

SECTOR ASSESSMENT (SUMMARY): AGRICULTURE, NATURAL RESOURCES, AND RURAL DEVELOPMENT

A. Sector Road Map: Landslide Risk Management

1. Sector Performance, Problems, and Opportunities

1. **Landslide hazards.** The Kyrgyz Republic, particularly the southern *oblasts* (provinces) of Jalal-Abad and Osh, is highly prone to landslides because of its rainfall patterns, geology, land cover, and high seismic activity.¹ There are 4,554 landslide sites in the country, of which 1,186 are active as of 2020 and threatening over 540 settlements and 300 infrastructure assets. About 5,000 houses with up to 30,000 residents face immediate landslide risk.² During 1991–2018, 591 landslide events occurred in the country, resulting in 275 fatalities.³ In Osh *oblast*, a landslide killed 38 people in Kara-Taryk village in 2003, and in 2017, 24 people were killed by a landslide in Ayusai, Ayu village.⁴ Disasters triggered by natural hazards affect about 5% of GDP and about 5% of the population annually.⁵ Landslide events disproportionately affect rural settlements and vulnerable groups, and around 70% of landslide fatalities are women and children.⁶ Community and critical infrastructure, agricultural production and livelihoods, transport and logistics, and mining sites are disrupted, damaged, or destroyed. Climate change is expected to increase landslide frequency in some areas because of earlier snowmelt, melting permafrost, and more intense precipitation events.⁷

2. **Fragmented institutional arrangements.** The Ministry of Emergency Situations (MES) is the primary agency responsible for disaster risk monitoring, management, and recovery in the Kyrgyz Republic. The Kyrgyz Integrated Hydrogeological Expedition under the State Committee of Industry, Power and Subsoils assesses and monitors landslide risks. The Road Infrastructure Department of the Ministry of Transport, Architecture, Construction and Communications is also responsible for monitoring landslide risks associated with the road network, and preventative and rehabilitation works. The role of active monitoring and warning of landslide risks in priority locations has been increasingly filled at the national level by the MES, particularly by the Hazard Monitoring and Forecasting Department. Supporting work is undertaken by international and local agencies—including the Geomechanics and Subsoil Use Institute and Scientific Engineering Center; the Osh Landslide Department under the State Committee of Industry, Power and Subsoils; the Central Asian Institute for Applied Geosciences; and the German Research Centre for Geosciences (GFZ-Potsdam)—to develop the underlying knowledge base. Effective landslide risk management has been hindered by distributed responsibilities and limited cross-agency coordination.

¹ A landslide is the movement of a mass of rock, debris, or earth down a slope. Landslides can be initiated by rainfall, snowmelt, changes in groundwater, earthquakes, disturbance by human activities, or any combination of these factors. Source: United States Geological Survey. [What is a landslide and what causes one?](#)

² There are 1,821 settlements in the Kyrgyz Republic, and 540 of these (29.7%) are at risk of landslides. Data and information provided by MES on 11 March 2021.

³ Data provided by the Ministry of Emergency Situations on 25 July 2020.

⁴ Havenith et al. 2017. Past and Potential Future Socioeconomic Impacts of Environmental Hazards in Kyrgyzstan. In O. A. Perry (ed). 2017. *Kyrgyzstan: Political, Economic and Social Issues*. New York.

⁵ Global Facility for Disaster Reduction and Recovery. 2015. [Country Profile: Kyrgyz Republic](#).

⁶ ADB. 2021. *Landslide Risk Management Sector Project: Poverty, Gender, and Social Assessment*. Consultant's report. Manila (TA 9727-KGZ).

⁷ Climate Change Assessment (accessible from the list of linked documents in Appendix 2 of the report and recommendation of the President).

