



# Technical Assistance Report

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Project Number: 39364  
June 2006

## Islamic Republic of Pakistan: Preparing the Community Water Storage and Irrigated Agriculture Development Project (Financed by the Japan Special Fund)

## CURRENCY EQUIVALENTS

(as of 16 May 2006)

Currency Unit	–	Pakistan rupee/s (PRe/PRs)
PRe1.00	=	\$0.016
\$1.00	=	PRs60.06

## ABBREVIATIONS

ADB	–	Asian Development Bank
CCA	–	cultivable command area
EIA	–	environmental impact assessment
GDP	–	gross domestic product
mm	–	millimeter
NWFP	–	North-West Frontier Province
O&M	–	operation and maintenance
PPTA	–	project preparatory technical assistance
PRA	–	participatory rural appraisal
PRSP	–	Poverty Reduction Strategy Paper
SDO	–	small dams organization
SEA	–	strategic environmental assessment
TA	–	technical assistance

## GLOSSARY

barani	–	dryland areas of Pakistan
warabani	–	rotational system of water distribution

## TECHNICAL ASSISTANCE CLASSIFICATION

<b>Targeting Classification</b>	–	General intervention
<b>Sectors</b>	–	Agriculture and natural resources; water supply, sanitation, and waste management
<b>Subsectors</b>	–	Water resource management, water supply and sanitation
<b>Themes</b>	–	Sustainable economic growth, environmental sustainability
<b>Subthemes</b>	–	Developing rural areas, natural resources conservation

## NOTE

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

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## I. INTRODUCTION

1. On the basis of requests from the Government of Pakistan and some provincial governments, a project preparatory technical assistance (PPTA) for the multi-province Community Water Storage and Irrigated Agriculture Development Project (TA) was included in the 2006–2008 country strategy and program update for Pakistan<sup>1</sup>. The Fact-Finding Mission for TA visited Pakistan from 22 January to 8 February 2006, including visits to the North-West Frontier Province (NWFP), Punjab, and Sindh. The mission reached an understanding with both federal and provincial governments on the impact, outcome, outputs, implementation arrangements, cost, financing arrangements, terms of reference, and geographical focus for TA (see Design and Monitoring Framework in Appendix 1).<sup>2</sup>

## II. ISSUES

2. Pakistan is one of the world's most arid countries, with an average rainfall of under 240 millimeters (mm) a year. The population and economy depend heavily on the Indus River and its tributaries. A large and complex hydraulic system constitutes the backbone of a flourishing agrarian economy that accounts for about 25% of gross domestic product (GDP) and employs about half of the labor force. Yet, a significant proportion of the country remains outside this system and suffers severe water scarcity. In NWFP, these *barani* areas account for 49.0% of total cultivated land, and in Punjab for 18.6%. The lack of secure water sources for agriculture and other uses is seen as a major constraint to improving peoples' livelihoods. Yet, with mean annual rainfall of 500–800 mm, of which 60% occurs from mid-July to the end-August, the potential for water storage is high and little exploited.

3. Small dam projects were initiated by the Government in 1961 and received support from the Asian Development Bank (ADB) in the mid-1980s.<sup>3</sup> They resulted in more assured agricultural production and, in some cases, more secure water supply. Nevertheless, their economic performance remains generally low due to (i) slow development of irrigated agriculture in the command area, (ii) reduced dam life from sedimentation, and (iii) limited utilization of reservoir water other than for agriculture.<sup>4</sup> However, substantial potential exists for improvements that capitalize on the value of water stored in reservoirs and expand local water services.

4. Despite Pakistan's small dams generally being located in areas that yield a lot of sediment, limited attention has been paid to reducing sediment inflow. Survey results from projects completed over the past 40 years reveal that, in a number of cases, storage capacity has been halved within one to two generations, with consequent reductions in economic benefits. Introducing sustainable watershed management to mitigate sediment inflows is therefore critical and a priority for both new and existing dams.

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<sup>1</sup> ADB. 2005. *Pakistan: Country Strategy and Program Update (2006-2008)*. Manila.

