## RISK ASSESSMENT AND RISK MANAGEMENT PLAN

<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Rating</th>
<th>Mitigation Measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Procurement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOWRAM has insufficient qualified staff to efficiently undertake the procurement required to implement the project.</td>
<td>S</td>
<td>An international procurement specialist during the transaction TA will support the MOWRAM PMU in preparing the procurement plan, packaging, contract management plan, advance actions for works and goods contracts, and recruitment of the PMIC and the individual consultants to support the data center. During implementation, the PMIC which includes an international and a national procurement and contract management specialist, will also support the PMU by providing them with on-the-job training in procurement during project implementation.</td>
<td>MOWRAM, PMU, PMIC, and TA consultant</td>
</tr>
<tr>
<td>There is no nationwide system for collecting and disseminating procurement information, including tender invitations, requests for proposal, and contract award information.</td>
<td>M</td>
<td>Information regarding the procurement of services and goods shall be available on the websites of MOWRAM and ADB. MOWRAM should regularly update reports and disclose information related to procurement processes including contract awards.</td>
<td>MOWRAM, PMU, and PMIC</td>
</tr>
<tr>
<td>Contract management capacity needs strengthening.</td>
<td>M</td>
<td>Capacity building of PMU staff in contract management will be provided by PMIC, and an international and a national procurement and contract management specialist will be included in the PMIC team.</td>
<td>MOWRAM, PMU, and PMIC</td>
</tr>
<tr>
<td><strong>2. Financial Management</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inherent risk related to the country’s inconsistent application of the financial reporting standards are used to prepare project financial statements.</td>
<td>S</td>
<td>ADB and other development partners have been supporting the government to update its national financial reporting standards to fully align with the International Public Sector Accounting Standards (IPSAS). A draft plan has been submitted to ADB by the government to show its plans and commitments to transition towards the IPSAS cash basis. ADB will continue to resolve this issue through implementation of the time-bound plan.</td>
<td>MOWRAM</td>
</tr>
<tr>
<td>The new PMU finance officer and staff to be assigned to the project have limited capacity in project financial management. Although they have experience from their capacity in the same positions in other projects, their familiarity with the FMM and the updated ADB loan disbursement guidelines need to be enhanced.</td>
<td>S</td>
<td>A project accountant will be assigned to the PMU from the Finance Department of MOWRAM to assist the PMU finance officer and staff. The PMIC will include financial management specialists to support and train or mentor PMU finance staff in project financial management, standard operating procedures, FMM, ADB’s Loan Disbursement Handbook, and the project administration manual.</td>
<td>MOWRAM, PMU, and PMIC</td>
</tr>
<tr>
<td>The new staff at the PMU have limited capacity to prepare financial management</td>
<td>S</td>
<td>System improvement in project accounting will link the Sage software installed in the</td>
<td>MOWRAM</td>
</tr>
<tr>
<td>Risk Description</td>
<td>Rating</td>
<td>Mitigation Measures</td>
<td>Responsibility</td>
</tr>
<tr>
<td>------------------</td>
<td>--------</td>
<td>---------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>reports, and to show financial and physical progress in one report as required in the FMM. The current project accounting system is semimanual with limited use of Microsoft Excel spreadsheets.</td>
<td>S</td>
<td>Finance Department with the project accounts and physical progress. Support will be provided to the PMU in the enhancement of the financial management information system using agreed software, which will link internal reporting activities with those at interdepartmental and interagency levels to reduce or eliminate budget and/or disbursement variances.</td>
<td>MOWRAM and MEF</td>
</tr>
<tr>
<td>The accounting software still needs to be installed in the PMU finance unit to be established, and the PMU staff trained in its use.</td>
<td>S</td>
<td>PMU finance staff will be trained on how to generate financial management reports from the agreed project accounting and reporting software.</td>
<td>MOWRAM and MEF</td>
</tr>
<tr>
<td>Staff capacity in internal audit is limited. PMU staff will comprise several staff assigned from other MOWRAM departments since 2007, but without the necessary educational background, and a few new young staff with accounting degrees but lacking experience in internal audit. In addition, the internal audit department claims it does not have enough equipment to perform its duties effectively and efficiently.</td>
<td>S</td>
<td>Capacity building under the Public Financial Management for Rural Development Program will be monitored so that staff of the internal audit department of MOWRAM are provided with continuous on-the-job training on internal audit and in advanced Microsoft Excel and are provided with the necessary support and equipment such as laptop computers, printers, and vehicles.</td>
<td>MOWRAM and MEF</td>
</tr>
<tr>
<td>The quality of external audit remains a concern, particularly the need to raise awareness of the required project audit standards, strengthen the terms of reference for external auditors, and review the practice of audit bundling to create large contracts in light of inadequate capacity and experience of auditors.</td>
<td>S</td>
<td>The terms of reference for auditors will be updated and the potential participation of the National Audit Agency explored to further improve audit quality. The performance of the external audit firm will be closely monitored to ensure that the staff assigned to the project have the qualifications and experience as agreed in the contract.</td>
<td>MOWRAM and MEF</td>
</tr>
</tbody>
</table>

