

**ASIAN DEVELOPMENT BANK**

**TAR: AFG 36252**

**PROPOSED**

**TECHNICAL ASSISTANCE**

(Cofinanced by the Government of Canada)

**TO THE**

**ISLAMIC REPUBLIC OF AFGHANISTAN**

**FOR PREPARING THE**

**WESTERN BASINS WATER RESOURCES MANAGEMENT AND  
IRRIGATED AGRICULTURE DEVELOPMENT PROJECT**

**October 2004**

## CURRENCY EQUIVALENTS

(as of 20 September 2004)

Currency Unit	=	afghani (AF)
AF1.00	=	\$0.0221
\$1.00	=	AF45.17

## ABBREVIATIONS

ADB	–	Asian Development Bank
GIS	–	geographic information system
IWRM	–	Integrated Water Resources Management
km	–	kilometer
MIWRE	–	Ministry of Irrigation Water Resources and Environment
MOF	–	Ministry of Finance
O&M	–	operation and maintenance
TA	–	technical assistance
TOR	–	terms of reference
WUA	–	water users association

## TA CLASSIFICATION

<b>Poverty Classification</b>	–	Core poverty intervention
<b>Sector</b>	–	Agriculture and natural resources
<b>Subsector</b>	–	Water resources management
<b>Theme</b>	–	Economic growth
<b>Subtheme</b>	–	Fostering (physical) infrastructure development

Following the Board approval of the R-Paper, *Review of ADB's Poverty Reduction Strategy*, staff instructions to replace the PI/PCI classification with a new tracking system are under preparation in line with paragraph 83 of the R-paper.

## NOTE

In this report, "\$" refers to US dollars.

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## I. INTRODUCTION

1. The Islamic Republic of Afghanistan has requested support from the Asian Development Bank (ADB) for technical assistance (TA) to aid the country's development of water resources and irrigated agriculture. The TA was included in ADB's Afghanistan Country Strategy and Program 2003–2006 for execution in 2004.<sup>1</sup> The TA was prepared based on a Fact-Finding Mission from 29 February to 14 March 2004. The Fact-Finding Mission and previous reconnaissance missions held extensive consultations with Government representatives, *mirabs* (traditional irrigation masters), farmers, development partners, and other stakeholders. The TA was developed within the framework of ADB's Agricultural Sector Program loan (AFG-2083)<sup>2</sup> that underpins ADB's strategy for agricultural development and natural resource management.

## II. ISSUES

2. Water resources are one of Afghanistan's most valuable assets and fundamental to the agriculture sector, which sustains over 80% of the population. Irrigated agriculture uses 95% of developed water resources and produces the vast majority of agricultural output in the country. The Hari Rud and Murgahb River basins are the primary river basins in western Afghanistan (Badghis, Ghor, and Herat provinces). Together they cover 78,000 square kilometers (over 12% of Afghanistan) and provide 3 billion cubic meters of annual runoff split almost equally between the two basins. The rivers flow west and northwest out Afghanistan and eventually drain into Turkmenistan. The basins are home to 9% of Afghanistan's population. Poverty is endemic in the rural areas. In some villages, a landless existence is common with many residents sharecropping and sometimes receiving a small portion of the harvest. Strengthening water resources management and increasing the productivity of irrigated agriculture are critical to improving the overall rural economy and reducing poverty (Appendix 1).

3. **Existing Irrigation.** Much of the area of the western basins has the least developed irrigation potential in Afghanistan. In the middle and lower Hari Rud basin around Herat, however, 28 traditional irrigation systems exist that have over 500 kilometers (km) of main canals and irrigate 100,000 hectares as well as provide water for livestock, domestic use, and municipal supply. The Ministry of Irrigation Water Resources and Environment (MIWRE) is responsible for irrigation, yet MIWRE staff in Herat lack training and resources to effectively develop and manage the irrigation systems. The 28 systems are centuries old and have customary water allocations for major canals; however, water is measured imprecisely and current allocations do not account for changes over the past generations. *Mirabs* are still the primary institution for irrigation management and have the community respect and authority to mobilize local labor for operation and maintenance (O&M). However, the *mirabs* need improved capacity and the systems need more attention beyond the existing O&M.

4. Existing irrigation systems suffer from two major problems. First, they are seriously in need of repair and, in many cases, entire canal networks need major rehabilitation because decades of civil unrest have impeded routine maintenance and denied adequate resources for repairs. This condition is exacerbated by the flood-prone and meandering nature of the Hari Rud River, which leads to the constant need to rehabilitate canal intakes; erosion and loss of farmland; and canal erosion that requires river training, bank protection, canal rerouting, siphons, and aqueducts. Inadequate cross-drainage results in localized spates breaching canals. Second, due to the traditional nature of the irrigation systems, few modern regulating structures exist and water distribution is through temporary and makeshift rudimentary

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<sup>1</sup> The TA first appeared in *ADB Business Opportunities* on 1 August 2003.

<sup>2</sup> ADB. 2004. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Afghanistan for the Agriculture Sector Program*. Manila.

structures. Numerous canals run in parallel for many kilometers, and the systems need to be rationalized to eliminate duplication and increase the irrigable area.

5. In addition to improving existing systems, new lands could be brought under irrigation in the western basins and provide significant benefits to rural communities. The strong mirab institution and tradition of community participation are important dynamics that have great potential to ensure a local sense of ownership, and sustainable system management and O&M for rehabilitation and new projects developed in the western basins.

6. **Water Resources Management and Salma Dam.** Although mirabs can play an effective water management role at the irrigation system level, no institutions exist to manage water at higher levels within the western basins. In addition to lack of basin management, little data exists to allow adequate water resources planning. MIWRE does not have the capacity to generate and manage the requisite information. The proposed development of Salma Dam<sup>3</sup> on the Hari Rud River accentuates the need for basin management and planning since the dam may have a large impact on the flow regime of the river. The dam may create opportunities for an expanded command area and more intensive irrigation of existing areas. Strategies to most effectively exploit the dam's potential for irrigated agriculture in consonance with its planned hydropower generation need to be developed, and basin development should take place within socially and environmentally sound policy frameworks, which do not yet exist.