<sup>2</sup> TA first appeared in *ADB Business Opportunities* on 16 February 2006.

<sup>3</sup> ADB. 1985. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Islamic Republic of Pakistan for the Small Dams Project*. Manila (Loan 0750-PAK[SF], approved on 31 October 1985, for \$39 million. The term "small dams" used in this context relates to projects undertaken by small dams organizations of NWFP and Punjab that are generally in the range of 15–30 meters high but recently include projects on the order of 50 meters. Although the "small dams" terminology used in Pakistan has been retained here, the technical procedures for planning, designing, and operating subprojects to be reviewed under TA will follow international practice for large dams, including those of the International Commission on Large Dams and the World Bank, in which large dams are defined as higher than 15 meters or with a storage capacity greater than 3 million cubic meters.

<sup>4</sup> ADB. 1997. *Project Completion Report on the Small Dams Project in Pakistan*. Manila; and ADB. 1999. *Project Performance Audit Report on the Small Dams Project in Pakistan*. Manila.

5. Slow or inadequate development of irrigated agriculture in the cultivable command area (CCA) is a major drag on the economic performance of small dams projects. The main reasons include (i) delays in developing watercourses and preparing farmland for irrigation and (ii) difficulties in adopting higher-value irrigated cropping systems. Farmers with no experience in irrigated agriculture and scarce financial resources have been left to their own devices to develop watercourses, organize water distribution, and level their fields—all at high cost.

6. Efficient irrigation methods are also lacking. Options such as pressurized piped systems would be a significant improvement over the current practice of gravity irrigation, which has high conveyance and distribution losses. Even where extension support to promote remunerative irrigated cropping systems is provided, the systems are not adapted. The current approach treats all farmers as a homogenous group, ignoring farmers' differences and specific constraints. As a result, most farmers have not changed cropping patterns and treat reservoir water only as a supplementary source for traditional crops. Some encouraging cases of new high-value cropping systems being adopted are the exception rather than the rule.

7. Most existing small dam projects focus on irrigation. Benefits from other water uses are often foregone, undervalued, or incorporated at a later date at additional cost. Taking a multipurpose and integrated view of water resource development through small and medium dams for communities in the *barani* areas can satisfy other vital community needs and also introduce income-generating activities to help cover the project's operation and maintenance (O&M) costs (e.g., reservoir fisheries<sup>5</sup> and water supply to neighboring villages and towns).

8. Lessons learned from previous experience call for improving implementation methodology. Ownership by beneficiary communities is low in most cases, which can explain problems experienced after dam construction such as slow development of the CCA, limited maintenance of canals, and lack of watershed stabilization. Enabling conditions to stimulate ownership should be systematically enhanced through effective consultation, including with women, and strong participation throughout the project cycle. Local nongovernment organizations have proven to mobilize communities efficiently, and their support might be required. Similarly, lack of coordination between line departments due to weak implementation structure and arrangements has led to core components being neglected or to inappropriate sequencing of interventions, resulting in lower project efficiency.

9. Considerable experience in planning and designing small dam projects exists in Pakistan. Although dams already built are considered sound from a safety perspective, the opportunity exists to optimize designs and update procedures in light of experience gained over the past 30 years and to take into account advances made in the international arena.

10. The environmental and resettlement impacts of small dams are case-specific, ranging from negligible to significant. Cumulative environmental effects from the presence of several dams in a particular sub-basin need to be evaluated. To comply with ADB and Government safeguard policies, the ensuing project will be classified as category A.

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<sup>5</sup> The current approach of auctioning reservoir fisheries to a contractor raises minimal income and does not foster private contractor investment in more intensive fish production.

### III. THE TECHNICAL ASSISTANCE

#### A. Impact and Outcome

11. TA will prepare a sector-like project to increase social and economic development of the rural population in *barani* areas of NWFP and Punjab by introducing sustainable irrigated agriculture and providing water for domestic and other uses. Subprojects to be financed under the ensuing investment will comprise (i) small to medium dams and associated irrigation systems, (ii) other community water services, (iii) improved watershed management, and (iv) agricultural support services. Agreement will be reached on the scope, components, subproject selection criteria, environmental and social safeguard assurance and mitigation measures, cost, and financing and implementation arrangements for the project. Areas of policy dialogue will be identified by TA as the basis for discussion with the Government during appraisal of the project.

