm layer by 6–30% in 5 years. Increases in the concentrations of plant-available P of up to 74% were significant irrespective of tree species, suggesting an efficient nutrient pump. This improvement in soil fertility via including N<sub>2</sub>-fixing trees is further evidence that afforestation with mixed-species plantations can be a sustainable land-use option for the degraded cropland. Results in Khorezm showed that 5 years after afforestation, the soil organic C (SOC) stocks rose by 10–35%, adding 2–7 t C ha<sup>-1</sup> to the upper 0–20 cm soil layer, with *E. angustifolia* (Russian olive) being the most effective tree species in soil C sequestration. Thinning the 5-year-old plantations would satisfy the average annual per capita energy needs of 55–90 people in Uzbekistan and exceeds by 400% the energy value gained over the same period from cotton stalks, commonly used in rural households. The new fuelwood source could also reduce the illegal cutting of natural *Tugai* and desert forests. A comparative analysis of tree-based land use with the conventional annual cropping of cotton, winter wheat and rice on the land of low fertility showed that, except for the first year, gross margins of tree plantations exceeded those of the annual crops, owing to the annually recurring benefits from fuelwood and fodder.

#### Benefits

- afforestation technology is based on traditional methods of trees' cultivation using local tree species; Restored production of abandoned land using a simple method;
- tree plantations are established with little irrigation rates;
- biodrainage properties of trees provide cheap and ecologically clean means of coping with water-logging;
- carbon is sequestered in tree biomass and soil;
- soil quality is improved thanks to increased content of nitrogen and humus;
- increased nutrient cycling recharge;
- multipurpose mixed species plantation provides an increased farm income and diversification of income sources with multiple products like fuel and construction wood, timber, edible fruits, high-protein leaves as supplement for cattle fodder.

#### Estimates

The costs for establishment of tree plantations include costs associated with purchasing and transportation of tree saplings, use of machinery and labour costs. Establishment costs for selected tree species (Russian olive, Asiatic poplar) made up ca. USD 3,508 per ha according to official exchange rate as of July 2015).

Most costs are incurred in the procurement of seedlings. The cost of hired labour required to plant the seedlings is also high. However, the tradition of community-based voluntary activities to help implement social projects (hashar) may help in reducing the cost of planting considerably. Current costs are defined based on the assumption that irrigation and care will be provided by a single person over 9 months. After 2 years, irrigation ceases and the trees must survive in the natural habitat.

**Table 4: Inputs and costs for afforestation on degraded land, per ha, 2009**

Inputs	Costs (US\$) % met by land user	
<b><i>Establishment activities</i></b>		
Labour	179.10	3%
Equipment - machine use	67.00	100%

**Table 5. Estimated inputs and costs for agroforestry technology, 2011, per ha**

<b>Inputs</b>	<b>Costs (US\$)</b>
<b>Establishment activities</b>	
Labour	222.00
Use of machinery	274.00
Seedlings (subsidized by project)	590.00
<b>Total</b>	<b>1086.00</b>
<b>Maintenance activities</b>	
Labour	922.00
Plastic cover	1.20
Compost/manure	55.00
<b>Total</b>	<b>978.20</b>

(b) Orchard-based agroforestry

Planting legumes and cereals in fruit orchards for simultaneous production and conservation benefits is a farmer-tested technology in the Faizabad region, Tajikistan, an area which is characterised by hilly topography and deep but highly erodible loess soils. The re-introduction of traditional technology had been influenced by the collapse of state system in the 1980s, when state-supported supplementary irrigation could not be maintained anymore opening thus an opportunity for farmers to innovate with intercropping and secure their livelihoods (50% of income). After the Soviet era, farmers reduced the tree stand density so as wheat or legumes could be planted in the inter-rows. Alignment of the trees was often a compromise between wind direction, slope and shape of plot.

For instance, the density of apple stands was reduced by expanding the inter- and intra-row spacing. Along each row of trees a 2-3 m strip of grass was left to grow. The layout of fruit trees in lines is a compromise between being along the contour, and against the prevailing wind (Wocat 2004). The choice of crops under the fruit trees depended on land tenure, thus the leased land plots were cropped with wheat solely, while wheat-legumes (beans, lucerne) rotation had been in practice in privately owned farmland. Such an agroforestry system provided protection against strong winds, heavy rains and flooding. Water-caused soil erosion was reduced due to improved soil cover by inter cropping, decomposed leaf litter and crop residues. Soil fertility was improved by nitrogen-fixing legumes.