7. **Watershed Resources.** The western basins' watersheds are critical to sustain the water resources on which irrigation depends. The watersheds' range and forest resources are vital to sustain the livelihoods of the basin inhabitants including the Kuchi (nomadic Pushtun tribesman) who move their flocks among seasonal pastures. Watershed resources have come under increasing pressure and are severely degraded in many areas. This condition not only threatens the sustainability of water resources but greatly affects the poor and other marginalized groups who depend most on these resources.

8. **Agriculture.** Although improved irrigation is vital to increase agriculture productivity, other factors and inputs are involved. The Department of Agriculture does not have the capacity to deliver agricultural support services, and its improved effectiveness in the short term is uncertain. However, farmers need assistance with inputs, extension, postharvest facilities, and marketing. The western basins are well-positioned to develop higher value crops and are strategically located for export. Afghans are assiduous farmers, but they need additional support to improve and develop a self-sustaining situation of enhanced productivity and incomes.

### III. THE PROPOSED TECHNICAL ASSISTANCE

#### A. Purpose and Output

9. The TA will undertake technical studies, institutional analyses, and capacity needs assessments to prepare an investment project for integrated water resources management (IWRM) and irrigated agriculture development. The TA and the ensuing project have the following interrelated objectives: (i) improve water resources management at all levels, from on-farm to basin management; (ii) rehabilitate, modernize, and develop new irrigation and water resources infrastructure; (iii) enhance the enabling environment for improved agricultural productivity; (iv) ensure the integrity and productivity of watershed resources; and (v) develop

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<sup>3</sup> Completion of the Salma Dam, which was started and abandoned in the early 1980s, has been proposed by the Government of India, which supported the original project. Funding has been earmarked for the project although no construction schedule has been proposed and the updated feasibility study is not yet available.

capacity and strengthen institutional frameworks for IWRM and irrigated agriculture. The TA will prepare a sector investment program within an IWRM framework that includes the following outputs: feasibility studies for subprojects and civil works; policies and institutional frameworks; detailed implementation arrangements; capacity development programs; service delivery mechanisms and strategies; a due diligence report on Salma Dam;<sup>4</sup> and monitoring and evaluation procedures. The TA framework is in Appendix 2.

## **B. Methodology and Key Activities**

10. To achieve its strategic objectives, the TA and the ensuing project will be based on the components described below. The components are not discrete; they work synergistically to optimize water resources management and improve agricultural productivity. The TA's integrated approach will develop a project that will establish requisite capacities and frameworks to support successful and sustainable implementation of programs and physical infrastructure. The project is designed to be a stand-alone intervention with or without Salma Dam. Completion of Salma Dam may enhance project benefits, and project activities can be phased to integrate more closely with the dam's development as its execution becomes imminent. The policies and activities in water resources and irrigated agriculture such as river basin management, agricultural market development, and land titling, among others to be prepared by the TA, have also been designed to support the reform agenda under ADB's Agricultural Sector Program loan (footnote 2).

11. **Strengthened Integrated Water Resources Management.** The TA will review the current status of water resources in the western basins and initiate the analysis of surface water (timing, quantity, and quality) and an inventory of use. The TA will evaluate different release regimes in the Hari Rud Basin under the proposed Salma Dam to optimize irrigation rehabilitation and development activities and will review all aspects of the Salma Dam project to ensure that it reflects international best practice and is consistent with ADB social, environmental, and economic guidelines. The TA will evaluate groundwater resources in the basins, generate options to exploit groundwater and conjunctive use, and identify water harvesting opportunities. It will also review existing practice and policies for IWRM and develop options to strengthen IWRM under the project, including a basin authority and development planning process. To support those efforts, the TA will initiate the development of a geographic information system (GIS) database for land and water resources within the Hari Rud basin that will be adapted for appropriate management needs and expanded to other basins under the project, and identify the necessary modeling to be accomplished by the project. By ensuring sound IWRM policies and practice at the river basin level, the TA and ensuing project will optimize the development of irrigation and all other water needs within a framework for sustainable planning, development, and management.

12. **Preparation of Core Subprojects for Irrigation and Water Resources Management.** The TA will prepare to feasibility level the upgrading of three canal irrigation systems as well as one additional irrigation system for upgrading or other representative subproject (e.g. flood control or new irrigation system) that could be supported under the ensuing project. The TA will make an initial assessment of new areas in the Hari Rud basin that could be irrigated if Salma Dam can support such development. Irrigation core subprojects will be executed in the Hari Rud

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<sup>4</sup> Two reasons exist for this activity. First, ADB wants to help maximize Salma Dam's development impact. Second, while ADB and its cofinancing partners are not directly involved in developing the Salma Dam, the association and possible interdependence of activities under the ADB Project and development of the dam pose reputational risks to ADB and its cofinancing partners if the dam is not developed in accordance with international best practice and ADB safeguard policies.

basin with one canal irrigation network selected in the upper, middle, and lower reaches of the basin. Rehabilitation will be comprehensive. It will start with intake structures and work systemically to the end of the canal network. Irrigation works will upgrade distribution structures for improved water management and include on-farm water management activities. Core subprojects to be selected will address a range of rehabilitation, modernization, and protection needs. The TA will establish multiple subproject selection criteria (technical, social, economic, etc.); create a subproject development methodology; and develop an investment plan of subprojects to be pursued throughout the basins for the first 2-3 years of the project. Preparation of core subprojects will be accompanied by development of frameworks, assessments, and plans in accordance with ADB policies to address resettlement, the environment, indigenous peoples, and other concerns. The goal of this component is to develop integrated processes and methodologies for subproject preparation and execution to be replicated under the project within the anticipated capacity and participation of MIWRE, mirabs, farmers, and other stakeholders. Strategies for sustainable O&M are also a critical aspect of the TA. The TA will evaluate alternative irrigation technologies and generate options for disseminating them under the project.