#### B. Methodology and Key Activities

12. TA will review the performance of existing small dam projects and assess a number of options for future development with a strong emphasis on community management. Alternative strategies will be identified for four aspects critical to the success of future investments: (i) appropriate models of irrigated agriculture, (ii) regeneration and sustainable management of watersheds, (iii) multiple uses of reservoir water, and (iv) developing community ownership of subprojects. Maximizing subproject investment returns and subproject sustainability will be essential in assessing options. TA will be based on the five components described below.

13. **Component 1: Testing Options for Improving Dams' Sustainability and Economic Return.** A range of development models for irrigated agriculture development will be explored by analyzing different farming systems and their specific constraints to adopting higher-value irrigated crops. The analysis will generate a range of investment responses and associated support packages tailored to the prevailing socioeconomic conditions of farmers as they progress from subsistence agriculture towards more diverse and higher-value agriculture. Watershed regeneration and sustainable management will be promoted by addressing the factors that led to land degradation, learning from past and ongoing community-based natural resource management projects. Strategies for community-based watershed management of existing and new dams will be developed together with a program for institutional reform and capacity building. Potential for multiple use of reservoir water will be explored, including irrigation, rural water supply and sanitation, domestic uses, fisheries, livestock, mini hydropower, serving downstream environmental needs, and recreation. This will involve an assessment of the water rights of existing and new users. In terms of financial sustainability, options will be identified to generate revenues to support an O&M budget for the dam and irrigation system and contribute to a village development fund. In accordance with ADB's *Water for All: The Water Policy of ADB* (2001), a service provider approach will be pursued via the creation of farmers' organizations to operate and maintain the irrigation schemes and manage watershed stabilization. Consultations with communities will focus on creating an enabling framework for local ownership of subprojects and stimulating the commitment necessary for command area development, O&M, and watershed management.<sup>6</sup> Specific guidelines will be developed, and support provided, to ensure that communities are meaningfully included in planning and design from an early stage and that validation workshops take place involving communities. Local governments and line departments will be organized to present PPTA

<sup>6</sup> Options for providing legal status to beneficiary organizations will be examined (e.g., recognition as farmers' organizations as defined under the provincial irrigation and drainage authority acts). A starting point is provided in the institutional model proposed under TA 3131-PAK: Strengthening of Farmers Organizations in Small Dams Operations, approved on 15 December 1998 in the amount of \$150,000.

recommendations. Subproject eligibility criteria will need to reflect a demand-driven development approach.

14. **Component 2: Preparation of 3–4 Sample Subprojects.** TA will review and update feasibility studies prepared by government agencies for three or four sample subprojects representative of the wider list of candidate projects in NWFP and Punjab. The review will include new options to mainstream into subproject design irrigated agriculture development, watershed management, community-based O&M, and multiple water uses. In accordance with ADB's safeguard policies, TA consultants will conduct an environmental impact assessment (EIA) of a sample subproject and facilitate knowledge transfer to small dams organizations (SDOs)<sup>7</sup> and provincial authorities on EIA of dam projects. A strategic environmental assessment (SEA) will be carried out to determine key environmental and development issues and to make a preliminary sub-basin assessment of the nature and scale of any cumulative subproject environmental impacts on downstream users and wetlands. Social impacts for sample subprojects involving resettlement will be assessed and resettlement plans developed. A resettlement framework for remaining subprojects will be prepared. An initial poverty and social analysis is in Appendix 2.

15. **Component 3: Subproject Selection Criteria and Policy Issues.** Selection criteria will be prepared taking into account evaluations of previous small and medium dam projects and TA review of sample subprojects. Criteria will include technical, economic, social, environmental, sustainability, and governance factors. Policy dialogue and institutional recommendations on matters related to small dam development will be pursued under TA, including procedures for delivering agricultural support, community ownership of irrigation systems, arrangements for watershed management, and cross-agency coordination.

