



**The World Bank**

RESILAND CA+ Program: Kyrgyz Republic Resilient Landscape Restoration Project (P177407)

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# Project Information Document (PID)

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Appraisal Stage | Date Prepared/Updated: 12-Dec-2023 | Report No: PIDA0142



## BASIC INFORMATION

### A. Basic Project Data

Project Beneficiary(ies)	Region	Operation ID	Operation Name
		P177407	RESILAND CA+ Program: Kyrgyz Republic Resilient Landscape Restoration Project
Financing Instrument	Estimated Appraisal Date	Estimated Approval Date	Practice Area (Lead)
Investment Project Financing (IPF)	06-Dec-2023	25-Apr-2024	Environment, Natural Resources & the Blue Economy
Borrower(s)	Implementing Agency		
Kyrgyz Republic	Ministry of Emergency Situations		

### Proposed Development Objective(s)

The objectives of the project are: (i) to increase the area under sustainable landscape management in Selected Locations in the Kyrgyz Republic; and (ii) to promote Kyrgyz Republic's collaboration with other Central Asian countries on transboundary landscape restoration.

### Components

Strengthening Institutions and Regional Collaboration  
Enhancing Resilient Landscapes and Livelihoods  
Project Management and Coordination

## PROJECT FINANCING DATA (US\$, Millions)

### Maximizing Finance for Development

Is this an MFD-Enabling Project (MFD-EP)?	No
Is this project Private Capital Enabling (PCE)?	No

### SUMMARY

Total Operation Cost	52.40
Total Financing	2.40



Financing Gap	50.00
<b>DETAILS</b>	
<b>World Bank Group Financing</b>	
Non-World Bank Group Financing	
Trust Funds	2.40
Environmental And Social Risk Classification	
Moderate	
Decision	
The review did authorize the team to appraise and negotiate	

## B. Introduction and Context

### Country Context

#### *Regional context*

1. Drylands in Central Asia are one of the most rapidly degrading and climate vulnerable areas in the world.<sup>1</sup> A mix of natural arid conditions and increasing anthropogenic pressures, such as conversion of land to intensified commercial agriculture, logging, and grazing, have led to land degradation, deforestation, erosion, loss of vegetation cover, and loss of biodiversity. This, in turn, has affected the productivity of agriculture, the resilience of infrastructure, and the potential for tourism development, while increasing the fragility of the region. The region is increasingly exposed to intense weather events and natural disasters, which further degrade the landscapes, people's living conditions and economic opportunities, and infrastructure. Furthermore, in Central Asia, land degradation is a critical trigger of migration in search of livelihoods.<sup>2</sup> Climate change impacts are expected to worsen the condition of countries' natural resources and the overall resilience of their populations and ecosystems. Glaciers in Central Asia, accounting for 10 percent of the annual streamflow in the Amu Darya and Syr Darya basins, have already shrunk by one third in volume since the beginning of the 20<sup>th</sup> century.<sup>3</sup> Glacier and snow cover melt in upstream countries due to climate change will lead to an increase in mudflows, floods, and risk of glacial lake outburst flood (GLOF), that will impact both upstream and downstream countries.<sup>4</sup>

<sup>1</sup> Magero. C. 2019. Drylands and Climate Change – Synthesis Paper; and World Bank. 2019. <https://blogs.worldbank.org/voices/fighting-climate-change-planting-trees-sea>.

<sup>2</sup> <https://www.unccd.int/news-stories/stories/new-study-links-climate-change-land-degradation-and-migration-central-asia>.

<sup>3</sup> World Bank. 2015. <https://www.worldbank.org/en/news/press-release/2015/11/03/world-bank-supports-climate-resilience-in-central-asia>.

<sup>4</sup> For instance, 88 percent of outburst lakes posing risks to Uzbekistan are in the Kyrgyz Republic. Source: Uzhydromet data [http://193.7.160.230/web/neacc/neacof5/Zayceva\\_neacof5.pdf](http://193.7.160.230/web/neacc/neacof5/Zayceva_neacof5.pdf).



2. According to the most recent estimates, the annual cost of land degradation in Central Asia due to land use and land cover changes between 2001 and 2009 was about US\$6 billion, around 6 percent of countries' average Gross Domestic Product (GDP), and the cost of action against land degradation was five times lower than the cost of inaction over a 30-year horizon.<sup>5</sup> The increased frequency of landslides and mudflows costs the five Central Asian countries 1.2-2.2 percent of GDP annually.<sup>6</sup> Arresting the degradation of regional public goods, such as water and land, will improve the livelihoods and climate resilience of the poor, and increase global interest in Central Asia's vast and largely pristine natural resource endowment for "clean and green" agricultural exports and tourism.