3. **Experience with physical interventions for landslide risk reduction.** Direct landslide risks can be addressed through physical interventions, including unloading soil, reshaping bulging or cracked areas, draining underground and surface water, and building retaining structures. This has most frequently been undertaken for geohazards such as rockfall for strategic roads by the Ministry of Transport, Architecture, Construction and Communications. The MES has applied the unloading method twice previously, but its technical capacity for and experience in the implementation of such engineering measures needs strengthening.⁸ Nature-based solutions including greening and timber retaining and drainage structures may also be considered. The government requires international expertise and in-country application to generate experience and evidence.⁹

4. **Quantitative analysis and data sharing.** Landslide hazard and risk has been extensively mapped in the Kyrgyz Republic through collaboration between the MES and national and international research agencies. There is limited standardization and consolidation of the risk assessment methodologies, data, and results. The maps have not been widely used by government and communities for strategy, planning, and investment for local landslide risk management. This includes in master planning of new settlements, which poses risks to new developments.¹⁰ Current government practices for landslide monitoring do not take a systematic or standardized approach and are based on visual monitoring and use a limited number of parameters. Scientific, multiparameter, and equipment-based monitoring, taking advantage of new technologies such as satellite imagery and remote sensing, can improve accuracy and geographical coverage. Monitoring systems should be integrated with the MES early warning system, developed with the support of the United Nations Development Programme (UNDP), World Food Programme (WFP), and the World Bank.

5. **Community disaster risk management practices.** Community-based approaches to disaster risk management have been applied on a demonstration basis in the country. These have not led to institutionalization by the government for use as the standard process for engaging communities in disaster risk management, including for landslides. The government's approach is still focused on disaster preparedness and response and on educating communities through very top-down and traditional training and awareness raising activities in communities and schools. Participatory risk assessment and planning, risk communication initiatives, and implementation of small-scale mitigation measures as identified by the communities can improve sustainability and support the most vulnerable population groups. The government mandatory household insurance program has minimal penetration and is at risk of insolvency. Private insurance options are limited for agricultural producers and small businesses, particularly in remote areas.

6. **Resettlement as a landslide risk mitigation option.** Over 4,000 households (about 20,000 people) are targeted for resettlement across the country because of landslide and rockfall risk.¹¹ Resettlement is costly and a political, economic, social, cultural, and logistical challenge. The decision to resettle people is made based on a simplified landslide hazard ranking system and on-site visual observation, without comprehensive analysis including options analysis. Resettlement is also not systematic, with limited guidance or documentation of good resettlement practice. Resettled communities often return to at-risk areas or do not want to resettle, as their

⁸ World Bank. 2014. *Implementation Completion Review Report for Kyrgyz Republic-Disaster Hazard Mitigation Project*. Washington, DC.

⁹ Technical Feasibility Study: Ayusai Subproject (accessible from the list of linked documents in Appendix 2 of the report and recommendation of the President).

¹⁰ Government of the Kyrgyz Republic. 2017. *The program of the Government of the Kyrgyz Republic on the development of master plans for settlements of the Kyrgyz Republic for 2018–2025*. Bishkek.

¹¹ Ministry of Emergency Situations (data provided on 26 May 2020).

farming livelihood practices demand significant land area that is not available in their new locations. A more strategic approach, with improved capacity, standardization of resettlement procedures and practices, and more systematic data collection and management, could improve effectiveness and community support.

2. Government's Sector Strategy

7. The government's long-term national development strategy 2018–2040 presents the overall socioeconomic development strategy for the country.¹² It emphasizes attention to environment, climate change adaptation, and disaster risk reduction. The current national development program for 2018–2022 includes proactive management of disaster and climate change risks and reduction of geophysical risks.¹³

8. The Concept of Comprehensive Protection of Population and the Territory of the Kyrgyz Republic from Emergency Situations for 2018–2030 is the key government strategy on disaster risk management.¹⁴ It adopts the four Sendai Framework for Disaster Risk Reduction priorities as the key disaster risk management priorities for the Kyrgyz Republic.¹⁵ These are (i) improving knowledge of disaster risk, (ii) improving the institutional framework for disaster risk management, (iii) investing in disaster risk reduction measures to build resilience, and (iv) enhancing disaster preparedness to ensure effective response. Landslide risk is recognized as a key risk to the country. Risk reduction and preparedness measures identified for landslides include monitoring hazardous areas, slopes, and precipitation; early warning; resettlement; engineering works to protect settlements, businesses, and critical infrastructure; riverbank protection; improved land use; and capacity building.

