SECTOR ASSESSMENT (SUMMARY):
AGRICULTURE, NATURAL RESOURCES, AND RURAL DEVELOPMENT[1]

Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. Tajikistan is highly prone to climate-related extreme weather events, notably flooding, which caused about 80% of disaster mortalities in the country during 1990–2016.[2] Climate change is expected to exacerbate these adverse events and their impacts. Higher temperatures and changes in precipitation patterns are expected to cause earlier and faster snowmelt, recession of glaciers, and a decline in overall water availability. Water stress conditions are likely to become more common, and flooding and landslides are likely to become more frequent and damaging.[3]

2. Climate vulnerability is particularly acute in the districts along the Pyanj River Basin (PRB), the primary tributary to the Amu River in the south of the country. These are among the country's poorest districts, comprising a wide range of geographical and climatic conditions. The PRB is the largest river basin in the country (114,500 square kilometers), spanning 18 administrative districts across two administrative regions (Khatlon and Gorno Badakhshan provinces), with a population of about 1.3 million.[4] The mountain massifs of the PRB have glaciers and permanent snowfields at elevations above 3,500 meters, with high-density drainage networks of steep alpine streams delivering runoff and sediment rapidly to the alluvial fan. Water resources management (WRM) in the PRB is critical to the country's economy and development. Khatlon is the province with the largest population (2.7 million) and agriculture production (e.g., 774,000 tons of cereal production) as well as the most food-insecure zone of the country's irrigated areas.[5] The PRB is the country's poorest river basin (55% poverty rate).[6] Approximately 15% of the PRB is at high to extremely high risk of floods, and this is expected to increase to 20% by 2070.[7] About 30 natural disaster events occurred annually during 1998–2016 in the Khatlon region, with four lives lost and damage exceeding more than $3 million per year.[8] Annual river flows are likely to increase in the glacial subbasins from 2015 to 2070 as a result of increased melt caused by higher air temperatures. The expected change in monthly flow rates, resulting from increased rainfall and decreased snowfall, could increase the magnitude and frequency of extreme flood events. River flow seasonal distribution is likely to shift, and irrigation water requirements are likely to increase.[9]

3. Timely and accurate reporting, forecasting, and warning of weather, hydrometeorological, and climatic conditions are critical inputs to effective WRM, agricultural production, and disaster risk reduction. The importance of these services will grow under future climatic changes. The Agency for Land Reclamation and Irrigation (ALRI), the Ministry of Energy and Water Resources

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[1] This summary is based on ADB. 2017. Institutional Transformation. Consultant's report. Manila (TA 8090-TAJ); and ADB. 2017. Legal Structure Analysis. Consultant's report. Manila (TA 8090-TAJ). Available on request.

[2] Centre for Research on the Epidemiology of Disasters. The International Disaster Database (accessed 16 April 2018).

[3] M. Punkari et al. 2014. Climate Change and Sustainable Water Management in Central Asia. *ADB Central and West Asia Working Paper Series.* No. 5. Manila: Asian Development Bank (ADB).

[4] ADB. 2013. *Building Climate Resilience in the Pyanj River Basin.* Consultant's report (TA 7970-TAJ). Manila.

[5] World Food Programme. 2013. *Food Security Classification Overview–January 2013.* Dushanbe.

[6] World Bank. 2013. *Tajikistan: Reinvigorating Growth in the Khatlon Oblast.* Washington, DC.

[7] ADB. 2011. *Climate Resiliency for Natural Resources Investments.* Consultant's report. Manila (TA 7599-TAJ).

[8] World Bank. 2017. *Strengthening Critical Infrastructure Against Natural Hazards Project.* Social Assessment Report. Washington, DC.

[9] World Food Programme. 2017. Climate Risks and Food Security in Tajikistan: A Review of Evidence and Priorities for Adaptation Strategies. *C-ADAPT Analyses.* Rome.

(MEWR), and other key stakeholders and communities rely on the State Agency for Hydrometeorology (Hydromet) for such outputs.