3. Land degradation and deforestation are particularly prevalent in Central Asia's border areas, causing increased vulnerability of natural ecosystems and acute regional externalities. Countries face similar border land management challenges due to high populations in these areas and resulting impacts of animal husbandry and irrigated agriculture activities. Border areas also experience degradation-related natural disasters, such as landslides, mudflows, and floods, which in turn impact key transboundary infrastructure, such as roads, railways, transboundary watersheds (Amu Darya and Sir Darya River basins), and impact transboundary trade and tourism along the region's Silk Road. The region's transboundary biodiversity corridors, home to some globally important migratory routes and critically and highly endangered species, such as the Asiatic cheetah and the Saiga antelope, are also affected in their ability to conserve biodiversity.<sup>7</sup>

4. The World Bank Central Asia Resilient Landscape Restoration Program (RESILAND CA+ Program) was formed in 2019 to provide Central Asian countries with a regional framework to increase the resilience of regional landscapes and people through landscape restoration. This umbrella program finances analytics and advisory on landscape restoration, and supports investment projects in Central Asian countries, namely the Uzbekistan Resilient Landscapes Restoration Project (P174135, approved in June 2022) and the Tajikistan Resilient Landscape Restoration Project (P171524, approved in February 2022), glued together by a Regional Exchange Platform for high-level dialog on landscape restoration. Each RESILAND CA+ project addresses landscape restoration using country-relevant entry points: Uzbekistan focuses on tree-based systems, protected areas, and nature-based tourism, while Tajikistan focuses on forest, protected area, and pasture management. The collective, harmonized, and regional approach of the RESILAND CA+ Program, where shared regional cooperation goals are delivered through country-based engagements, is considered the most effective method for landscape restoration with shared border areas being hotspots of land degradation, deforestation, and poverty, making national approaches less effective. The Program is also aligned with a regional vision of addressing the degradation of regional public goods by working together as one region.

5. Regional cooperation offers a promising trend to address landscape degradation. January 2023 saw the signing of a historic border agreement between Uzbekistan and the Kyrgyz Republic, adding to the signing of more than 20 other agreements in the past several years. Following a decade of tense relations, Uzbekistan and Kazakhstan convened a summit of Central Asian heads of state in Astana, Kazakhstan in March 2018 where they signed the Astana Resolution on reinforced cooperation on landscape restoration. Additionally, in 2019, the countries joined the ECCA30 Initiative to support landscape restoration efforts in partnership with European states and prominent development partners, and in 2020, the countries endorsed a 10-year Regional Environmental

<sup>5</sup> E. Nkonya et al. (eds.). 2016. Economics of Land Degradation and Improvement – A Global Assessment for Sustainable Development, DOI 10.1007/978-3-319-19168-3\_10.

<sup>6</sup> World Bank. 2023. Regional Engagement Framework for Central Asia. January 2023 Update. Washington, DC.

<sup>7</sup> UN Environment. 2020. Convention on Migratory Species, February 2020; Report on Transboundary Conservation Hotspots for Central Asia Mammals Initiative.



Program for Sustainable Development under the auspices of the Interstate Commission on Sustainable Development (ICSD) and signed a Joint Declaration of intent to cooperate on climate and security within the framework of Green Central Asia. The 2021 Summit's Joint Statement stressed the importance of "a dialogue platform to discuss urgent issues of regional cooperation" to address "climate change mitigation and adaptation, desertification control, rational use of water and energy resources, environmental protection and ecology" among other issues.<sup>8</sup> This regional vision will result in important regional spillovers that are transboundary in nature, such as improved connectivity and integrity of natural resources, increased resilience of regional climate sensitive cross-border infrastructure, such as roads and railways, increased opportunities for local development and resilience of transboundary communities, increased capability for early warning with improved real-time information from glacial and hydrological monitoring in upstream countries, and peace.

#### ***Country context***

6. **Economic growth in the Kyrgyz Republic has been volatile in the past decade due to overdependency on gold production and remittances, political instability, and a lack of a competitive private sector.** The poverty rate (at US\$3.65/day) is expected to decline from 17.2 percent in 2021 to 15.5 percent in 2022, and GDP growth is expected to moderate to 3.5 percent in 2023 as gold production contracts and the agriculture sector experiences a slowdown. Poverty levels are expected to decline by 0.6 percent to 14.9 percent, reflecting the positive effect of increased social protection programs and wage increases exceeding the negative impact of falling remittances and slower growth. Yet, risks to this outlook remain significant: a deterioration of the Russian economy may lead to added decline in remittances, and stricter application of the existing international sanctions on Russia, or imposition of secondary sanctions against Kyrgyz-based companies might significantly impact trade and domestic economic activity.<sup>9</sup>

7. **The country is an important source of water for the region.** The Kyrgyz Republic is located between two major mountain systems, the Tien Shan, and the Pamirs, and is bordered by Kazakhstan to the north, China to the east, Uzbekistan to the west, and Tajikistan to the southwest. In this highly mountainous country, most people live in the foothills of mountains, centered around two urban conurbations - the capital Bishkek in the north and the Fergana Valley between Osh and Jalal-Abad oblasts (regions) in the west. Of the total land area of about 200,000 square kilometers, 94 percent is covered by mountains of an average height of 2,750 meters above sea level.<sup>10</sup> The Kyrgyz Republic's high-elevation glaciers, known as the "Water Tower of Central Asia", feed many of Central Asia region's rivers through a combination of ice-snow melt in high mountains, precipitation in mid-mountain forests, and fissure water in low mountains. The glaciers produce water in the hottest and driest periods of the year and compensate for periods of low precipitation - crucial to the region's agricultural economy (93 percent of the total freshwater use<sup>11</sup>) and the production of hydroelectric power. The Kyrgyz Republic consumes about 20 percent of its surface water resources<sup>12</sup>, while the rest flows to downstream countries such as Kazakhstan, Tajikistan, and Uzbekistan.

8. **The Kyrgyz Republic is highly vulnerable to climate change impacts**, ranking 65 out of 185 countries in the 2021 ND-GAIN Index.<sup>13</sup> The country has identified climate change impacts as significant challenges to its

<sup>8</sup> Turkmenistan. 2021. Joint Statement following the Consultative Meeting of the Heads of State of Central Asia.