B. Major Development Partners: Strategic Foci and Key Activities

9. The major development partners active on disaster risk management in the Kyrgyz Republic are the Asian Development Bank (ADB); World Bank; Japan International Cooperation Agency (JICA); and United Nations agencies such as UNDP, WFP, United Nations Children's Fund (UNICEF), and the World Health Organization (see table). The focus of the World Bank has been on hazard and risk assessment; hydrometeorology; landslide monitoring and early warning; disaster risk reduction and education; physical mitigations including unloading, damage, and loss assessment; and disaster risk financing and risk insurance. JICA has recently finished a major project looking at disaster risk management in the transport sector. UNDP has worked on agrometeorology, disaster risk assessment, monitoring and early warning, strengthening disaster response capacity, and regional collaboration. The WFP has worked at local level on disaster preparedness in schools, agroforestry in landslide-prone areas, and small-scale disaster risk mitigation works for households. UNICEF and the World Health Organization have supported ministries in the education and health sectors. The United States Agency for International Development and the Government of Germany also work on disaster risk management.

¹² Government of the Kyrgyz Republic. 2018. *National Development Strategy of Kyrgyz Republic 2018–2040*. Bishkek.

¹³ Government of the Kyrgyz Republic. 2018. *The Development Program of the Kyrgyz Republic for the Period 2018–2022: Unity. Trust. Creation*. Bishkek.

¹⁴ Government of the Kyrgyz Republic. 2018. *Concept of Comprehensive Protection of the Population and the Territory of the Kyrgyz Republic from Emergency Situations for 2018–2030*. Bishkek.

¹⁵ United Nations Office for Disaster Risk Reduction. 2015. *Sendai Framework for Disaster Risk Reduction 2015–2030*. Sendai.

Major Development Partner Projects

Development Partner	Project Name	Duration	Amount (\$ million)
National projects			
ADB	Climate Change and Disaster-Resilient Water Resources Sector Project	2019–2025	38.60
ADB	Kyrgyz Republic: Emergency Rehabilitation Project	2003–2008	5.00
World Bank	Enhancing Resilience in Kyrgyzstan	2018–2024	20.00
World Bank	Measuring Seismic Risk in Kyrgyz Republic	2014–2017	0.90
World Bank	Disaster Hazard Mitigation Project	2004–2012	11.80
JICA	Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic	2016–2019	126.50
UNDP	Strengthening Climate Resilience of the Batken Province of the Kyrgyz Republic through Introduction of Climate Smart Irrigation and Mudflow Protection Measures	2019–2020	
UNDP	Strengthening Integrated Risk Governance Capacities of the Kyrgyz Republic and Regional Cooperation in Central Asia	2017–2021	5.30
UNDP	Strengthening Disaster Response and Risk Assessment Capacities in the Kyrgyz Republic and Facilitating a Regional Dialogue for Cooperation	2013–2015	2.10
UNDP	Effective Disaster Risk Management for Sustainable Development and Human Security	2012–2016	5.00
UNDP	Climate Risk Management in Kyrgyzstan	2010–2014	0.60
WFP	Climate Services and Diversification of Climate Sensitive Livelihoods to Empower Food Insecure and Vulnerable Communities in the Kyrgyz Republic	2019–2023	9.60
WFP	Information Analysis and Management System Project	2016	0.10
UNICEF	Reducing the Disaster Vulnerability of Children in Kyrgyzstan	2012–2013	
Government of Germany	Increasing Climate Resilience in Central Asia - Sustainable Rural Development through the Introduction of Innovative Agricultural Insurance Product	2017–2020	0.65
Regional projects			
ADB	Developing a Disaster Risk Transfer Facility in the Central Asia Regional Economic Cooperation Region	2019–2022	2.00
ADB	Economics of Climate Change in Central and West Asia	2012–2017	3.25
World Bank	Strengthening Early Warning of Mountain Hazards in Central Asia Project	2016–2020	1.20
World Bank	Strengthening Financial Resilience and Accelerating Risk Reduction in Central Asia	2019–2023	9.25
World Bank, WMO	Central Asia Hydrometeorology Modernization Project	2011–2023	27.70
WMO	Central Asia Region Flash Flood Guidance System	2015–2017	
UNICEF, IFRC	Strengthening Local and National Capacities for Emergency Preparedness and Response in High Earthquake Risk Countries of Central Asia	2019–2020	
GIZ	Ecosystem-Based Adaptation to Climate Change in High Mountainous Regions of Central Asia	2015–2020	7.10