13. **Agricultural Support Services.** The TA will seek to optimize improved water availability and management and will review the technical, institutional, social, and economic factors surrounding crop production and marketing. It will identify opportunities for increasing productivity through improved yields as well as promote adoption of higher value crops for domestic consumption and export. An important objective will be to develop agricultural options and support programs that provide sustainable alternatives to poppy cultivation, which is still currently low in the area. The TA will use a comprehensive assessment that evaluates the entire production chain and marketing process. The desired approach will rely on decentralized modalities to deliver agricultural support services that require few Government resources. Innovative options that use the farm communities themselves, mirabs, the private sector, and other stakeholders will be explored. In addition, the TA will generate macrolevel strategies for agricultural development in the western basins that will exploit the region's comparative advantages. Eventual project implementation will integrate improved agricultural practices and support services with irrigation rehabilitation and new development.

14. **Watershed Management.** The TA will assess the status of watersheds in the western basins and identify patterns of degradation, their causes, and impacts on water resources and communities. The assessment will be especially important in the watersheds above the proposed Salma Dam to control sediment inflow and protect the useful life of the reservoir. The TA will assess the patterns of resource use in the western basin watersheds and develop options to conserve and improve watershed resources in order to maintain the integrity of the water resource base as well as improve the availability of watershed resources for the basins' inhabitants. Emphasis will be on decentralized delivery modalities for any watershed program to be implemented under the project. The GIS activities initiated as part of the water resources management component will also be used to support watershed analysis and management.

15. **Capacity Development and Institutional Strengthening.** The TA will identify capacity constraints with regard to all aspects of project implementation and define detailed capacity development programs to be supported under the project. Capacity development will address training for MIWRE, mirabs, farmers, and other stakeholders, and identify resource requirements to ensure that activities under the project will be successfully and sustainably executed. Capacity development will include all aspects of irrigation system rehabilitation, development, and management as well as IWRM activities. A substantial capacity development program may be needed to support agricultural and watershed management components. The TA will also recommend the most effective modalities for capacity development.

16. The TA will review current policies and institutions related to water resources management and irrigated agriculture and make recommendations to bolster them. It will define programs and policies for basin management and other water resources institutions to be developed under the project. Current agricultural and watershed management policies and institutions will be reviewed to assess their effectiveness, and the TA will make reform recommendations in support of project and sector objectives. The TA will propose activities to strengthen institutions and capacity for addressing resettlement, indigenous people, and environmental assessment and management under the project. Current practices for land titling in the western basins and procedures to strengthen the process will also be addressed, and farm-level interventions specifically targeted at the poor and landless farmers will be developed.

### **C. Cost and Financing**

17. The total cost of the TA is estimated at \$2.06 million equivalent, comprising \$1.761 million in foreign exchange and \$299,000 equivalent in local currency. The Government has requested that ADB finance the entire foreign exchange cost and \$199,000 equivalent of the local currency cost. The Government will contribute the remaining local currency cost of \$100,000 equivalent. The TA will be financed on a grant basis by the Government of Canada and ADB's TA funding program and be administered by ADB. Details of the cost estimates and financing are in Appendix 3. The Government has been advised that approval of the TA does not commit ADB to financing an ensuing project.

### **D. Implementation Arrangements**

18. The Ministry of Finance will be the Executing Agency and MIWRE will be the Implementing Agency for the TA. MIWRE has agreed to the following support before the TA starts: (i) appoint a counterpart TA project director; (ii) select at least six staff members to work with the TA team; (iii) help in data collection; (iv) facilitate three workshops – two in Herat and one in Kabul; (v) provide a full copy of the Salma Dam feasibility study; and (vi) provide logistical support, technical services and mapping, and office space and utilities. To support TA activities, two committees will be established: (i) to coordinate TA implementation, a project technical advisory committee chaired by MIWRE and composed of high-level technical staff from MIWRE and other relevant ministries; and (ii) a steering committee for policy guidance and TA review chaired by the deputy minister of finance, with other deputy and ministerial level officials as members.

19. The TA will be implemented over 8 months, from commencement of consultants. ADB will recruit a team of consultants through a firm to provide a total of 58 international and 8 domestic person-months of consulting services in irrigation engineering, hydrology, economics, agriculture, watershed management, environment, social analysis, and mirab development. The consultant terms of reference are in Appendix 4. ADB will engage the consultants in accordance with its *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for engaging domestic consultants.

## **IV. THE PRESIDENT'S RECOMMENDATION**

20. The President recommends that the Board approve (i) ADB administering a portion of technical assistance not exceeding the equivalent of \$760,000 to be financed on a grant basis by the Government of Canada, and (ii) ADB providing the balance not exceeding the equivalent of \$1,200,000 on a grant basis to the Government of Afghanistan for preparing the Western Basins Water Resources Management and Irrigated Agriculture Development Project.

## SUMMARY INITIAL POVERTY AND SOCIAL ANALYSIS (IPSA) REPORT FORM

### A. Linkages to the Country Poverty Analysis

<b>Is the sector identified as a national priority in country poverty analysis?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Is the sector identified as a national priority in country poverty partnership agreement?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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#### Contribution of the sector or subsector to reduce poverty in Afghanistan:

Water resources are one of Afghanistan's most valuable assets and are fundamental to the agriculture sector, which supports about 85% of the population. Irrigated agriculture, is vital as it accounts for most agricultural production, and reducing the country's rural poverty will require improved access to water resources and irrigation, along with improved availability of input supply, support services, and marketing infrastructure. Although irrigation schemes cover more than 2.6 million hectares of a total of 8 million hectares agricultural land, such schemes require rehabilitation due to deterioration caused by neglect and inadequate resources during decades of civil unrest. The project will address the aforementioned problems, not only to benefit persons with access to irrigation, but also stimulate the entire rural economy, improve livelihood opportunities for landless labor, and stem poverty in the western region.