Estimates

Within the framework of the project «Evaluation of Agroforestry Technologies and Approaches to Prevent Natural Hazards in Erosion and Mass Wasting Prone Areas of Tajikistan», 2010-2011, by NCCR North-South and public organisation CAMP Kuhiston, seven agroforestry systems containing mixed fruit trees to prevent natural disasters, protecting infrastructure, houses, farm land, farm animals have been tested in five villages with a total population around 30,000 in Nurobod district of Tajikistan. The project directly benefited seven families with 200-400 fruit trees, whilst more than 100 villagers benefited from workshops on fruit tree management and soil and water conservation and consultations by horticulture experts.

**Table 6. Inputs and costs for agroforestry technology, 2004, per ha**

<b>Inputs</b>	<b>Costs (US\$)% met by land user</b>	
<b>Establishment activities</b>		
Labour	60.00	100%
Equipment -machinery	120.00	100%

- increased nutrient availability and nutrient cycling
- increased soil organic matter
- reduced soil compaction
- increased above ground biomass
- diversification reduces risk of production failure

#### Socio-economic benefits of agroforestry

- increased crop yields
- increased fodder production
- increased production area
- increased product diversification
- reduced risk of production failure
- improved food security and self sufficiency
- improved health
- increase income opportunities
- improved livelihood as revenues are greater compared to labour migration and livelihood security

#### Risks and challenges for implementation of agroforestry

- Costs for tree seedlings is the most critical factor; subsidies allowed pioneer farmers to apply the new technology, therefore there is a risk of low adoption among resource-poor farmers
- Conflict over land ownership may appear among previous and present land users
- Limited access to irrigation water
- Insecure land tenure rights
- Low level of awareness and skills

## **II. Category II: On-farm water efficiency and water saving**

### **II.1. Water-saving practices – drip irrigation**

#### Description of the technology

Technology of drip irrigation technique has been effectively used in many countries around the world. Positive results were obtained in a short time, contributed to the rapid spread of drip irrigation especially in countries with arid climate. But in Tajikistan, drip irrigation technology is not yet widely used

Unlike common irrigation, drip irrigation is based on the admission of water in small doses into root zone of plants, the number and frequency of the water supply is regulated in accordance with plant requirements. Water is supplied to all plants uniformly and in the same amount. And that's as much as a plant needs, without unnecessary flooding of soil and water loss. In addition, drip irrigation prevents enormous water loss due to evaporation during transportation of water to the plant.

- Reduction of secondary salinization - drip irrigation does not require the construction of drainage, ground water and salt doesn't rise, and the soil structure is preserved. Such irrigation makes it possible to grow plants in the moderately saline soils, use low salted water for irrigation. With drip irrigation takes place an intense leaching of salts near the droppers. The accumulation of salts on the edges does not have too much impact on the development of plants. Water and nutrients are absorbed by the part of the root system from the leached zones of soil.
- Drip irrigation allows using irrigation on slopes or areas with complex topography, without special facilities or soil transfer. The use of drip irrigation on the slopes does not create any threats to their erosion. In addition, drip irrigation is very beneficial for arid land, in which ordinary watering can create gaps, and water may not go for watering plants, but deep into the ground.
- Easy operations in the aisle. The traditional irrigation aisle is filled with water, which makes the movement of machinery and people on them difficult. With drip irrigation, ditches remain free from moisture, allowing for tillage, spraying and harvesting at any time irrespective of conduct of irrigation, because the soil between the rows throughout the season is dry.

#### Estimates

Currently, drip irrigation system in Central Asian countries is not yet common among land users. The reasons are various; the main one is the cost and complexity of the drip irrigation system, according to farmers, and in quality (turbidity or sludge) of water for irrigation. However, there are on-farm examples, which proved the practices of drip irrigation to the best use. Having a tubular drip irrigation system, farmers can get 3.8 tons of cotton from one hectare. Other farmers with similar initial conditions and the quality of the soil, received about 1.5-2.1 tons per hectare. In this case the farmer used 3 times less water, 50% less fertilizer, and 58-60 liters less of fuel per hectare spent for farm machinery.