4. Hydromet is hindered by many of the weaknesses of post-Soviet institutions, including limited budget, decaying infrastructure, and poor staff retention. Consequently, it has insufficient capacity to provide quality services; its monitoring network is sparse, it has limited forecasting and warning capabilities, and limited resources to improve or develop new outputs to meet users' needs. Hydromet has a limited and patchy meteorological and hydrological monitoring network that is labor-intensive to operate, and it depends on third-party numerical weather prediction modeling and satellite imagery for providing local weather forecasts. Its weather forecasting is not integrated with analysis of hydrological responses such as flood forecasting. Hydromet's platforms and networks for rapid and broad dissemination of weather-related news and alerts to key government and civil society stakeholders are limited. Hydromet's teams lack sufficient coordination to develop new advisory and customer service skills, and evaluation and verification are not performed to improve services. This hinders Hydromet's ability to achieve its public service mandate to inform, warn, and protect the public regarding weather and hydrometeorological issues.

2. Government's Sector Strategy

5. The government has prioritized addressing current and future climate-related risks to WRM and disaster management. Tajikistan's Intended Nationally Determined Contribution to the United Nations Framework Convention on Climate Change Paris Agreement prioritizes reducing vulnerability to climate change in key sectors such as agriculture and water resources through the improvement and modernization of hydrometeorological services, disaster risk reduction, and improved knowledge sharing, among others.[10] The National Development Strategy to 2030 also highlights climate change as a key risk and cites adaptation as a cross-sector investment priority.[11] These adaptation priorities were reflected in investments proposed during consultations with government and civil society stakeholders for improvements in WRM,[12] and the Tajikistan National Climate Change Adaptation Strategy due for adoption in the second quarter of 2018.[13]

6. The Committee for Environmental Protection (COEP) is the state planning and regulatory entity for natural resources management and environmental protection, and the country focal point for international climate funds including the Green Climate Fund and Climate Investment Funds. Hydromet, an agency under the COEP, is the coordinating state entity for weather and climate and the implementing authority for the United Nations Framework Convention on Climate Change.

7. In May 2015, Hydromet's legal structure was amended from state institution to state agency status under the COEP. This upgraded the employment status of approximately 60 key Hydromet staff to civil servant level, with accompanying increases in remuneration, promotions, and incentives. The remainder of the Hydromet staff remain under the original state institution structure. However, the salaries of Hydromet staff remain low, and staff retention is a key barrier to Hydromet's development. Key civil servants (including senior management) receive about $150

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[10] Government of Tajikistan. 2015. Intended Nationally Determined Contribution towards the achievement of the global goal of the UN Framework Convention on Climate Change by the Republic of Tajikistan. Dushanbe.

[11] Government of Tajikistan. 2016. *National Development Strategy of the Republic of Tajikistan for the Period Up To 2030*. Dushanbe.

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

[13] ADB. 2017. Draft National Climate Change Adaptation Strategy. Consultant's report. Manila (TA 8090-TAJ).

per month and other staff receive about $50 per month.[14] These are significantly lower than comparable civil servant positions in other state entities ($80–$300 per month), the private sector ($100–$3,000 per month), and national consultants on externally-financed projects ($1,000–$5,000 per month).[15]

8.   The restrictions applied to Hydromet's state agency status limit its ability to function with more management and budget autonomy, as envisaged under the project. This includes seeking and retaining additional entrepreneurial income and setting staff salaries. A state agency is funded entirely from the state budget, with salaries approved within limits set by the government in accordance with annual budget allocations. Additional income received for services rendered may only be used in agreement with the Ministry of Finance. A state institution is responsible for managing and controlling its own funds; it may have varied sources of funding, including state budget contribution, and it may make use of additional revenues from business activities independently.

3.   ADB Sector Experience and Assistance Program

9.   Since 1999, the Asian Development Bank (ADB) has provided loans and grants of more than $150 million and technical assistance (TA) of over $17 million to the agriculture, natural resources, and rural development (ANR) sector and disaster and risk management operations.[16] The WRM subsector, including irrigation and drainage (I&D) and flood management, has been the major recipient of ADB support (over $100 million), followed by climate change adaptation (over $29 million), rural development (over $20 million), and the cotton industry ($15 million). ADB's performance in the ANR sector has been mixed. The 2014 country assistance program evaluation noted that projects suffered from (i) complex and ambitious project design, (ii) deficient scale in the on-farm components, and (iii) the deterioration of infrastructure investments because of insufficient operation and maintenance.[17] It also suggested that ADB should (i) shift from conventional I&D rehabilitation to I&D modernization to improve sustainability, (ii) continue to support policy reform in the ANR sector, (iii) involve nongovernment organizations in projects, and (iv) develop a long-term plan for increasing institutional and financial sustainability. Improving Hydromet's capacity to deliver effective early warnings to cope with disasters and weather- and/or climate-related risks contributes to reducing risks in PRB implementation.