ADB = Asian Development Bank, GIZ = Deutsche Gesellschaft für Internationale Zusammenarbeit, IFRC = International Federation of Red Cross and Red Crescent Societies, JICA = Japan International Cooperation Agency, UNDP = United Nations Development Programme, UNICEF = United Nations Children's Fund, WFP = World Food Programme, WMO = World Meteorological Organization.

Source: ADB.

C. Institutional Arrangements and Processes for Development Coordination

10. ADB is a member of the Development Partners Coordination Council of the Kyrgyz Republic, which was established in 2009. Its aim is to facilitate information sharing, networking, dialogue, and collaboration among donors, government agencies, and civil society institutions. The council has a co-chairs group of the heads of five bilateral and multilateral agencies, and a full-time secretariat. The council has various working groups, including a working group on environment, climate change, and disaster risk management focusing on (i) environment and ecology, (ii) climate change adaptation and mitigation, (iii) disaster risk management, and (iv) sustainable natural resources management.

11. The Kyrgyz National Platform for Disaster Risk Reduction was formally established in 2011 as a major commitment to the Hyogo Framework of Action 2005–2015.¹⁶ It was reconfirmed in 2019 through the national disaster risk management strategy as an integral part of the government's state system for civil protection. The platform is coordinated by the MES and represents a multistakeholder national mechanism that serves as an advocate of disaster risk reduction at different levels.

12. ADB has actively coordinated with national stakeholders to identify, prioritize, and develop the key investments that comprise the investment project. During project preparation, ADB has worked closely with the donor community—particularly with the World Bank, JICA, UNDP, and research organizations—to ensure good coordination on project activities, avoid overlap of investments and target areas, and incorporate lessons learned from earlier and ongoing projects. It is intended that this will continue during project implementation through the Development Partners Coordination Council and the Kyrgyz National Platform for Disaster Risk Reduction processes, among others, including reporting of results and lessons learned through periodic council and national platform meetings, project workshops, and the project website.

13. Multistakeholder consultation and coordination during project preparation has ensured useful links of the investment project to other donor projects. The investment project is integrating the learning on landslide monitoring and unloading from the World Bank Disaster Hazard Mitigation Project (2004–2012) and is complementary with the ongoing Enhancing Resilience in Kyrgyzstan Project (2018–2024).¹⁷ The investment project will establish a national landslide monitoring system integrated with the already functional national early warning system. Work done under JICA's Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic (2016–2019) will provide a knowledge base for the physical landslide risk mitigation works under the project.