### B. Poverty Analysis Proposed Poverty Classification: Core Poverty Intervention<sup>a</sup>

#### What type of poverty analysis is needed?

Apart from the general assessment of poverty and its characteristics, the required poverty analysis must address the linkages between the rural poor and irrigated agriculture, and the needs of poor farming households. The technical assistance (TA) calls for a baseline distributional poverty analysis as well as project impact analysis to identify the groups in most need of assistance and to help target project activities. The TA also has gender and indigenous people's specialists who will address poverty issues for these groups to ensure that project benefits are distributed equitably.

### C. Participation Process

<b>Is there a stakeholder analysis?</b>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
<b>Is there a participation strategy?</b>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

### D. Gender Development

#### Strategy to maximize impacts on women:

The TA includes 2 months of a gender specialist, and a gender development plan will be drafted under the TA.

**Has an output been prepared?**  Yes  No

### E. Social Safeguards and other Social Risks

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
<b>Resettlement</b>	<input type="checkbox"/> Significant	As a sector project, a resettlement framework will be developed under the TA. Resettlement planning for core subprojects is explicitly addressed in the TA Terms of Reference. (Relevance or significance is unknown. The plan is to be developed as required.)	<input type="checkbox"/> Full
	<input checked="" type="checkbox"/> Not significant		<input checked="" type="checkbox"/> Short
	<input type="checkbox"/> None		<input type="checkbox"/> None
<b>Affordability</b>	<input type="checkbox"/> Significant		<input type="checkbox"/> Yes
	<input type="checkbox"/> Not significant		<input checked="" type="checkbox"/> No
	<input checked="" type="checkbox"/> None		
<b>Labor</b>	<input type="checkbox"/> Significant		<input type="checkbox"/> Yes
	<input type="checkbox"/> Not significant		<input checked="" type="checkbox"/> No
	<input checked="" type="checkbox"/> None		

<sup>a</sup> Following the Board approval of the R-Paper, *Review of ADB's Poverty Reduction Strategy*, staff instructions to replace the PI/PCI classification with a new tracking system are under preparation in line with paragraph 83 of the R-paper.

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
<b>Indigenous Peoples</b>	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	An indigenous people's specialist will be part of the TA team and will produce an indigenous people's plan if necessary. (Relevance or significance is unknown. The plan is to be developed as required.)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Other Risks and/or Vulnerabilities</b>	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

**PRELIMINARY PROJECT FRAMEWORK**

<b>Design Summary</b>	<b>Performance Indicators/Targets</b>	<b>Monitoring Mechanisms</b>	<b>Assumptions and Risks</b>
<p><b>Sector Goal</b></p> <p>1. Raise the productivity of irrigated agriculture to improve rural incomes and stem rural poverty.</p> <p>2. Strengthen integrated water resources management (IWRM) for sustainable development in the western basins.</p>	<p>1. Improved incomes of rural people</p> <p>2. Reduced number of persons living in poverty and improved livelihood opportunities for poor and landless farmers</p> <p>3. Improved management of water resources within a sustainable framework</p>	<p>Asian Development Bank (ADB) review missions</p> <p>Project implementation unit (PIU) or project management units (PMUs)</p> <p>Internal mechanisms to be developed in the Ministry of Irrigation, Water Resources and Environment (MIWRE), and the Department of Agriculture (DA)</p> <p>Community monitoring mechanisms</p> <p>Nongovernment organization (NGO) monitoring</p> <p>Technical and institutional evaluations</p>	
<p><b>Project Purpose</b></p> <p>1. Improve delivery of irrigation service and equity of benefit distribution.</p> <p>2. Improve capacity, institutional framework, and resources for IWRM.</p> <p>3. Improve productivity of existing cropping patterns and increase diversified and higher value cropping with equitable benefits for the poor.</p>	<p>1. Target number or area of irrigation systems is rehabilitated; increased command area or improvement of distribution (time, quantity, and equity); increased cropping intensity</p> <p>2. Target number of new systems or new command area is achieved</p> <p>3. Improved yields per hectare; improved availability of agricultural support services; higher farmer incomes</p> <p>4. Increased incidence of farmers growing high-value and diversified crops</p> <p>5. Poor and landless farmers benefiting from project interventions in equal or greater portion than other beneficiaries; women, indigenous people, and other marginalized groups benefiting from the project</p> <p>6. Improved watershed resources; steady and sustainable surface water runoff</p> <p>7. Improved policies and institutions for IWRM are in</p>	<p>ADB review missions</p> <p>Supervision by PIU or PMUs</p> <p>Internal mechanisms developed with MIRWE, DA, and Department of Commerce</p> <p>Geographic information system (GIS) monitoring and remote sensing</p> <p>Community monitoring mechanisms</p> <p>NGO monitoring</p> <p>Household surveys</p> <p>Technical, institutional, and socioeconomic evaluations</p> <p>Market surveys</p>	<p>Security will be stable to implement the project.</p> <p>Adequate water exists and land acquisition will be possible to expand the irrigation area.</p> <p>Farmers will be receptive to new cropping patterns and farming techniques.</p> <p>Markets for higher value crops exist.</p> <p>Social barriers will not hinder land titling and efforts to improve equity and target poverty through project interventions.</p> <p>Local commanders will not bias project interventions and capture benefits.</p>