<sup>9</sup> World Bank Kyrgyz Republic Macro Poverty Outlook, October 2023.

<sup>10</sup> <https://mfa.gov.kg/en/Menu---Foreign-/about-country/about-Kyrgyzstan>.

<sup>11</sup> <https://www.un-page.org/static/5bae010ac61b99a0e71f4ab989306e1c/2017-kyrgyz-republic-green-economy-stocktaking-report-rus.pdf>.

<sup>12</sup> Water Resources Service, 2023. <https://news.un.org/ru/interview/2023/03/1439172>.

<sup>13</sup> University of Notre Dame. 2020. Notre Dame Global Adaptation Initiative. <https://gain.nd.edu/our-work/country-index/>.



development goals with its commitment to climate change adaptation outlined in the country's First Nationally Determined Contribution (NDC, 2016) and Updated NDC (2021). In 2016, the Kyrgyz Republic released its Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), identifying water, energy, agriculture, and infrastructure sectors as the most vulnerable to climate change impacts.<sup>14</sup> Between 1970 and 2000, the country lost about 17 percent of its glaciers and some forecasts suggest that the Kyrgyz Republic may lose about 50 percent of its glaciers by 2050<sup>15</sup>, leading to intense floods and droughts that will in turn affect the entire Central Asia region.

#### Sectoral and Institutional Context

**9. The geography of the Kyrgyz Republic makes it highly prone to natural disasters.** On average, the country experiences 200 natural disasters each year, including avalanches, earthquakes, floods, mudflows, landslides, and droughts.<sup>16</sup> In recent years, and with the support of the World Bank-funded Enhancing Resilience in Kyrgyz Project (ERIK, P162635), the country has improved its capacity to mitigate, and respond to natural disasters by developing a framework for a Unified System of Comprehensive Monitoring and Forecasting of Emergencies (USCMFE) - a geospatial platform that includes information on policies, infrastructure, data, tools, and capacity building to support efficient decision making for disaster risk management (DRM), maintained by the Ministry of Emergency Situations (MoES) Hazard Monitoring and Forecasting Department (HMFD). The platform is part of the country's newly established Crisis Management Center with early warning and damage and loss assessment capabilities. However, a national system and consistent methodology to monitor natural and climate-induced disasters (such as mudflows, glaciers, flash floods, and snow cover) is lacking and such data are not fed into the USCMFE, thus limiting the possibilities of the USCMFE in decision making and planning of DRM and response actions that would benefit the Kyrgyz Republic and the region.

**10. Land degradation, mountainous terrain, and impacts of climate change make the country particularly vulnerable to mudflows that further degrade its landscapes and impact communities and infrastructure.** The combination of degraded land, topography, and adverse climate conditions, especially heavy precipitation events after prolonged drought periods and rapid glacier and snow melt, resulted in 920 mudflow events in 2010-2022, accounting for 35 percent of all disasters in the country. Each year, 17,000 people were affected on average, costing the economy US\$38 million.<sup>17</sup> The mudflows eroded soils, removed vegetation, destroyed infrastructure, houses, agriculture activities, and other economic assets, and put at risk the lives and livelihoods of downstream communities. Climate change impacts are projected to increase mudflow frequency and intensity in the range of 5-15 percent by 2050.<sup>18</sup>

**11. Land degradation has been estimated to cost the Kyrgyz Republic US\$601 million annually (base year 2007), translating into 16 percent of GDP.**<sup>19</sup> According to a report submitted by the Kyrgyz Republic to the United Nations Convention to Combat Desertification (UNCCD) in March 2023, the proportion of degraded land over the total land area in 2015-2019 was 9.6 percent, equivalent to 18,319 square kilometres of degraded land across the country,

<sup>14</sup> Kyrgyz Republic. 2016. Third National Communication to the UNFCCC. [https://unfccc.int/sites/default/files/resource/NC3\\_Kyrgyzstan\\_English\\_24Jan2017\\_0.pdf](https://unfccc.int/sites/default/files/resource/NC3_Kyrgyzstan_English_24Jan2017_0.pdf).

<sup>15</sup> Central Asian Institute of Applied Geosciences (CAIAG).

<sup>16</sup> MoES, March 2023. [https://24.kg/obschestvo/261746\\_opolzni\\_seli\\_lavinyi\\_kto\\_inbspkak\\_spasaet\\_nas\\_otnbspchrezvyichaynyih\\_situatsiy/](https://24.kg/obschestvo/261746_opolzni_seli_lavinyi_kto_inbspkak_spasaet_nas_otnbspchrezvyichaynyih_situatsiy/).

<sup>17</sup> WRI. 2018. AQUEDUCT Global Flood Analyzer. <https://floods.wri.org/>.

<sup>18</sup> World Bank Climate Risk Country Profile for Kyrgyz Republic. 2021. Havenith, H. B., Torgoev, I., Meleshko, A., Alioshin, Y., Torgoev, A., & Danneels, G. 2006. Landslides in the Mailuu-Suu Valley, Kyrgyzstan—Hazards and Impacts. Landslides, 3(2), 137–147.

<https://www.infona.pl/resource/bwmeta1.element.springer9e756bb9-63cd-351f-a5d5-caf8acba3d2e>.