D. ADB Sector Experience and Assistance Program

14. The Kyrgyz Republic has been a member of ADB since 1994 and has received \$1.2 billion in loans, \$670 million in combined grants from the Asian Development Fund and Japan Fund for Poverty Reduction, and \$60 million in technical assistance. Pillar 2 of ADB's country partnership strategy (2018–2022) stipulates climate resilience and disaster risk reduction, focusing on water resources, as one of the strategic priorities.¹⁸ ADB's investments in disaster risk management in the Kyrgyz Republic have focused on the water sector and mainstreaming disaster risk reduction

¹⁶ United Nations International Strategy for Disaster Reduction. 2005. *Hyogo Framework of Action 2005-2015*. Kobe.

¹⁷ World Bank. [Disaster Hazard Mitigation Project](#); and World Bank. [Enhancing Resilience in Kyrgyzstan Project](#).

¹⁸ ADB. 2018. *Country Partnership Strategy: Kyrgyz Republic, 2018–2022—Supporting Sustainable Growth, Inclusion, and Regional Cooperation*. Manila.

into infrastructure development. Emergency assistance has support the government's disaster response and recovery including after landslides.¹⁹ The project will support the ongoing Climate Change and Disaster-Resilient Water Resources Sector Project through development of a landslide risk management plan and procedures for landslide risk assessment and mitigation including resettlement.²⁰

15. ADB has significant country and regional experience in climate change adaptation and disaster risk management including related to landslide events. Regional climate change technical assistance completed in 2017 assessed the opportunities and costs for climate change adaptation measures including for the Kyrgyz Republic.²¹ Ongoing regional technical assistance including the Kyrgyz Republic addresses the lack of loss data to inform disaster risk financing regional risk transfer.²² The Emergency Baipaza Landslide Stabilization Project in Tajikistan completed in 2005 addressed the post-disaster situation following a large landslide in southern Tajikistan that blocked the Vakhsh River with rising waters, threatening the Baipaza Hydro Power Station.²³ The Earthquake Emergency Assistance Project in Pakistan completed in 2014 rehabilitated major roads and bridges following the 2005 earthquake, including protection and slope stabilization works to reduce risks of landslides.²⁴ ADB has twice provided emergency response to flood and landslide events in Sri Lanka.²⁵ ADB supported preemptive geohazard risk reduction in Guangxi province in the People's Republic of China through permanent resettlement and risk-mitigating engineering measures.²⁶

16. Lessons from ADB activities in the country and region call for (i) incorporating climate and disaster risk assessment into infrastructure planning, design, and operation; (ii) using a more inclusive and gender-sensitive participatory planning and management process; (iii) supporting infrastructure investment with improved capacity for resources and natural hazards monitoring and forecasting; (iv) strengthening project management effectiveness through deeper engagement of the executing agency, implementing agency, and steering committee; (v) minimizing the number of procurement packages to improve efficiency; and (vi) facilitating advance action for land acquisition, resettlement, and detailed engineering design.²⁷

¹⁹ ADB. [Kyrgyz Republic: Emergency Rehabilitation Project](#).

²⁰ ADB. [Kyrgyz Republic: Climate Change and Disaster-Resilient Water Resources Sector Project](#).

²¹ ADB. [Economics of Climate Change in Central and West Asia](#).

²² ADB. [Developing a Disaster Risk Transfer Facility in the Central Asia Regional Economic Cooperation Region](#).

²³ ADB. [Emergency Baipaza Landslide Stabilization Project](#).