10.   ADB will continue to sharpen its focus on sustainable, inclusive food security and enhanced WRM by implementing a river basin approach through the project, which addresses WRM issues, the water supply system, and water user levels in the PRB in southern Tajikistan. The project will improve the government's WRM capacity in the PRB nationally and regionally through establishment and enhancement of national and cross-border institutions for effective WRM in the PRB. It will also increase agricultural production, food security, and water supply and use efficiencies through civil works investment and capacity building in a selected irrigation system, the Chubek Irrigation System in Hamadoni district.[18]

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[14] State Agency for Hydrometeorology. 2017. Program Schedule and Production for 2017. Dushanbe.

[15] State Agency for Hydrometeorology. 2017. Personal communication.

[16] These include ADB administered cofinancing grants and TA resources.

[17] Independent Evaluation Department. 2014. *Country Assistance Program Evaluation: Tajikistan—Responding to the Changing Development Conditions.* Manila: ADB.

[18] ADB. 2016. *Report and Recommendation of the President to the Board of Directors: Proposed Loan, Grant, and Administration of Grant and Technical Assistance Grant to the Republic of Tajikistan for the Proposed Water Resources Management in the Pyanj River Basin Project.* Manila (L3434-TAJ).

11.   The additional financing of the project will support the development of Hydromet to become a sustainable and well-resourced institution that provides timely and accurate forecasting services. The project focuses on (i) addressing Hydromet's underlying institutional barriers and weaknesses, which hamper its institutional capacity and development; and (ii) supporting improved capacity in the production and dissemination of forecasting services, particularly for the PRB area.

12.   Other development partners also support the ANR sector in Tajikistan through improvements to hydrometeorological monitoring and forecasting. The World Bank's Central Asia Hydromet Modernization Project has invested in equipment and training to improve the meteorological and hydrological monitoring network, data storage, and short-term weather forecasting.[19] The World Bank is seeking additional financing for that project to develop standard operating procedures and information service regulations, build capacity for additional services (including glaciology and agrometeorology), and strengthen the monitoring network. The World Bank has also supported Hydromet's capacity building under a regional project;[20] and is strengthening capacity in monitoring, forecasting, and user-focused impact-based early warning of mountain hazards of the Central Asia National Meteorological and Hydrological Services.[21] The ADB technical assistance on Building Capacity for Climate Resilience will invest in equipment and training for climate change scenario and impact modeling, and a climate information database.[22] The World Bank, in association with the Global Facility for Disaster Reduction and Recovery and the World Meteorological Organization, are working with Hydromet and other related agencies in Central Asia to develop and implement a Central Asia Region Flash Flood Guidance System that provides flood guidance and potentially early warnings.[23] The Finnish–Tajikistan Meteorology Project (2014–2017) supported improvements in Hydromet's (i) capacity to provide climate services, (ii) air quality observation system, (iii) strategic and technical planning capacity, and (iv) capacity in modern observation technology and weather service process.[24] A second phase is expected to commence in 2018.

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[19] World Bank. 2011. *Central Asia Hydromet Modernization Project*. Project appraisal document. Washington, DC.
[20] World Bank. 2011. *Central Asia Hydrometeorology Modernization Project.* Washington, DC.
[21] World Bank. 2017. *Strengthening Early Warning of Mountain Hazards in Central Asia.* Planning workshop. Almaty, Kazakhstan. 14 March 2017.
[22] ADB. 2012. *Technical Assistance to the Republic of Tajikistan for Building Capacity for Climate Resilience*. Manila.
[23] World Meteorological Organization. Central Asia Region Flash Flood Guidance (CARFFG) System.
[24] Finnish Meteorological Institute. Finnish–Tajikistan Meteorology Project (FINTAJ).