<sup>19</sup> Global Mechanism of the UNCCD. 2018. Country Profile of Kyrgyzstan. Investing in Land Degradation Neutrality: Making the Case. An Overview of Indicators and Assessments. Bonn, Germany. [https://www.unccd.int/sites/default/files/ldn\\_targets/2018-12/Kyrgyzstan.pdf](https://www.unccd.int/sites/default/files/ldn_targets/2018-12/Kyrgyzstan.pdf).



and close to two million people were exposed to land degradation in 2015-2019.<sup>20</sup> Rural communities, in particular transboundary communities and low-income groups, are most impacted as land degradation affects water, pasture, and agricultural land, 45.7 percent of which is already considered vulnerable to degradation due to unsustainable practices and climate change.<sup>21</sup>

**12. MoES is the main entity responsible for disaster risk reduction (DRR), DRM, and hydrometeorology, and is therefore a key partner for strengthening landscapes resilience and reducing land degradation in the Kyrgyz Republic.** MoES has departments at national and oblast levels, working in collaboration with other ministries and agencies, including the Ministry of Agriculture and the Ministry of Natural Resources, Environment and Technical Supervision. KyrgyzHydromet (KHM) is the MoES agency responsible for meteorological and hydrological monitoring and forecasting, and the MoES' HMFD receives the data and combines them with exposure and vulnerability data to guide decision-making for disaster preparedness, warning, response, and risk reduction. The Institute of Water Problems of the National Academy of Sciences of the Kyrgyz Republic (NAS) has research capacity and conducts monitoring and forecast of mudflows. Currently, the KHM, the Tien Shan Alpine Scientific Center (TSASC) under NAS, and the Central Asian Institute of Applied Geosciences (CAIAG) monitor the dynamics of specific glaciers in the country using varied approaches and methodologies, with limited coordination and staff capacity.

**13. MoES has some experience in using green solutions and nature-based solutions (NBS) in DRM activities.** Between 2014 and 2020, MoES carried out upstream planting in 1,200 hectares of mudflow-prone areas as part of a Green Project, led by its Department for Protection of Population and Territories, aiming at slope stabilization pilots in landslide prone areas. The planting was carried out by local communities following a Green Wager Program (GWP)<sup>22</sup> approach in collaboration with local authorities and the technical support of the United Nations World Food Program (WFP), which mobilized and trained communities and compensated them for labor. The Green Project was frozen in 2021-2022 for lack of public funding and it resumed in 2023 at a small scale. MoES has implemented small-scale structural NBS solutions in streams prone to mudflows, such as retention ponds or groynes (to reduce transportation of mud to downstream areas during floods) and green stream bank protection measures, such as riprap. While MoES recognizes the value of planting and NBS for disaster prevention and community engagement, it lacks sufficient knowledge on solid methodology and scientific approach, possible solutions, experience, and funding to scale them up to make a real impact on increasing resilience against mudflows and other natural and climate-induced disasters.

## C. Proposed Development Objective(s)

**14. The project is part of the RESILAND CA+ Program, whose goal is to increase resilience of regional landscapes in Central Asia.** The regional impact of the Program will be measured by aggregating the results of individual RESILAND CA+ Program country projects and monitoring the results of regional activities. Accordingly, the Project Development Objective (PDO) and PDO-level Indicators are harmonized across the RESILAND CA+ Program country projects.

<sup>20</sup> UNCCD Kyrgyz Republic Country Profile. <https://www.unccd.int/our-work-impact/country-profiles/kyrgyzstan>.

<sup>21</sup> Shamshiev B N. Teshebaeva Z A. and Ismailova J. A. 2017. Degradation of Land in Kyrgyzstan and the Ways of their Solutions. Report. Bishkek: KNAU. <http://knau.kg/>.

<sup>22</sup> The Green Wager concept is broadly described as temporary labor-intensive activities in natural resource management for which participants are paid a direct wage under standard labor rates, resulting in long-term benefits for the environment and society.



### Development Objective(s)

15. **The objectives of the project are:** (i) to increase the area under sustainable landscape management in Selected Locations in the Kyrgyz Republic; and (ii) to promote Kyrgyz Republic's collaboration with other Central Asian countries on transboundary landscape restoration.

### Key Results

16. **The following indicators will measure the achievement of the PDO:**

- (a) Land area under sustainable landscape management practices (Corporate Result Indicator [CRI], Hectare)
- (b) People benefiting from landscape management practices (Number, sex disaggregated)
- (c) Transboundary sustainable landscape management policies harmonized (Number)

### D. Project Description

17. **Project approach.** The project's regional objective will be achieved by financing activities that generate and disseminate landscape restoration, climate change resilience, and DRM knowledge of regional value. At the national level, the project will enhance the country's mudflow, glacier, and snow cover monitoring systems to inform decision making in mitigating the impacts of mudflows and snow melt in the long term. Within the targeted mudflow-prone areas, the project will support a combination of upstream (upper part of target catchments) and downstream (lower part of the catchments, in floodplains) climate-resilient NBS and green, grey, and hybrid solutions where grey solutions provide immediate mudflow mitigation benefits while NBS and green solutions provide these benefits in the medium- and long-terms. The project approach has immediate and direct regional spillover effects as the target areas in the south of the country are located upstream of transboundary rivers. The implementation of green solutions will have a strong focus on community participation through a GWP approach to create green jobs and enhance community buy-in of interventions. It will be accompanied by support to resilient livelihoods for the communities through training and market linkages using the One Village One Product (OVOP) method<sup>23</sup>, which has been proven effective in the Kyrgyz Republic, to reduce the pressure off natural resources, and ensure sustainable job creation and community buy-in of interventions.