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Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
	<p>place, as are the technical resources to support IWRM and planning capacity</p> <p>8. Improved water resources management infrastructure developed and benefits generated</p>		
<p><b>Proposed Project Components/Outputs</b></p> <p>1. Investment program for irrigation rehabilitation and for development of new irrigation systems</p> <p>2. Program to improve quality and sustainability of irrigation management and operation and maintenance (O&amp;M)</p> <p>3. Program to improve access to information, inputs, farm practices, and marketing opportunities for traditional and high-valued crops</p> <p>4. Program to improve agricultural opportunities for poor and landless farmers and farm laborers</p> <p>5. Program to manage and enhance watershed resources</p> <p>6. IWRM policies and capacity-building program for management agencies</p>	<p>1. Increased funds spent on rehabilitation, covering a larger crop area; cropping intensity improved; improved water distribution (timing and quantity)</p> <p>2. Improved quality of irrigation management and O&amp;M; improved cost recovery and sustainability of O&amp;M</p> <p>3. More farmers/communities receiving agricultural support services; better market opportunities for traditional and diversified crops</p> <p>4. Increased incomes (reduction in poverty) for poor and landless farmers and farm laborers</p> <p>5. Improved integrity of watershed resources; increased availability of watershed resources to area inhabitants; stable sedimentation and surface runoff</p> <p>6. New policies, practices, and more capable agencies in place for water resources management</p>	<p>ADB review missions</p> <p>Supervision by PIU or PMUs</p> <p>Internal mechanisms developed with MIRWE, DA, and Department of Commerce</p> <p>GIS monitoring and remote sensing</p> <p>Development of community monitoring mechanisms</p> <p>NGO monitoring</p> <p>Household surveys</p> <p>Technical and institutional evaluations</p> <p>Market surveys</p>	<p>Security will be stable to implement the project.</p> <p>Government intervention in traditional irrigation schemes will not destroy social capital and Mirab (traditional irrigation masters) system, leading to poorer O&amp;M.</p> <p>Market and prevailing social conditions and incentives (sharecropping, etc.) will support project effectiveness.</p> <p>Government capacity to implement the programs will grow quickly enough.</p> <p>Community members and indigenous people will be able to participate in project design.</p> <p>Government will support decentralized modalities for service delivery and alternatives for decentralized service delivery may be limited.</p> <p>Adequate political will to implement proposed reforms.</p>
<p><b>Technical Assistance Activities</b></p> <p><b>1. Irrigation</b></p> <p>Assess rehabilitation needs and develop a comprehensive, participatory methodology and investment program to rehabilitate and develop new irrigation areas.</p>	<p><b>Technical Assistance Inputs</b></p> <p>58 person-months of international consultants</p> <p>8 person-months of domestic consultants</p>	<p>ADB review missions</p> <p>Consultant reports</p> <p>Specialized household and market surveys, and technical and institutional evaluations</p>	

Continued on next page

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks								
<p>Build capacity of Mirabs, MIWRE, and farmer groups for O&amp;M.</p> <p><b>2. Irrigated Agriculture and Rural Poverty Reduction</b> Assess scope for improved support services, information, inputs, farm practices, and marketing for traditional and higher value crops.</p> <p>Develop a program of decentralized agriculture support services to address farmers' needs.</p> <p>Develop a medium-term strategy and program to improve marketing from farm gate to export.</p> <p>Develop farm-level interventions specifically targeted at the poor and landless farmers.</p> <p>Improve land titling to secure farmer access to means of production.</p> <p><b>3. Watershed Management</b> Design community-based programs and a capacity building program to better manage watershed resources, including pastures.</p> <p><b>4. IWRM</b> Develop a capacity building program for river basin and other institutions for IWRM; initiate a basin-level development planning process.</p> <p>Integrate Salma Dam into river basin development activities.</p>	<table border="0"> <tr> <td>ADB</td> <td style="text-align: right;">\$ 1,200,000</td> </tr> <tr> <td>Government of Canada</td> <td style="text-align: right;">\$ 760,000</td> </tr> <tr> <td>Government</td> <td style="text-align: right;"><u>\$ 100,000</u></td> </tr> <tr> <td>Total</td> <td style="text-align: right;">\$ 2,060,000</td> </tr> </table>	ADB	\$ 1,200,000	Government of Canada	\$ 760,000	Government	<u>\$ 100,000</u>	Total	\$ 2,060,000		
ADB	\$ 1,200,000										
Government of Canada	\$ 760,000										
Government	<u>\$ 100,000</u>										
Total	\$ 2,060,000										

**COST ESTIMATES AND FINANCING PLAN**  
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
<b>A. Asian Development Bank<sup>a</sup> Financing</b>			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	1,393.0	0.0	1,393.0
ii. Domestic Consultants	0.0	24.0	24.0
b. International and Local Air Travel	74.0	0.0	74.0
2. Additional Cost Packages			
a. Land Survey	0.0	20.0	20.0
b. Geographic Information System	20.0	0.0	20.0
c. Social Assessment	0.0	18.0	18.0
d. Translation	0.0	32.0	32.0
3. Workshops and Capacity Development	20.0	15.0	35.0
4. Miscellaneous Administration and Office Support Costs	0.0	64.0	64.0
5. Vehicles, <sup>b</sup> Radios, and Running Costs	120.0	20.0	140.0
6. Representative for Contract Negotiations	0.0	6.0	6.0
7. Contingencies	134.0	0.0	134.0
<b>Subtotal (A)</b>	<b>1,761.0</b>	<b>199.0</b>	<b>1,960.0</b>
<b>B. Government of Afghanistan Financing</b>			
1. Office Accommodation	0.0	20.0	20.0
2. Remuneration and Per Diem of Counterpart Staff	0.0	30.0	30.0
3. Data Collection and Management	0.0	20.0	20.0
4. Workshop Facilitation	0.0	5.0	5.0
5. Technical Services	0.0	15.0	15.0
6. Logistical Support and Transport	0.0	10.0	10.0
<b>Subtotal (B)</b>	<b>0.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Total</b>	<b>1,761.0</b>	<b>299.0</b>	<b>2,060.0</b>

Note: As per the Board Paper, *Review of Afghanistan's Classification under ADB Graduation Policy* dated 7 June 2002, the cost-sharing limit for loans and TA operations for Afghanistan is waived during the period 2002–2004.