3. Institutional Capacity

<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Rating</th>
<th>Mitigation Measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMU and PDWRAMs have poor capacity to implement the project.</td>
<td>M</td>
<td>The project performance monitoring system has been developed and shall be established immediately after mobilization of the PMIC. Capacity of the PMU and PDWRAM staff involved in the project will be strengthened by providing support from the PMIC and on-the-job training on project implementation.</td>
<td>MOWRAM</td>
</tr>
</tbody>
</table>

4. Project Implementation

<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Rating</th>
<th>Mitigation Measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start-up action is delayed.</td>
<td>L</td>
<td>The PMU is already established and staffed. The following will be completed before loan effectiveness:</td>
<td>MOWRAM and PMU</td>
</tr>
<tr>
<td>Risk Description</td>
<td>Rating</td>
<td>Mitigation Measures</td>
<td>Responsibility</td>
</tr>
<tr>
<td>------------------</td>
<td>--------</td>
<td>---------------------</td>
<td>----------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(i) Evaluation of technical and financial proposals of PMIC, data center consultants, and WCS, and draft contracts for all.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ii) Evaluation of bidding documents for international competitive bidding for civil works and goods packages for Kamping Pouy and Prek Po subprojects.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(iii) Evaluation of bids for procurement of other goods and equipment, and vehicles.</td>
<td></td>
</tr>
<tr>
<td>coordination between MOWRAM and PDWRAMs and FWUCs is weak.</td>
<td>M</td>
<td>The MOWRAM Department of Farmer Water Users Communities is the project implementing agency, and the central and provincial departments of MOWRAM in the target provinces have been made part of the PMU. Therefore, the project will be managed and implemented under one roof. This will ensure that there is no communication or coordination gap and all implementation decisions will be made by a cohesive team.</td>
<td>PMU</td>
</tr>
<tr>
<td>Planning and funding of O&amp;M is inadequate.</td>
<td>S</td>
<td>The O&amp;M support system was formulated during the TA. The works contract of each subproject includes an O&amp;M and FWUC component, ensuring participation of farmers as key during project design and implementation. FWUCs will be established, trained, and supported intensively for sustainable O&amp;M.</td>
<td>MOWRAM, FWUC, and O&amp;M service providers under the works contracts of all four subprojects</td>
</tr>
<tr>
<td>FWUCs from other projects are unwilling to participate in joint reservoir operation planning.</td>
<td>M</td>
<td>A JOROP protocol for Kamping Pouy has been prepared under the TA and will provide the basis for the development of a formal water sharing agreement among concerned FWUCs and farmer groups at lower levels. The PMIC will prepare a detailed JOROP for both Kamping Pouy and Stung Chinit South subprojects in consultation with other projects and provide technical advice and support to the PDWRAMs in supervising JOROP implementation in the subprojects. The works contract of each subproject includes an O&amp;M and FWUC component, ensuring participation of farmers as key during project design and implementation.</td>
<td>PMU and PMIC</td>
</tr>
<tr>
<td>Farmers are unwilling to participate in scheme improvement (upgrading tertiary canals), and contribute to irrigation service fee.</td>
<td>L</td>
<td>Experience shows the risk of some households being unwilling to upgrade the tertiary canals and participate in the FWUC is low. Investment in tertiary canal upgrade will not be made for those households. The process to establish the FWUCs will allow consultation with farmers and confirm their participation in the FWUCs, as well as their PMU and O&amp;M service providers under the works contracts of all four subprojects</td>
<td></td>
</tr>
</tbody>
</table>