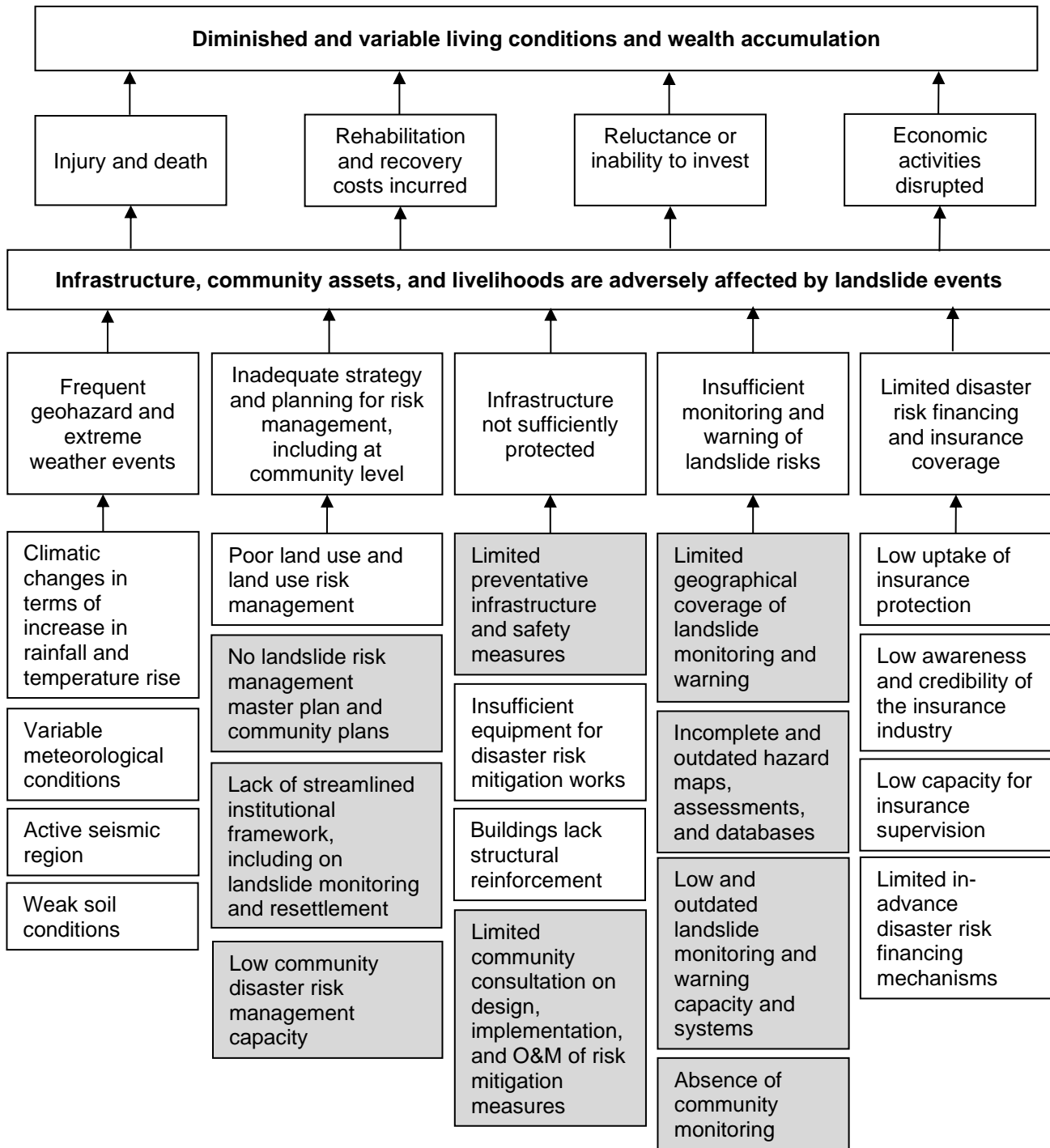
²⁴ ADB. [Earthquake Emergency Assistance Project](#).

²⁵ ADB. [Sri Lanka Flood and Landslide Disaster Response Project](#); and ADB. [Second Sri Lanka Flood and Landslide Disaster Response Project](#).

²⁶ ADB. [Guangxi Wuzhou Urban Development Project](#).

²⁷ ADB. 2016. *Economics of Climate Change in Central and West Asia*. Consultant's report. Manila (TA 8119-REG).

APPENDIX A: PROBLEM TREE FOR THE LANDSLIDE RISK MANAGEMENT



O&M = operation and maintenance .

Note: Shading indicates issues to be addressed under the project.

Source: ADB