<sup>a</sup> Financed by ADB's technical assistance funding program (\$1,200,000) and the Government of Canada (\$760,000).

<sup>b</sup> Vehicles include two land cruisers and two double cab pickups, Codan radios, drivers, running costs, and security equipment. To facilitate vehicle purchase, Afghanistan Resident Mission will procure the vehicles before the TA starts, and the vehicles will not be reflected in the TA consultant request for proposal or contract.

Source: Asian Development Bank estimates.

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. **Team Leader-Water Resources Specialist** (7 person-months, international). The team leader will (i) oversee all aspects of the technical assistance (TA), manage the quality and timeliness of the TA outputs, and coordinate the TA team's activities with Ministry of Irrigation Water Resources and Environment (MIWRE), Asian Development Bank (ADB), and other stakeholders; (ii) synthesize the TA team's output and work with ADB, Ministry of Finance (MOF), and MIWRE to develop a well-defined and cogent investment project; (iii) prepare procurement packages for the subsequent loan, consistent with ADB's *Guidelines for Procurement*; (iv) prepare the Project Administration Memorandum for the proposed loan; (v) assist the MOF, Executing Agency (EA), and ADB in developing a project framework in line with the Use of the Logical Framework for ADB-Assisted Loans and TA; (vi) review the current physical status of water resources in the western basins; (vii) analyze existing integrated water resources management (IWRM) policy frameworks, institutional arrangements, and technical capacity to support IWRM policy implementation regarding among others, water allocation procedures, water rights, regulatory issues, data collection and management, basin management and organizations, apex bodies, groundwater management, and water quality management; (viii) identify existing constraints and deficiencies in the policy framework, institutional arrangements, and capacity for IRWM, and make recommendations, and develop detailed terms of reference (TOR) to address shortcomings; (ix) develop the approach and TOR for basin planning; (x) work with MIWRE and the consultant team to develop monitoring and evaluation frameworks for the TA and project; (xi) provide overall guidance to develop methodology, and select and prepare the core subprojects under the TA; and (xii) help the Government and ADB determine the appropriate size and scope of the loan.

2. **Deputy Team Leader** (8 person-months, domestic). The deputy team leader will (i) provide expertise in using local knowledge to support the team leader; (ii) provide backstopping for technical activities and general support to the TA team's tasks; (iii) manage administrative tasks as necessary in cooperation with support staff; (iv) manage workshops in close cooperation with the TA team, ADB, MIWRE, and other stakeholders; and (v) work with MIWRE to establish the TA facilities in Herat including purchase and rental of equipment, finding housing for the team, and other activities.

3. **Irrigation and Water Resources Engineer** (6 person-months, international). The irrigation engineer will (i) act as team leader in the absence of the team leader; (ii) supervise a review of existing irrigation systems for rehabilitation and identify options for other water resources management infrastructure; (iii) develop selection criteria for core subprojects with other team members; (iv) direct technical activities for preparing the selected core subprojects; (v) assess the technical and institutional capacity of MIWRE, mirabs, contractors, and other stakeholders so as to identify capacity development needs (human and other resources) and define a program to build the needed capacity for project activities; (vi) develop implementation arrangements and TOR for the project for executing civil works; (vii) direct reconnaissance to identify potential irrigation expansion areas; (viii) review existing practice of traditional water or irrigation management methods and recommend improvements for scheme rationalization, scheduling, water control devices and structures, and training (MIWRE, mirabs, and farmers); (ix) assess the potential and develop a possible project component for rainwater harvesting; and (x) develop monitoring, evaluation, and reporting procedures for civil works under the TA and project.

4. **On-Farm Water Management Specialist** (4 person-months, international). The specialist will (i) execute the outline canal inventory of structures in the irrigation core subprojects and prepare an inventory of rehabilitation works; (ii) with the irrigation engineer,

identify a range of typical irrigation rehabilitation, rationalization, and modernization works and provide guidance on the most suitable and cost-effective (e.g., offtakes and flood prevention structures) accounting for river dynamics and communities' capacities for maintenance, among others (iii) develop a component for command area development and on-farm water management for subprojects and develop the requisite TOR as well as capacity development program for MIWRE and mirabs; (iv) assess the capacity of MIWRE, mirabs, and farmers for system management and operation and maintenance (O&M) and make recommendations for improvement, including TOR and capacity development program; (v) determine the average recurrent irrigation O&M costs, conduct cost-recovery analysis (including labor), assess O&M sustainability for project interventions, and make recommendations to improve sustainability; (vi) assess the magnitude of drainage and flooding problems in representative areas and make recommendations to develop a project response if needed; and (vii) assess the scope for new irrigation technologies and expansion of traditional technologies and develop the requisite TOR and a possible project component.

5. **Hydrologist** (3 person-months, international). The hydrologist will (i) determine the water balance for the Hari Rud River basin using simple modeling techniques and available data; (ii) work with the dams specialist to determine downstream flows of Salma Dam based on the probable rule curve; (iii) formulate recommendations for hydrological aspects of rehabilitation work and with the TA team, prepare inputs, for rehabilitation designs in the selected core subprojects; (iv) evaluate the hydrometeorological data and the reservoir-volume and reservoir-surface curves for Salma Dam; (v) design an inflow time series into the Salma Dam reservoir over the longest period records available; (vi) perform sensitivity analyses on firm yield for irrigation and energy production of the dam under various scenarios including raised and reduced dam height, release regime; (vii) perform flood calculations and route floods through the reservoir as needed for assessing the spillway design; and (viii) prepare recommendations for collecting data and installing of equipment (location, type, etc.) for monitoring hydrometeorological data in the western basins, consistent with national initiatives.