Problem Tree for the Agriculture, Natural Resources, and Rural Development Sector
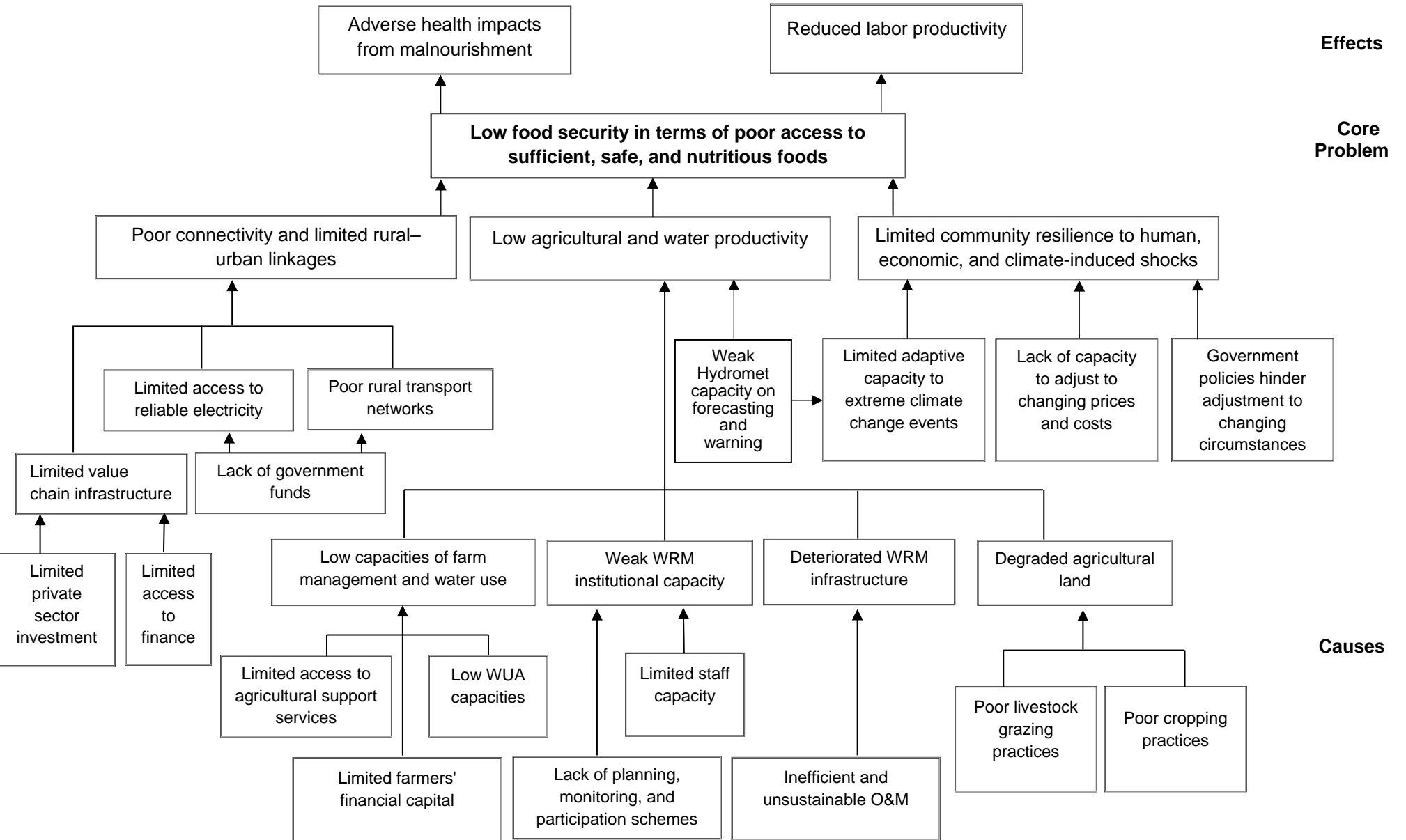
Hydromet = State Agency for Hydrometeorology, O&M = operation and maintenance, WRM = water resources management, WUA = water users' association.