Approximate investments, required for installation of a drip irrigation system vary depending on agricultural crop and is most expensive for wheat - USD 4,374 per ha, then for cotton – USD 4,222 USD per ha. **The cheapest and the most beneficial is drip irrigation system for orchard – USD 2,406 per ha.**

Conversion to drip irrigation allows the farmer to save on:

- pumping (electricity) costs by USD 238.9 per ha of cotton, USD 151.7 - per ha of wheat, and USD 153.2 - per ha of orchards;
- diesel fuel and farming practices by USD 52 on diesel fuel and USD 40.6 on the agronomic activities per ha of cotton for example;
- fertilizer costs by USD 54.6 per ha of cotton and USD 18 per ha of wheat;
- labor costs are reduced USD 95.6 per ha for all crops under consideration;

Thus, total savings from switching to drip irrigation per year per ha for cotton reaches USD 282.5; for wheat – USD 308.2; for orchards – USD 292.

Anticipated increase in yields is fairly significant and reaches 40% on average for all crops. Based on average yields and average annual price of crops, these benefits are calculated. Additional benefit in the form of increased yield can be estimated for cotton at USD 1,285 per ha; for wheat – USD 1,025 per ha; for orchards – 1,438 per ha.

Payback period of investing in drip irrigation is for cotton 3.3 years; for wheat – 4.3 years and orchards – 1.7 years. Herewith, the warranty period of the drip irrigation system is 10 years.

- availability of required, suitable local construction material and labor.

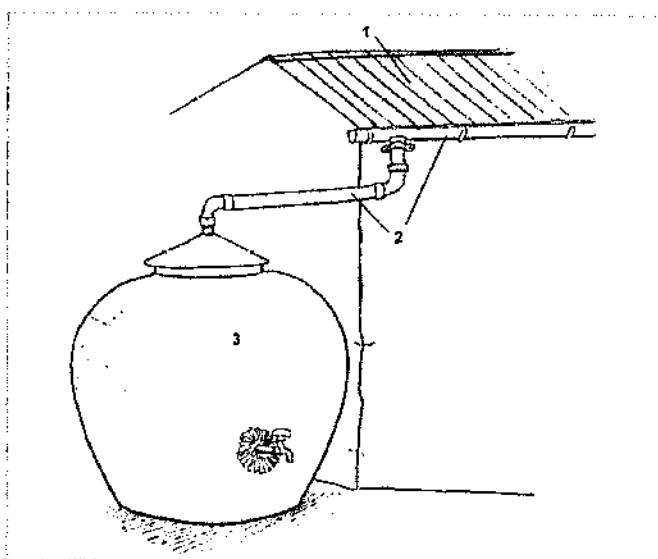


Figure 3. Three basic components of a rainwater harvesting system: catchment (1), delivery system (2), storage reservoir (3)

### Benefits

Rainwater can be used for multiple purposes ranging from irrigating crops to washing, cooking and drinking. Collected rainwater can supplement other water sources when they become scarce or are of low quality like brackish groundwater or polluted surface water in the rainy season. It also provides a good alternative and replacement in times of drought.

Rainwater harvesting is a simple low-cost technique that requires minimum specific expertise or knowledge and offers many benefits. Rainwater harvesting is a popular household option as the water source is close by, convenient and requires a minimum of energy to collect. An advantage for household systems is that users themselves maintain and control their systems without the need to rely on other members of the community. Since almost all roofing material is acceptable for collecting water for household purposes, worldwide many RWH systems have been implemented successfully.

On-Farm micro-catchment systems are also simple in design and may be constructed at a low cost, making them easily replicable and adaptable. They have higher runoff efficiency than macro-catchment systems and do not usually need a water conveyance system. They allow soil erosion to be controlled and sediments to be directed to settle in the cultivated area. Suitable land-based micro-catchment techniques exist for any slope or crop. However, these systems generally require continuous maintenance with a relatively high labor input.

### Estimates

Installing a water harvesting system at household level can cost anywhere from USD 100 to 1,000. It is difficult to make an exact estimate of cost because it varies widely depending on the availability of existing structures, like rooftop surface, pipes and tanks and other materials that can be modified for a water harvesting structure. Additionally, the cost estimate mentioned above is for an existing building and the actual cost depends on the final design and size of the tank, and the availability and price of these items. The cost would be comparatively less if the system were incorporated during the construction of the building itself.