18. **Project intervention areas.** The project will be implemented in the northern oblasts of Naryn and Issyk-Kul, bordering Kazakhstan, and the southern oblasts of Jalal-Abad and Osh within the transboundary (with Uzbekistan) Kara-Darya River basin, in particular within the Kara-Unkur River sub-basin and the Kugart River sub-basin. The majority of the intervention sites (13) will be in Osh and Jalal-Abad oblasts, which present the highest concentration of mudflow high risk sites.<sup>24</sup> Three intervention sites will be in Issyk-Kul and Naryn oblasts in the north – sites that present high mudflow risk levels with considerable protection impact of households and agricultural land. Green and NBS interventions and specific locations will be identified by an ongoing World Bank-financed technical study.

<sup>23</sup> The OVOP method was introduced by JICA and is based on the concept of developing one village by promoting at least one product where regional resources such as local agricultural products, specialty products, and tourism resources are accepted not just locally but worldwide. This approach has already been successfully implemented in several oblasts in the Kyrgyz Republic, including Issyk-Kul, Osh, and Jalal-Abad. See link below for an IFC study of the OVOP method: <https://www.ifc.org/en/insights-reports/2021/building-inclusive-supply-chains>.

<sup>24</sup> According to MoES, with the possible occurrence of catastrophic events (1<sup>st</sup> degree) and destructive events with flows between 100 to 1,000 m<sup>3</sup>/s (2<sup>nd</sup> degree).



19. The project will be financed by US\$45 million International Development Association (IDA) Credit, US\$5 million PROGREEN Grant, and US\$2.4 million KWPF Grant, and will comprise three inter-related components to be implemented over a five-year period.

**Component 1: Strengthening Institutions and Regional Collaboration (*US\$6.5 million from IDA; US\$2.0 million from PROGREEN; US\$2.4 million from KWPF*)**

20. Component 1 has a national and regional focus, financing activities that enhance government capacity for forecasting, monitoring, and preparedness for reducing and mitigating impacts of natural and climate-induced disasters, thereby enhancing resilience of landscapes and their restoration (sub-components 1.1 and 1.2) and activities that improve regional awareness, capacity, and cooperation on transboundary resilience of landscapes (sub-component 1.3).

**Sub-component 1.1: Strengthening Institutions and Climate-induced Hazard Monitoring Capacity (*US\$6.50 million from IDA*)**

21. To enhance glacier and snow cover monitoring, the sub-component will strengthen the capacities of KHM under MoES and TSASC under NAS to conduct monitoring and forecast of six glaciers. KHM will be supported with: (i) development and operationalization of a national glacier and snow cover monitoring system to become an integral part of the USCMFE, with associated activities, such as preparation of standard monitoring and modeling methodologies, integration of glacier inventories, and information and communication technology (ICT) equipment; (ii) monitoring field equipment and other goods; (iii) hands-on training of junior staff and partners; (iv) operating costs of field expeditions to monitor glaciers at Kungei Ala-Too range in Chok-Tal and Chon-Aksuu river basin in Issyk-Kul Oblast; and (v) construction of an avalanche station. TSASC will be supported with: (i) modern equipment for field investigations and vertical sounding and related expenses to allow it to update its glacier studies; and (ii) goods, consultancies, and training to help it conduct climate and hydrological modeling of glaciers as well as assessments of glacial hazard risks, such as avalanches and GLOF. TSASC will support KHM in the establishment of the national glacier and snow cover monitoring system.

22. To enhance mudflow monitoring, the sub-component will support MoES's HMFD, which operates the USCMFE, and the Institute of Water Problems and Hydropower (IWP), which monitors mudflows and floods and issues forecasts of water availability. HMFD will be supported with i) procurement of monitoring equipment such as mobile monitoring points, laser scanners, unmanned aerial vehicles, drones, satellite data, and equipment for field investigation, ii) installation of 1-2 automated monitoring stations in the Kara-Darya river basin; and iii) training of MoES staff on the use of the new equipment and systems. IWP will undertake the development of methodologies and guidelines for predicting, modeling, and assessing mudflow hazards. The activities will be supported by procurement of monitoring equipment, technical assistance, and Geographic Information System (GIS) training to strengthen their digitalization, updating of maps, and field validation capabilities.

**Sub-component 1.2: ICT for Disaster Risk Management in Degraded Landscapes (*US\$2.4 million from KWPF*)**

23. This sub-component will finance ICT system design, technical support, software, equipment, and experience exchange with expert agencies from Korea to develop and incorporate into the USCMFE a data-driven and user-oriented ICT tool for mudflow monitoring in degraded landscapes. The ICT tool will add data on land degradation and land cover to the national mudflow monitoring system that will be developed under sub-component 1.1 and incorporated into the USCMFE. The tool will feature advance geospatial and mapping capability, a satellite data



utility, and functions to analyze the interface between land degradation, land cover, and mudflows in the country, as well as features that facilitate inter-government data sharing for a more accurate and quick forecasting of mudflows and decision making. The ICT software and equipment of HMFD and MoES' Mudflow Protection Department regional offices will be upgraded, and relevant governmental agencies will be given access to the system. The sub-component will also finance the development of manuals and will enhance capacity of HMFD and other relevant departments to operate and maintain the ICT tool, including a study tour to/from Korea by experts, and other ICT equipment for HMFD to help it access and analyze field data gathered by its field offices. The sub-component will finance ICT equipment (GIS software, drones, Global Positioning System equipment, PC equipment) and information technology and GIS-related expertise for the Ministry of Agriculture's Kyrgyz Design Institute on Land Management (Giprozem), which is in charge of maintaining national land degradation maps, to improve its data collection and mapping capabilities. This equipment will help Giprozem produce digital land degradation maps and other technical reports that will be integrated into the national mudflow monitoring system to enable more robust data availability for forecasting. A field survey will be conducted each season in project areas to verify the maps and refine the process. The systems will feature the latest high efficiency and low emission technologies in line with the World bank guidelines for ICT/monitoring equipment.