6. **Hydrogeologist** (2 person-months, international). The hydrogeologist will (i) collect and analyze existing data on hydrogeology for the western basins; (ii) to the extent possible, determine the extent, depth, and possible yields of the aquifers and their sustainability for irrigation and other development utilizing existing data, plus any additional data that can be generated within the TA; (iii) formulate recommendations for further testing, surveying the groundwater and its management, and develop TOR for these activities; and (iv) develop project activities and TOR to exploit groundwater and conjunctive use.

7. **Due Diligence Specialist on Salma Dam Feasibility Study** (3 person-months, international). A dam engineer (with other specialists as required) will (i) review and comment on the dam design with respect to selection of dam axis, selection of dam type and dam zoning, construction materials engineering and assumptions on construction materials suitability and availability; (ii) comment on alternative designs with a concrete-faced rock fill dam and advise on the advantages and disadvantages of this dam type; (iii) review and comment on the dam instrumentation concept and propose modifications if found inadequate; (iv) conduct a site visit with a geologist to assess the geologic features at the dam site and assess the project design, the scope of geological and geotechnical investigations at the dam site and for construction materials; (v) assess the feasibility report's evaluation, assess the reservoir tightness and the design of underground sealing works, and recommend modifications if inadequate; (vi) perform a seismic risk study; (vii) review and comment on the project configuration, i.e., layout of dam and appurtenant structures, river diversion during construction, design of power waterways, and hydropower plant; (viii) cross-check the hydraulic design and dimensioning of the appurtenant structures; (ix) review and comment on the facilities to counteract sedimentation of the reservoir

and recommend modifications if found inadequate; (x) assess the constraints on modifying existing designs based on the constructed project components and the performed excavations; (xi) recommend a project layout and dimensions that reflect the current state of the art in dam and hydraulic structures design; (xii) cross-check and comment on turbine type, dimensioning, setting of axis, number of units; and assist the hydrologist in cross-checking energy calculations and comment on the hydraulic steel structures design; (xiii) review the electrical equipment and transmission line design; and (xiv) produce a stand-alone due diligence report on the Salma Dam feasibility study.

**8. Agricultural Support Specialist and Agricultural Economist** (7 person-months, international). The agricultural specialists will (i) identify and analyze key technical, institutional, social, and economic constraints that limit higher value cropping and production of wheat and traditional crops; (ii) identify needs and develop TOR for additional analysis under the project; (iii) assess current and historic delivery of extension, other agricultural support services, and marketing for traditional and higher value crops; (iv) review existing data and identify data needs for the technical potential (agroclimatic, soils, etc.) for higher value cropping and improved production; (v) develop service delivery recommendations to promote adoption of higher value cropping in general and work with the water users association specialist and social specialists for pilot programs at the subproject level that can be integrated with core subproject development (develop pilot programs and TOR for the project) with a focus on decentralized delivery (e.g., mirabs and private sector); (vi) analyze current patterns of land tenure and sharecropping and evaluate impacts on project interventions, overall project returns, and benefit distribution; (vii) analyze sector trends and current cropping patterns, make a market analysis of irrigated agriculture, assess the region's competitiveness, and identify opportunities for improved agricultural productivity; (viii) analyze and make recommendations on current policies and practices at local and national levels that influence irrigated agriculture, for example, subsidy, tax, monopsony, credit, and other distortionary influences; (ix) determine needs and make recommendations to strengthen market systems at all levels (from farm gate to agribusiness and international export); (x) assess opportunities and constraints and make recommendations regarding private sector and agribusiness participation in irrigated agriculture; (xi) provide an irrigated agriculture and water resources sector revenue and expenditure analysis and give recommendations for reforms; (xii) develop short-, medium-, and long-term strategies for enhanced irrigated agriculture productivity to be supported within and outside the project, and include equity and poverty considerations; (xiii) analyze the economic potential for irrigation or infrastructure investment and work with the TA team to determine the sustainability of O&M financing; and (xiv) assist in deriving estimated productivity changes and benefits from recommended technical and institutional irrigation and agricultural activities supported through the project.

**9. Geographic information system (GIS) and Basin Mapping Specialist** (2 person-months, international). The GIS specialist will (i) recommend and procure appropriate GIS technologies for the TA and project, consistent with other government GIS activities; (ii) develop GIS mapping for the entire Hari Rud basin including hydrologic, agricultural, and watershed resources and infrastructure; (iii) work with the TA team, MIWRE, mirabs, and other stakeholders to define needs and priorities from GIS technology; (iv) based on task (iii), establish protocols to enable the project to apply, expand, and maximize the use of GIS mapping throughout the western region; and (v) prepare a detailed capacity development program for MIWRE and other stakeholders in the use of GIS mapping to support project activities and objectives.

**10. Land Titling Specialist** (1 person-month, international). The land titling specialist will (i) assess current status and practices for land tenure, registry, and related institutions in the

western basins; (ii) develop procedures consistent with national initiatives for land titling to be included under the project activities; and (iii) create a capacity development program for land titling.

11. **Environmental Specialist** (3 person-months, international). The environmental specialist will (i) assess and compare relevant national environmental policies and frameworks with those of ADB and best practice to identify gaps, differences, or conflicts; and recommend modifications or mechanisms to promote compatibility; (ii) prepare initial and summary environmental examination reports for each core subproject in accordance with ADB's environmental assessment guidelines for sector projects; (iii) develop and cost out any needed environmental management and monitoring plans to mitigate negative environmental impacts; (iv) develop environmental assessment and review procedures for subprojects to be replicated under the loan project; (v) assess MIWRE's (or other agencies') capacity for environmental assessment, implementing environmental management plans, and executing subproject environmental review procedures and make recommendations to improve practice and for a capacity development program; (vi) formulate environmental criteria for screening and approving subprojects; and (vii) examine the feasibility study for Salma Dam and comment on the adequacy of the environmental impact assessment.