Field preparations. Previous intensive tillage operations may impact/ contact the rooting depth. In such cases, sub-soiling and deep plowing are required to breakdown the hard pan for better crop root development and surface water infiltration.

Laser guided land leveling. Unevenness of fields obstructs crop germination, water application, soil nutrient utilization and energy resources use, especially during surface irrigation modes. Laser-guided land leveling can enhance the soil-water balance, achieve energy savings and improve crop performance.

Mulch producing options. Most farmland soils in Tajikistan have low soil organic matter and contain few plant available nutrients. There are many ways to improve such soils. One of them is the retention of residues from legume crops, cereals (e.g. sorghum), cover crops, and organic manure in addition to mineral fertilizer applications as part of an integrated CA-based system.

Appropriate crop rotations. Intensive mono-cropping can create problems including weed, disease and pest infestation and fertility decline. Appropriate crop rotations can be help to resolve such problems.

Minimum tillage or no tillage. Soil tillage and other field operations associated with crop production can reduce up to 45-50% of production costs. Minimum or no-till seeding systems significantly reduce these production cost. Tillage can be used when it is necessary to reshape permanent beds.

Multi crop no till seeder. Conventional seeders can plant only a single crop under tilled conditions. The CA modified no-till seeders can plant different crops with minimum soil disturbance into crop residue retained land, and simultaneously apply fertilizers.

Weed and insect control. During the initial 2-3 years, weed management and insect control via herbicides and insecticides require much attention. Later, the accumulated crop residue layer and crop rotations restrict weed germination and insect infestation.

### **III.1. Conservation / no-till or minimum tillage agriculture**

#### Description of the technology

Intensive tillage of soils leads to their slow but steady degradation. Therefore, scientists and farmers have been turning their attention to a more sustainable development in agriculture based on reduced tillage. Zero and minimum tillage have found widespread application under rainfed conditions. However, there is paucity of information on such conservation tillage systems in irrigated agriculture.



Tree intercropping has many variations. Alley cropping is a system in which trees or hedges are planted in closely spaced rows to fertilize the crops grown between. Parkland systems are a discontinuous cover of scattered trees. There are many others, and most are beautiful—chili peppers and coffee, coconut and marigolds, walnuts and corn, citrus and eggplant, olives and barley, teak and taro, oak and lavender. The possible combinations are endless.

Plowed under during the twentieth century to make room for industrialized methods of farming, tree intercropping is one of dozens of techniques that can create an agricultural renaissance—a transformation of food-growing practices that bring people, regeneration, and abundance back to the land.

### **III.3. Intensive orchards**

#### Description of the technology

An intensive garden is a garden with plants with early fruiting that brings a large amount of fruits of high quality. In fact, these are gardens that pay back the gardener's investments in a short time (as a rule, this happens after 4-5 years).

The control over the growth and development of tall trees takes much longer than growing low plants. Therefore, by laying an intensive garden, the technology assumes the planting of stunted (dwarf) and colon-shaped fruit carriers.

There is one more definition - a super-intensive garden. This is a rather vague concept. As a rule, these words mean the planting of intensive fruiting, which brings qualitative fruits for a long time: here there are plants of one species, but of different varieties. In this fruiting lasts for a long period: from the middle of summer and almost until the end of autumn (depending on the varietal variety of planted trees).

#### Planting and caring for an intensive garden

Before doing gardening, it is extremely important to understand the peculiarities of growing trees. First you need to select the land. It is desirable that the landing zone has an even relief, the groundwater level is about 1.5 m from the ground surface. Pay attention to the weather peculiarities of the area: it is undesirable for the zone to have a lot of precipitation, sharp gusts of winds.

The garden of intensive fruiting actively develops only on high-quality fertile soil. In order to accelerate the development of fruit bearing, a number of works are to be carried out before planting:

- The land is ploughed and compacted with special fertilizers (organic, minerals). If necessary, liming is carried out to reduce the acidity of the soil
- Installed drainage, as well as a system for watering plants (drip irrigation system).
- If the groundwater is too close to the surface of the earth, the plants are planted on hills. Therefore, the level of the ground is raised (artificial hills are created or the entire area of the future garden is raised - covered with fertile soil).