16. **Component 4: Reconnaissance Survey in Sindh.** In Sindh, inadequate information has been generated so far on the potential to develop community water storage in arid areas. This province will not be covered under the ensuing loan but, at the request of the government of Sindh, TA will carry out a reconnaissance-level assessment based on existing studies and proposals of the irrigation and agriculture departments. This assessment will inform any future decision on investment support in ADB's country strategy and program.

17. **Component 5: Institutional Capacity and Implementation Structure.** Introducing new models and technology for irrigated agriculture and an integrated approach to water resource development will require a commensurate change in planning processes, interaction with communities, and interagency coordination. TA will assess the institutional capacity of relevant agencies and make recommendations to strengthen organizational structures and build capacity. Planning and design procedures and guidelines for small dam projects will be reviewed and updated.<sup>8</sup> TA will facilitate a cross-provincial working group to undertake this review with key provincial officials who possess experience in small dam projects, together with representatives of domestic consulting firms that carry out feasibility studies and designs.

## C. Cost and Financing

18. The total cost of TA is estimated at \$1,125,000 equivalent. The Government has requested that ADB finance \$900,000 equivalent. TA will be financed on a grant basis by the Japan Special Fund, funded by the Government of Japan. The Government will provide the remaining cost of

<sup>7</sup> SDOs were created under the provincial departments of water and power. Their mandate is to implement small dam provincial projects and manage the O&M of the dams.

<sup>8</sup> This exercise will include a survey on sedimentation of existing dams.

\$225,000 equivalent. Detailed cost estimates are in Appendix 3. The Government has been informed that approval of TA does not commit ADB to finance any ensuing project.

#### **D. Implementation Arrangements**

19. The provincial irrigation and power departments of NWFP and Punjab will be the executing agencies for TA and will each nominate a senior staff member to be TA project director reporting to their respective secretary. They will provide furnished offices for TA, phone lines, support for workshops and data collection, and logistical assistance for field investigations. The provincial irrigation, agriculture, forestry, and fishery departments will provide counterpart staff to the TA team. In each province, two committees will be formed: (i) a secretary-level steering committee for policy guidance chaired by the chairman of the planning and development departments, with representation from irrigation, agriculture, forestry and wildlife, and fisheries departments, and others as required, and (ii) a project technical advisory committee, to assist in implementation and interagency coordination, chaired by a project director and comprised of technical officers and community representatives. Steering committees will be formed and counterpart staff appointed prior to TA contract negotiations. The consultants will facilitate a cross-provincial working group to undertake a detailed review of planning and design guidelines.

20. TA will be implemented over 6 months from October 2006 to March 2007 and will require 23 person-months of international consulting services, and 45 person-months of domestic, in agricultural development, institutions, irrigation planning, economics, watershed management, dam planning and design, rural water use, and social and environmental assessment. Appendix 4 provides the outline terms of reference. All consultants will be recruited through a firm in accordance with the *Guidelines on the Use of Consultants by Asian Development Bank and Its Borrowers* and other arrangements satisfactory to ADB for the selection and engagement of domestic consultants. A simplified technical proposal will be used, and the selection method will be quality- and cost-based. Equipment will be procured in accordance with ADB's *Procurement Guidelines* and transferred to the Government after completion of TA.

21. Outputs from TA include (i) an inception report after 1 month that presents a detailed work program, consultation strategy, preliminary selection criteria, and nominations for sample subprojects; (ii) a midterm review report after 3 months that records progress, initial findings, and conclusions, as well as issues to be addressed in the second half of PPTA; (iii) a draft final report after 5 months including findings from each of the TA components, feasibility reviews of sample subprojects, updated selection criteria, proposals for institutional strengthening, and the results of the reconnaissance assessment in Sindh; and (iv) an updated final report 1 month later. In accordance with ADB's public communication policy, all of the TA reports will be disclosed to the public upon finalization. Where resettlement plans are prepared, they will be disclosed to people affected in a form and language they can understand. Tripartite meetings between the provincial and federal governments, ADB, and TA consultants will be held in Islamabad following submission of the inception, midterm, and draft final reports.