24. The World Bank's Guidance on Managing the Risks of Unmanned Aircraft Operations in Development Projects (the "UAO Guidance") will be applied to the project, and the Project Operations Manual (POM) will specify the allowed modalities for the operationalization of drones, including a risk mitigation plan for the procurement, use, and management of drones.

#### **Sub-component 1.3: Strengthening Regional Collaboration (*US\$2.0 million from PROGREEN*)**

25. The sub-component will finance two sets of activities:

- (a) Under the first set (US\$1 million), the sub-component will finance: (i) development of a catalog of current and future climate-induced disasters of a transboundary nature in Central Asia, to inform the region's governments on priority areas needing attention and actions to help mitigate the impact of such disasters on landscape degradation; (ii) preparation of an NBS manual and guidelines to expand the use of NBS to mitigate the impacts of mudflows, flashfloods, landslides, and other climate-induced events on land degradation in Central Asia; and (iii) development of a regional strategy for mudflow mitigation, including a roadmap and an investment plan. As in the RESILAND CA+ projects in Tajikistan and Uzbekistan, these activities will be executed by the Regional Environmental Centre for Central Asia (CAREC) under a contract with MoES.<sup>25</sup> CAREC may subcontract other entities for the execution of specific activities.
- (b) Under the second set (US\$1 million), the sub-component will: (i) support regional and global efforts to promote mountain landscapes and communities under the framework of the Second Global Bishkek Mountain Summit, Bishkek+25<sup>26</sup>; (ii) support the development of coordinated approaches by regional scientific and educational entities to research of glaciers, water resources, ecosystems, and mountain communities in Central Asia and develop educational programs; (iii) finance technical assistance to mountain communities in Central Asia on the development of mountain products, including undertaking a gap analysis, product selection, training, and marketing; and (iv) finance a full-time technical expert to support the Mountain Partnership Secretariat in Bishkek (housed by the Ministry of Foreign Affairs) and liaise on regional

<sup>25</sup> CAREC is an independent, non-political, non-for-profit international organization, established in 2001 by all five Central Asia countries, the European Union, and UNDP. It is headquartered in Almaty, Kazakhstan, with country offices in all Central Asia capitals.

<sup>26</sup> With additional resources provided by the government of the Kyrgyz Republic. This will be the second Global Mountain Summit, 21 years after the first summit took place in Bishkek in 2002, and it will conclude the Five Years of Action. Mountain countries from Central Asia and around the World will participate in the Summit and its pre-meetings and workshops.



and national activities with the Mountain Partnership's global secretariat, hosted by the Food and Agriculture Organization of the United Nations (FAO) in Rome.

26. In coordination with regional activities financed by the RESILAND CA+ Program projects in Tajikistan and Uzbekistan, these activities are expected to support the implementation of several key regional activities identified by the ICSD in its 10-year Regional Environmental Program for Sustainable Development, including: (i) development of a memorandum of understanding (MoU) for facilitating border-crossing for nature-based tourism in protected areas and unique natural sites shared between countries, (ii) development of an MoU for using common modern methods of flora and fauna diversity inventory, and ecosystem condition among transboundary corridors, (iii) development of a joint transboundary management plan for ecological corridors for migratory animals, and transboundary cooperation agreements for addressing issues of protection of key species and habitats, (iv) development of a protocol for using NBS to increase their people, landscapes, and infrastructure's resilience, and (v) development of an MoU for the designation of a transboundary "Peace Park" between countries along the lines of the UNCCD Peace Forest Initiative (2020).

27. The knowledge generated by these activities will complement a regional exchange platform financed by RESILAND Tajikistan and a regional online database on sustainable landscape management and restoration financed by RESILAND Uzbekistan. While each country is accountable for its respective regional deliverables, these exchanges and knowledge products combined are expected to result in bilateral and/or multilateral agreements between the Central Asian countries on harmonized transboundary sustainable landscape management policies, memoranda of understanding (MoUs), plans, or protocols.

#### **Component 2: Enhancing Resilient Landscapes and Livelihoods (*US\$37.0 million from IDA; US\$3.00 million from PROGREEN*)**

28. Component 2 will finance upstream and downstream nature-based, grey, green, and hybrid solutions for reducing the impact of mudflows on communities, landscapes, and infrastructure in the targeted transboundary areas. These solutions will not result in land use change that would lead to the loss of carbon capture or an increase in emissions. It will also finance product making training to communities to diversify their activities in targeted areas and provide them with market linkages to sell their products in support of their resilient livelihoods to reduce their impact on the landscapes and ensure their buy-in of project activities.

##### **Sub-component 2.1: Landscape Restoration through Climate-resilient Green Solutions (*US\$1.0 million from IDA; US\$3.00 million from PROGREEN*)**

29. The sub-component will finance afforestation, enrichment planting, live crib walls, fencing, water retention structures, and irrigation works required to maintain the planted areas. Innovations, including the combination of fast-growing poplar trees with fodder species, will be demonstrated in suitable areas. Materials, hand tools, and equipment, temporary seasonal watering, irrigation works, and water harvesting structures will be financed, including sourcing of seedlings from state and private nurseries.