The planting pattern of plants depends on the rootstock. As a rule, young plants are planted according to the scheme of 0,7x2, 4x6 and 6x8. Every year, the plants are severely cut off so that they do not interlace with the crowns. An intensive type garden with a 4x6 planting scheme, consisting of dwarf trees, can be seen in the photo on the right (this is a fairly successful example of planting).

#### Benefits:

The structure of a passive solar greenhouse consists of the 3 main elements:

- (a) walls on the east, west, and north sides;
- (b) Wooden carcass with a polythene sheet on the south side, which picks up the largest amount of solar energy. The polythene sheet is set at an angle and supported by a wooden frame. Depending on financial capacities, weather conditions and the will of agricultural producers the carcass can be made of metal and covered with glass;
- (c) A (solid) roof on the north side to limit heat loss. The roof is tilted to avoid shading in winter and reduce the interior volume.

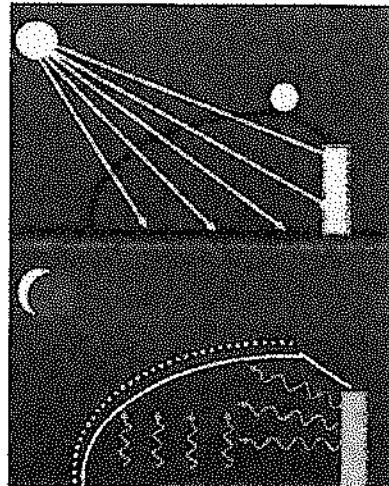


Photo (left) and Scheme (right) of a solar greenhouse example

### Benefits

- Enough solar radiation is accumulated for the photosynthesis process, needed for the plants;
- Interior climatic conditions required for growing vegetables all year round is shaped and sustained;
- Heat losses are reduced due to thick 3-layer walls on the east, west, and north sides;
- Design of the efficient passive solar greenhouse along an east-west axis, with the length of the south face increased and angled allows the largest possible surface area to the sun;
- Basic vegetables subsistence needs in remote areas can be fulfilled;
- Rural population gets additional income generation possibility;
- Materials for constructing of solar greenhouse are locally available wood, straw, stone), except for the transparent cover sheet or glass for covering the southern wall;
- Can be constructed by local builders.

### Estimates

Comparatively moderate costs: for Tajikistan 1m<sup>2</sup> of interior space of a greenhouse with a southern wall covered with glass costs around USD 150, of a greenhouse with southern wall covered with plastic costs USD 100.

The investment costs can be recouped in less than three years if the production is well-managed and the products sold.

## **2. Subsurface greenhouse-thermos**



- Greenhouse-thermos can be constructed by own labour forces during 1 season and without sophisticated equipment
- Suitable and favourable microclimate of the greenhouse-thermos allows growing tender plants and have positive effect on the yields;
- Greenhouse-thermos guarantees stable, reach harvest of any crop all year round.

The proper placement and orientation of the greenhouse-thermos is very important, since it will allow catching more sunlight and heat. Ideally, its longer part should be designed from West to East on an open and well-lighted place, so that its longer and bigger side is always sun-faced, whereas the opposite side may be heat-insulated with mineral wool or aerated plastic.

It will be of benefit if a building or a mountain slope covers the greenhouse from the North or North-western side. The greenhouse can be of any length, but the desirable and recommended width is below 5 m. A larger width will lower the thermos effect of the greenhouse, i.e. heating and lighting properties will be poorer. The greenhouse-thermos can be variously shaped.

1. Preparation of the pit. The main portion of the greenhouse is set into the ground, so a pit with a depth of at least 2 m must be dug. The length of the underground portion of the greenhouse can vary, but the width should not be more than 5 m. If this size is exceeded, the heating and light reflection will be weaker. Underground greenhouses should be oriented from east to west, so that one of the sides face south. In this position, the plants will receive the maximum amount of solar energy.

2. Walls and roof. A greenhouse foundation should be built or construction blocks installed along the perimeter of the pit. The foundation is the basis for the walls and frame of the greenhouse. The walls are best constructed from a material with good thermal insulation characteristics, such as thermal blocks. Roof frame is often made from wood, using bars impregnated with antiseptic materials. The roof structure is usually made straight, gable. Honeycombed polycarbonate, a popular modern material is best suited as the roof cover. The distance between the rafters in the construction is customized accounting for the width of polycarbonate sheets. Coating is obtained with a small number of joints as the sheets are typically produced with a length of 12 m. For a good insulation, the roof is sometimes made with a double polycarbonate layer. Although in this case the transparency is reduced by about 10%, this disadvantage is overcome by excellent thermal insulation characteristics.