12. **Watershed Specialist** (3 person-months, international). The watershed specialist will (i) identify current uses of watershed resources and key stakeholders (e.g., Kuchi); (ii) identify areas of watershed degradation and their causes and impacts; (iii) assess current watershed management and forestry practices, especially upstream of the Salma Dam site; (iv) assemble and review existing data with regard to technical potential for enhancing forest, range, and other watershed resources; (v) assess key technical, institutional, social, and economic constraints limiting the enhancement of watershed resources; (vi) develop recommendations to enhance watershed resources including activities to be supported through the project, with emphasis on decentralized modes of service delivery and interventions that can be bundled with other proposed project activities; (vii) develop recommendations to improve watershed management (or forestry) mechanisms, with emphasis on participation of resources users; (viii) assist the hydrologist in assessing the sedimentation potential of Salma Dam; and (ix) assist the GIS specialist with watershed concerns.

13. **Project Economist** (3 person-months, international). The project economist will (i) develop a methodology and an implementation process for the economic evaluation of subprojects for the TA and proposed project; (ii) prepare a detailed economic analysis of each core subproject following ADB's *Guidelines for the Economic Analysis of Projects*; (iii) conduct a poverty impact assessment for the various farm sizes and farming practices based on distribution analyses and poverty analysis, and utilizing as necessary ADB guidelines and *Integration of Poverty Impact in Project Analysis*; (iv) prepare a detailed sensitivity analysis addressing major project risks, potential impacts on project viability, and safeguards to be incorporated in the project; (v) work with the agricultural specialist to conduct farm budget analyses and financial sustainability analysis; (vi) provide detailed costing and financial and economic analyses for all proposed project components using Costab software; and (vii) examine the feasibility study for Salma Dam and comment on the cost benefit analysis.

14. **Social Assessment Specialist** (4 person-months, international). The social assessment specialist will (i) review secondary sources on the socioeconomic status of all persons in the subproject area (not only beneficiaries); (ii) carry out an initial social assessment in accordance with ADB's guidelines; (iii) coordinate with the project economist to conduct poverty analysis and development of detailed stakeholder analysis; (iv) analyze current patterns of land tenure and sharecropping and evaluate impacts on project interventions, overall project returns, and benefit

distribution; (v) develop a study methodology and instruments, recruit a field team, and manage the field studies in the subproject areas that include a detailed social and poverty analysis and detailed institutional analysis of the core subprojects; (vi) develop strategies and recommendations to enhance project benefits for the poor and landless; (vii) ensure mitigation of any negative social impacts; and (viii) develop TOR for the social assessment component for the project and needed capacity development activities for MIWRE, mirabs, and other stakeholders.

15. **Resettlement Specialist** (2 person-months, international) The resettlement specialist will (i) assess all potential resettlement impacts from the range of possible interventions under the TA and project within the purview of ADB's resettlement policy; (ii) prepare a resettlement framework consistent with ADB guidelines for sector projects; (iii) prepare any resettlement plans required for preparing core subprojects; (iv) review MIWRE and Afghanistan's relevant policies and practices, make recommendations to improve them, and provide guidelines as necessary; (v) assess the capacity at MIWRE and other relevant agencies and prepare a capacity development program for resettlement to be implemented under the project; and (vi) assess resettlement activities and plans associated with development of Salma Dam.

16. **Indigenous People's Specialist** (2 person-months, international) The specialist will (i) assess the prevalence of Kuchi and other indigenous people in the western basins; (ii) assess the impacts on indigenous people of the full range of possible interventions to be supported under the TA core subprojects and project; (iii) work with the watershed specialists to assess watershed resource use by indigenous people; (iv) develop indigenous people's plans consistent with ADB guidelines; (v) ensure that indigenous people are not impacted and obtain equitable benefits from the project, and develop project interventions targeted to benefit indigenous people; and (vi) assess the possible impact of Salma Dam on indigenous people.

17. **Gender Specialist** (2 person-months, international). The gender specialist will (i) develop a gender analysis of women's role in irrigated agriculture and water resources management activities, including work allocation, access to and control over resources, access to household benefits, decision making, and status (work with the social assessment specialist and the survey team to ensure that the survey instrument supports this); (ii) assess the impacts on women (and men, noting disparity) of the full range of interventions to be supported under the core subprojects and project; and (iii) develop and recommend strategies, mechanisms, and design features that will ensure that women fully participate in project activities and derive benefits from project activities, and that their interests are protected and enhanced through the project.

18. **Mirab or Water User Association (WUA) Specialist** (4 person-months, international). The mirab/WUA specialists will (i) assess the current functionality of the mirabs in a variety of systems and develop a profile of the current status and effectiveness; (ii) conduct a workshop with MIWRE, mirabs, farmers, and other stakeholders to assess current effectiveness, identify problems, solicit suggestions, and present options to improve irrigation management and development; (iii) analyze, develop options, and make recommendations as to the appropriate roles, responsibilities, and authorities for the mirabs, MIWRE, and other stakeholders to develop, conduct O&M, and manage irrigation systems; (iv) develop strategies and recommendations for integration of mirabs and cultivator participation in physical interventions to be supported through the core subproject and project; (v) work with the on-farm water management specialist, mirabs, and MIWRE on O&M cost analysis and sustainability, and develop detailed O&M procedures for the core subprojects and project; and (vi) develop recommendations to strengthen the mirab institution, including detailed project TOR, recommended policy changes, and a comprehensive mirab program with capacity development.