30. To maximize the impact of the project on affected local communities, a GWP approach will be implemented where community members will receive daily wages for their participation in planting, fencing, digging ditches, watering, and other green solution-related activities. The target group will include vulnerable members of communities that are willing to participate in the GWP. Since MoES does not have a legislative basis to pay communities for labor, WFP will be contracted to establish participant lists (mostly vulnerable households) jointly



with the Ministry of Social Protection, Labor and Migration and village-level representative body (*ayil kenesh*), conduct community mobilization, provide training, including on monitoring of seedlings' survival, and provide payments to the GWP participants for their labor, in collaboration with the relevant municipalities. In terms of locations and species, a multi-criteria analysis approach will be taken to select project municipalities on an objective basis. Working within select target areas in each municipality, experts will conduct an ecological site classification to support the selection of degraded or semi-degraded lands suitable for restoration, silviculture, and management measures. Land within leskhoz or protected areas will be excluded, and interventions will be climate-proofed and made sure that they meet communities' needs and provide an incentive for them to value these sites, once planted.

31. MoES will contract OVOP Kyrgyzstan<sup>27</sup> to mobilize and train mudflow-impacted community members in making products using locally available and leftover raw/waste and natural materials, such as fruit, nuts, wool, herbal plants, etc. Training will also be provided on business planning, standards and quality control, and value addition. As per the OVOP method, OVOP Kyrgyzstan will mobilize interested individuals (while ensuring at least equal participation of females), provide them with technical training on specific products based on market analysis and available material, and ensure end-product quality. Participating community members will collectively purchase the raw materials and any required equipment and machinery, while the organization will purchase the final products from the producers and sell them through existing local, national, and international outlets. The GWP and livelihood activities will be coordinated to maximize the impact on local communities, targeting the same communities and thus ensuring short-term and longer-term employment opportunities.

#### **Sub-component 2.2: Landscape Restoration through Climate-resilient Nature-based and Grey Solutions (US\$36.0 million from IDA)**

32. This sub-component will increase resilience of landscapes, reduce land degradation, and protect communities, agricultural land, and infrastructure such as irrigation canals and roads from mudflows in 16 sites using climate resilient NBS and grey interventions. The sites present high mudflow risks to communities, infrastructure, and agricultural land. The sites selection is grounded on the occurrence of mudflows, downstream transboundary impacts, intensity and impacts on households and landscapes. Thirteen sites are in Osh and Jalal-Abad (bordering Uzbekistan) along mudflow-prone tributaries of the Kara-Darya transboundary river, such as Kugart, Kara-Unkur, and Aravan-Sai. The remaining 3 sites will be in Issyk-Kul (bordering Kazakhstan) and Naryn oblasts in the north in areas that present high mudflow risk levels with a considerable protection impact on transboundary road infrastructure, households, and environmental safety in Issyk-Kul oblast, and households and agricultural land in Naryn oblast. Interventions will mainly consist of repairing and/or restoring existing priority flood protection features (embankments) that were built during the Soviet time. Priority functioning, defective embankments will be repaired, and dysfunctional embankments will be restored mainly with stones or gabions instead of the usual concrete walls. The works will use high efficiency and low emission standards in construction and rehabilitation, in line with World Bank standards on efficiency. Combined with conventional grey solutions, climate resilient NBS interventions, such as minor works in riverbank protection with vegetated riprap and flood retention ponds as well as other nature-based flood management and erosion control interventions, will be financed to capture eroded sediment from mudflows and slow flood peak flows. Additional NBS sites will be identified based on severity of land degradation, historical mudflow records, topographical and soil features, and proximity to beneficiary communities who will help maintain NBS interventions. The NBS may be cascaded or clustered; and/or combined with tree planting to maximize impacts at the micro-watershed level.

<sup>27</sup> OVOP Kyrgyzstan is a local organization working on rural development throughout the Kyrgyz Republic by utilizing the OVOP method.



33. To ensure routine preventative maintenance of critical infrastructure, including embankments and other river erosion prevention structures by MoES, the sub-component will finance the purchase of machinery, inspection tools, associated equipment, vehicles, and a mudflow structures asset management system (database) for MoES' Mudflow Protection Department in Osh, Jalal-Abad, Issyk-Kul, and Naryn oblasts. The sub-component will also finance the installation of hydrological and meteorological posts to measure the effectiveness of downstream interventions at each site, and sediment transport monitoring equipment to inform and validate the design of climate-resilient mudflow mitigation measures. It will also finance feasibility studies and detailed designs for proposed interventions, and supervision costs.

### **Component 3: Project Management and Coordination (*US\$1.5 million from IDA*)**

34. The component will finance the incremental operating costs and other eligible expenses associated with project implementation. The MoES Project Implementation Unit (PIU) will carry out project management functions, such as procurement, financial management (FM), environmental and social (E&S) risk management, monitoring and evaluation (M&E), reporting, communication, and grievance redress. The PIU will also be responsible for preparing annual work plans and budgets for MoES and Ministry of Finance (MoF) approval, respectively, hiring of external auditors, and ensuring that a strong focus on gender inclusion and citizen engagement is maintained in project activities. In addition to the PIU core staff, technical specialists will be contracted by the project to provide technical and operational support in MoES' Bishkek office and in project oblast branch offices, including on the design and implementation of NBS.

