

## PROJECT CLIMATE RISK ASSESSMENT AND MANAGEMENT REPORT

### I. Basic Project Information

<b>Project Title:</b> Water Resources Management in Pyanj River Basin
<b>Project Budget:</b> \$31.61 million (In addition, the technical assistance will be provided, with estimated cost of \$2.12 million, of which \$2.00 million will be financed on a grant basis by the Japan Fund for Poverty Reduction)
<b>Location:</b> Hamadoni, Farkhor, and Vose districts in Khatlon Province of Tajikistan
<b>Sector:</b> Agriculture, natural resources, and rural development; Subsectors (i) Irrigation (primary) and (ii) water-based natural resources management
<b>Strategic Agenda:</b> (i) Inclusive economic growth (IEG) , and (ii) Environmentally sustainable growth (ESG)
<b>Brief Description:</b> The project's outputs are: (i) water resources management (WRM) system in the Tajikistan portion, and effective joint regional management of the Pyanj River basin (PRB) improved; (ii) modernized and climate-proofed Chubek Irrigation System (CIS) WRM infrastructure fully operational; and (iii) farm management capacity and water use skill improved.

### II. Summary of Climate Risk Screening and Assessment

#### A. Sensitivity of project component(s) to climate/weather conditions and sea level

Project component	Sensitivity to climate/weather conditions and sea level
1. Irrigation and drainage network of CIS	1. Floods in Pyanj and other rivers, high sediment load in diverted water, and frequent mudflows.
2. Crops grown in the project area	2. Temperature variation; and intensity and frequency of droughts, rainfall, and winds.
3. Pumping systems	3. High sediment loads in irrigation water.

#### B. Climate Risk Screening

Risk topic	Description of the risk
1. Medium to high flooding risk	1. Floods and associated events may damage protection works, I&D infrastructure, crops, and settlements.
2. Changing pattern of climate conditions	2. Sedimentation may block irrigation system and thus increase (O&M) costs and accelerate the deterioration of infrastructure.
	3. Changing temperature and pattern of climate conditions may impact crops and increase water requirements.

Climate Risk Classification: **High** (See attached REA climate checklist and AWARE screen.)

#### C. Climate Risk Assessment

The following climate risks have been identified and assessed for the project:<sup>a</sup>

1. High temperature may increase the crop water requirements and reduce yield. The existing irrigation network may not have enough capacity to cater for increased discharges;
2. High river floods resulting from climate change may damage the project facilities and the settlement;
3. High river flows may bring in higher sediment loads thus choking the irrigation network and accelerating the deterioration of the pumps and thus requiring higher funds for O&M;
4. Hydrological and meteorological droughts may reduce water availability, which may not be sufficient to meet irrigation requirement of the CIS; and
5. The mud flows may damage the I&D infrastructure and the settlements.

### III. Climate Risk Management Response within the Project

<ol style="list-style-type: none"> <li>1. The future climate changes have been considered in crops selection and their water requirement estimation. To climate-proof the irrigation system for higher temperatures, a 2.5% increase in water demand has been factored into the capacity requirement for detailed design.</li> <li>2. The increased water demand will result in increased sedimentation if mitigating actions are not put in place. Under the project, the sediment previously deposited in I&amp;D network will be removed, and heavy machinery will be purchased for regular cleaning in the future. A sediment-excluding basin will be constructed to reduce the sediment entry into the system by about 85%. The reduced sediment entry will reduce annual funding requirement for removing sediments from the canals, and hence I&amp;D infrastructure are expected to be maintained adequately;</li> <li>3. The project is not expected to see reduced water diversions to the CIS from the Pyanj River due to drought, as the CIS draws only 4%–5% of Pyanj River flows. The construction of reservoirs to mitigate drought risk was not deemed appropriate at this time due to cost and the uncertainty of the changes in river flow volume.</li> <li>4. Suitable flood protection embankments and institutional arrangements for their maintenance and repair and to cater for disaster management are already in place or planned, in order to protect against damages from floods and mud flows.</li> </ol>
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<sup>a</sup> ADB. 2014. *Technical Assistance to Tajikistan for Water Resources Management in Pyanj River Basin*. Manila. (The consultant final report)