3. Heating. Inner side of the walls should be covered with a special thermo-insulating film, which will keep the heat inside the greenhouse. For the purpose of heating, local people use dung heaps placed in the corners of the greenhouse. The general interior illumination is not lost by burial of the greenhouse into the ground, it may seem strange, but in some cases, light saturation is even higher than that of the classical greenhouses.

#### Risks and challenges for implementation

In general, constructing a greenhouse-thermos requires considerable investments compared to ordinary greenhouse, but eventually all the efforts will be paid off.

## **IV. Category IV: Climate risk reduction**

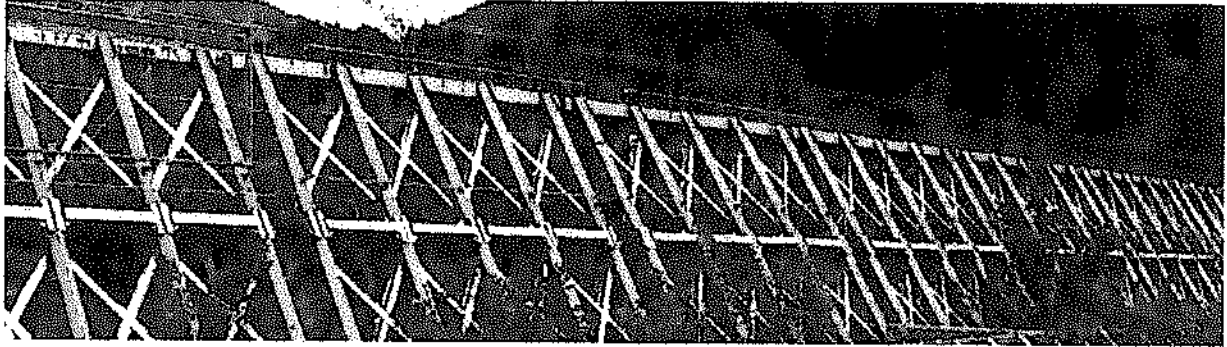
### **IV.1. Gabion-based river bank protection**

#### Description of the technology

Gabions - universal building structures with a wide range of applications. They have special significance for engineering and construction works on the protection of territories and landscaping. One of the areas of use of gabion structures is bank protection.

As for the size of the structure, the barriers are set to the entire width of the mudflow valley. It is very important to leave an opening between the bottom and the bottom rope of the system for unhindered passage of the flow and movement of animals.

The choice of anti-slip protection directly depends on the characteristics of the terrain and the mudflow itself (mudflow). Therefore, all calculations should be entrusted to specialists who will conduct competent engineering calculations.



Picture: NPO Geostroy

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## **ANNEX 9. ORGANIZATION PROFILE: NON-COMMERCIAL COOPERATIVE “SAROB”**

Sarob was founded in 2011 and is organized as a non-commercial cooperative with self-employed agricultural advisors being its members. By October 2017, there are 160 full members with total of 207 agricultural advisors working under the umbrella of “Sarob”. Members and affiliated agricultural advisors of “Sarob” are working in all districts of Tajikistan with the exception of the Pamir region. They provide fee-based agronomic advice to Tajik farmers in their regions/districts and serve as sales agents for the provision of modern agricultural technologies through Sarob’s commercial department. “Sarob” currently employs 26 full-time members of staff in three regional offices and one head office in Dushanbe.

The main goals of Sarob are:

- to increase the productivity and profitability of private farms and contribute to rural economic growth in Tajikistan
- to develop profitable, private sector advisory businesses for its members
- to become a self-financing cooperative

These goals are achieved through the implementation of the following main tasks:

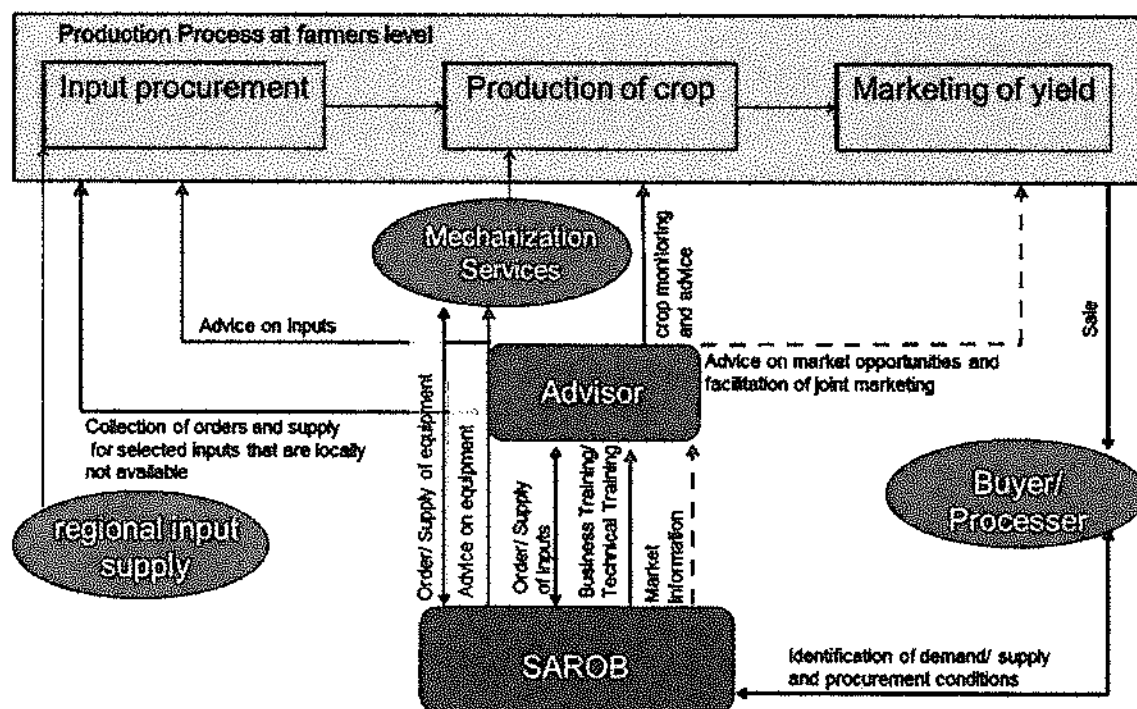
**Task 1:** Increase of the direct impact of Sarob’s advisory system at farm-level through:

- i. Improvement of the knowledge and skills of agricultural advisers (capacity building)
- ii. Diversification of advisory services based on crops and promotion of new advisory services to farmers
- iii. Demonstration of the positive impact of agricultural innovations and improvement of access to these inputs
- iv. Facilitation of self-help initiatives amongst farmers to overcome shortages in machinery services as well as to realize bulk procurements of inputs
- v. Promotion of BCI cotton to national and international buyers
- vi. Introduction of post-harvest technologies such as fruit drying
- vii. Facilitation of access to affordable, low-rate financial sources

**Task 2:** Strengthen Sarob as an organization through:

- i. Institutional Development
- ii. Development of management capacity
- iii. Support of member oriented services
- iv. Capacity building of staff
- v. Expand the network of respective members
- vi. Diversify into profit generating commercial activities such as inputs supply of seeds, machinery, advisory services and marketing

## Production process at the level of farmers



## Sarob activity in Zeravshan Valley

In the context of GIZ/GREAT project, starting from 2012 “Sarob” started establishing the advisory network in Zeravshan Valley. From that time Sarob established active advisory network in Panjakent, Aini and Kuhistoni Mascho and till now around ten professional advisers provide advisory service in region. Through its network “Sarob” promotes innovative technologies on climate resilience and sustainable land management practices.

Since 2016, Sarob is actively engaged in Zeravshan Valley under EU funded Rural Development Programme 1 "Improving livelihoods and food security through sustainable Natural Resource Management (NRM) project". Sarob's main activity under this project is to promote climate smart agriculture through integration of best practices and technologies on water saving, sustainable land management, agriculture. Sarob supports its work through the establishment of network of agriculture advisers in region, establishing demo plots and promotion of conservation agriculture which mostly related on climate change adaptation technology.

### Our partners:

Donors, International and local NGOs: GIZ/BMZ, EU, FAO, BCI, Helvetas, AKF, ACTED, MSDSP, CAMP Kuhiston;

Local partners: Ministry of Agriculture, Tajik Academy of Agriculture Science, Tajik agrarian university, Government of regions.