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	Yes
Projects in Disputed Area OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

35. The World Bank OP 7.50 is applicable because some activities use or risk polluting the waters of the Syr Darya River, an international waterway, which is shared by the Kyrgyz Republic, Kazakhstan, Tajikistan, and Uzbekistan. The project will not adversely change the quantity or quality of water flows to other riparians and will not be adversely affected by the other riparian countries' possible water use, and any works under the project will not change the nature of the original flood protection features (for example, embankment height will not be raised). The project will not cause appreciable harm; therefore, the exception to the notification requirement under paragraph 7(a) applies.

36. Seven Environmental and Social Framework Standards (ESS) are assessed and found to be relevant to the project. These are ESS1, ESS2, ESS3, ESS4, ESS6, ESS8, and ESS10. Overall, the project will result in environmental and social benefits, as it will support restoring degraded landscapes, implementing measures to enhance climate resilience of the targeted landscapes and infrastructures, and supporting communities to diversify economic activities. The project activities will focus on the rehabilitation of degraded low productivity land, disaster-prone and poor areas of the country. The project also has a cross-boundary dimension by promoting regional activities in cross-border landscape management and data sharing with the neighboring countries. The project's potential environmental risks and impacts are mainly attributed to the physical interventions associated with the resilient



landscapes and livelihoods enhancement activities under Component 2. These interventions include fencing of natural/assisted regeneration areas, soil improvement, tree planting, and restoration of footbridges for livestock passage access to remote pastures. The interventions also include construction of ecotourism trekking and natural trails, green and grey climate-resilient infrastructure (e.g., tree planting, terracing, river embankment, slope stabilization, mudflow diversion structures, etc.) in high-risk areas of the proposed project districts to enhance climate resilience. The above may result in air, soil, or water pollution, habitat loss and habitat disturbances, possible spread of invasive tree or shrub species, risks associated with genetically modified plant seeds, water stress, agriculture waste, and occupational health and safety. These risks are of low to medium impact and are predictable, avoidable, or reversible through available international mitigation practices and measures.

37. On the social side, the Environmental and Social Management Framework (ESMF) identifies risks related to the exclusion of vulnerable and marginalized groups, such as women, the elderly, ethnic minorities, etc., from project activities, particularly the sustainable livelihood activities of sub-component 2.1, and proposes general mitigation measures, to be detailed in Environmental and Social Management Plans (ESMPs) where appropriate. To address the above risks, the following draft instruments will be prepared, consulted on, and approved by the World Bank prior to appraisal: (i) ESMF, (ii) Stakeholder Engagement Plan (SEP), and (iii) Labor Management Procedures (LMP). A Resettlement Framework (RF)/Process Framework (PF) may also be prepared prior to Appraisal or during project implementation, as required. The ESMF outlines the guiding principles of environmental and social screening, assessment, review, management, and monitoring procedures for landscape restoration and pasture management activities. It also provides guidance and checklists on preparing any necessary site-specific environmental and social instruments.

## E. Implementation

### Institutional and Implementation Arrangements

38. **Implementing agency and project management.** The implementing agency of the project will be MoES. The existing PIU at MoES will be responsible for project management, and it has experience in managing World Bank-financed projects since 2011, including the ERIK Project, Central Asia Hydrometeorology Modernization Project, Emergency COVID-19 Response Project (P173766), and others. The PIU will carry out project management and coordination functions by assigning its core staff and hiring additional specific technical experts, with the aim to transfer knowledge to local MoES staff. It will prepare work plans and budgets for the approval of MoES and MoF, and support gender, citizen engagement, fiduciary, and Environmental and Social Framework (ESF)-related aspects in compliance with World Bank procedures.

39. **Implementation of regional, national, and oblast-level activities.** The first set of regional activities under sub-component 1.3 will be executed by CAREC under a direct contract with MoES. CAREC will coordinate with Central Asia research entities and may subcontract other entities for execution of specific activities. The second set of activities will be implemented by the MoES PIU in coordination with the Mountain Partnership Secretariat at the Ministry of Foreign Affairs. The development of the national glacier and snow cover monitoring system will be led by MoES KHM in collaboration with NAS and CAIAG, and the development of the national mudflow monitoring system and ICT tool will be led by MoES HMFD in collaboration with KHM, NAS, and Giprozem. Technical working groups that were established by MoES during project preparation for green solutions and NBS and for the monitoring systems will continue to operate during implementation to provide guidance on technical issues. Dedicated specialists and subject matter specialists, including IT and GIS experts, will be hired as needed. The GWP under sub-component 2.1 will be implemented by WFP through a direct contract with MoES and in collaboration



with the relevant municipalities and branches of the Ministry Labor, Social Protection, and Migration. WFP will mobilize community participants, provide training, and pay participants, while MoES will purchase the seedlings, fencing material, and other required goods through tenders. Forestry, dendrology, and geology experts will be hired to carry out ecological site classification to identify the target areas and types of vegetation to be planted. Contracts between individual households and local municipality will be signed in the case of each assigned sub-plot. The livelihoods training program will be carried out by OVOP Kyrgyzstan through a direct contract with MoES and in collaboration with the relevant municipalities. NBS and grey interventions under sub-component 2.2 will be implemented by contractors in coordination with MoES' offices in the four oblasts. MoES will distribute the procured heavy machinery and equipment to the Osh, Jalal-Abad, Issyk-Kul and Naryn regional mechanized division offices of the Emergency Prevention and Response Service of MoES, which carries out routine engineering activities and will be involved in the operation and maintenance (O&M) of project-financed activities.

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**The World Bank**

RESILAND CA+ Program: Kyrgyz Republic Resilient Landscape Restoration Project (P177407)

**Approved By**

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