5. Operations and Maintenance of Irrigation Schemes
<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Rating</th>
<th>Mitigation Measures</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6. Disaster and Climate Change</strong></td>
<td></td>
<td><strong>agreement to contribute to the irrigation service fee.</strong></td>
<td>MOWRAM; PDWRAMs; Provincial Department of Agriculture, Forestry, and Fisheries; and FWUCs</td>
</tr>
<tr>
<td>Extreme weather events adversely impact crop production.</td>
<td>M</td>
<td>The project design includes climate proofing of irrigation and drainage facilities to increase irrigation efficiency and protect agricultural lands, canals, and associated structures from potential flooding that may be caused by high-intensity and long-duration rain. To reduce the impact of drought on water availability, climate proofing of cropping patterns and irrigation scheduling were designed and established during the TA project. The PDWRAMs; Provincial Department of Agriculture, Forestry, and Fisheries; and FWUCs will be trained on the implementation of the designed cropping pattern and irrigation scheduling. JOROP will also be adopted.</td>
<td></td>
</tr>
<tr>
<td><strong>7. Environment</strong></td>
<td></td>
<td></td>
<td>PMU and PMIC</td>
</tr>
<tr>
<td>There are environmental risks including construction risks and damage from fertilizer and pesticide residues.</td>
<td>L</td>
<td>Adequate resources have been allocated for environmental safeguards including integrated pesticide management training.</td>
<td></td>
</tr>
<tr>
<td>Irrigation will be expanded beyond the boundary of the Stung Chinit South subproject into areas of potential critical habitat.</td>
<td>M</td>
<td>Stopping the canal rehabilitation works 100–200 meters inside the subproject boundary will limit the effectiveness of any pumping or newly constructed tertiary canals to supply water to areas outside the boundary. MOWRAM is committed not to extend or allow the extension of the secondary canals or unauthorized third-party pumping from command area canals or extension of those canals, during and after the project period.</td>
<td>PMU and PMIC (Wildlife Conservation Society to monitor)</td>
</tr>
<tr>
<td>Build-up of refuse in canals (specifically the main canal in Prek Po) constrains water delivery, reducing water quality, and increasing flood risk.</td>
<td>L</td>
<td>A solid-waste management component is included in the Prek Po subproject. This will also serve as a demonstration activity which other subproject communes might benefit from.</td>
<td>PMU and PMIC</td>
</tr>
<tr>
<td><strong>8. Social</strong></td>
<td></td>
<td></td>
<td>PMU and PMIC</td>
</tr>
<tr>
<td>Land acquisition and resettlement may occur in the Kamping Pouy subproject.</td>
<td>L</td>
<td>During the detailed engineering design of subprojects, measures to avoid or minimize involuntary resettlement impacts will be incorporated. A land acquisition and resettlement plan has been prepared for the Kamping Pouy subproject in consultation with relevant agencies and affected people, providing compensation and assistance for the affected people. When the detailed engineering design of Canal 15 and Stung Chinit South subprojects are available, screening of land acquisition</td>
<td>PMU, PMIC, and MEF GDR</td>
</tr>
<tr>
<td>A land acquisition and resettlement plan has been prepared for the Kamping Pouy subproject in consultation with relevant agencies and affected people, providing compensation and assistance for the affected people.</td>
<td></td>
<td></td>
<td>PMU, PMIC, PDWRAMs, FWUCs, and MEF GDR</td>
</tr>
<tr>
<td>Risk Description</td>
<td>Rating</td>
<td>Mitigation Measures</td>
<td>Responsibility</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------</td>
<td>---------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>and resettlement will be conducted by the PMIC in coordination with the PDWRAMs, FWUCs, and representatives of villagers, and land acquisition and resettlement plans will be prepared by the MEF GDR if land acquisition of individuals or households is required by the subprojects.</td>
<td>L</td>
<td>For any temporary site installation, the contractor(s) will propose the site(s) and submit the access plan for review of, and approval by, the PMU. The site will be within the public empty land which is available in the subproject areas. Metal sheets will be provided by the contractors for pedestrians and vehicle access during canal construction. Reconstruction of the canal crossing is within the scope of the canal improvement works of the subprojects. Civil works will be prioritized and carried out early in the canal sections which are within the affected canal crossings.</td>
<td>PMU, PMIC, contractors, and villagers.</td>
</tr>
<tr>
<td>Travel of local villagers in the subproject areas is disturbed during the construction stage.</td>
<td>L</td>
<td>Construction activities will be planned and implemented when water is not required for production. Local people will be informed of the construction activities 6 months in advance so they can adjust their planting schedule accordingly. Irrigation water supply will be blocked in just one embankment side, lengthwise, so the canals will still be able to supply water to the farmers' fields during construction. The contractors will discuss with the community the measures and construction methods with participation of the PMU and PDWRAM to ensure that irrigation will not be disrupted during canal construction.</td>
<td>PMU, PMIC, contractors, and villagers</td>
</tr>
<tr>
<td>Irrigation supply is temporarily blocked during canal construction.</td>
<td>L</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

S = substantial, M = moderate, L = low.
ADB = Asian Development Bank, FMM = financial management manual, FWUC = farmer water user community, GDR = General Department of Resettlement, JOROP = joint reservoir operation, MEF = Ministry of Economy and Finance, MOWRAM = Ministry of Water Resources and Meteorology, O&M = operation and maintenance, PDWRAM = Provincial Department of Water Resources and Meteorology, PMIC = project management and implementation consultant, PMU = project management unit, TA = technical assistance.