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

22. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$900,000 on a grant basis to the Government of Pakistan for preparing the Community Water Storage and Irrigated Agriculture Development Project, and hereby reports this action to the Board.

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p><b>Impact (the project)</b> Increased social and economic development through agricultural growth in <i>barani</i> areas of Punjab and NWFP</p>	<p>Remunerative irrigated agriculture developed over approximately 30,000 ha, 1,500 MT of fish produced per year, 25,000 households with improved access to drinking water, washing facilities, and water for livestock by 31 December 2012 (over the baseline of 31 December 2007<sup>a</sup>)</p>	<p>Government economic and social surveys</p> <p>Baseline and periodic monitoring reports commissioned under the project</p> <p>Project completion report, gender-disaggregated impact report, and possible project performance audit report</p>	<p><b>Assumption</b> Government policies continue to support and stimulate inclusive economic growth in remote arid areas.</p> <p><b>Risk</b> Political instability and increased insecurity prevent project implementation.</p>
<p><b>Outcome (the TA)</b> Agreed sector project based on sustainable concepts of irrigated agriculture development and increasing water availability for crops and other uses</p>	<p>Agreement reached between the Government and ADB on the final design regarding its scope, components, implementation arrangements, and financing plan by the first quarter of 2007, leading to loan appraisal mission</p>	<p>MOU signed by the Government and ADB</p> <p>Approved subproject feasibility studies by the Government and ADB</p>	<p><b>Assumption</b> Communities demonstrate a willingness to adopt new farming systems and management responsibilities for the watershed.</p> <p><b>Risks</b> Shift in Government development priorities</p> <p>The Government decides to seek alternative funding.</p>
<p><b>Outputs (the TA)</b> Project design is produced based on the following:</p> <p>1. Options assessed for (i) irrigated agriculture development suited to prevailing socioeconomic conditions, (ii) regeneration and management of watersheds, (iii) multiple uses of reservoir water, and (iv) community ownership and O&amp;M of irrigation system</p> <p>2. Feasibility studies reviewed of 3–4 representative subprojects in NWFP and Punjab reflecting selected options and demonstrating compliance with ADB safeguard policies</p>	<p>(i) Agreement of beneficiary communities, NGOs, and relevant technical departments and agencies on proposed project (SDOs, OFWMDs, ESDs, F&amp;WLDs, AgDs, IPDs, and FDs)</p> <p>(ii) P&amp;D, IPDs, SDOs, AgDs, F&amp;WLDs, EPAs, and ADB agree on subproject selection. Selected subprojects are economically viable and sustainable, and social and environmental impacts can be mitigated satisfactorily.</p>	<p>PPTA final report submitted by February 2007, reflecting</p> <p>(i) Reports of community consultations during project design phase and validation workshop with representatives of all stakeholder groups to be held prior to draft final report submission</p> <p>(ii) Tripartite meeting with the Government (P&amp;Ds, IPDs, SDOs, AgDs, F&amp;WLDs, EPAs), consultants, and ADB at inception review mission. Economic analysis and compliance documents.</p>	<p><b>Assumptions</b> The Government supports the design activities and encourages strong coordination of provincial agencies.</p> <p>Buy-in for proposed farming systems model and protection measures for the watershed</p> <p><b>Risks</b> IPDs and SDOs reject the development of a service approach and resist devolving the irrigation schemes' operation and maintenance to farmers.</p> <p>Various government provincial institutions involved in project preparation reject coordination improvement proposals.</p>

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
<p>3. Selection criteria developed for eligibility of subsequent subprojects in NWFP and Punjab and areas of policy dialogue proposed</p> <p>4. Reconnaissance level assessment undertaken of potential for community storage projects in Sindh</p> <p>5. Institutional capacity assessed, including recommendations for capacity building, and upgraded guidance on appraisal and design procedures as well as project implementation structure, and arrangements developed that are results-oriented and promote coordinated interagency action</p>	<p>(iii) P&amp;D, IPDs, SDOs, AgDs, F&amp;WLDs, EPAs, and ADB agree on subproject selection criteria that are responsive to community needs.</p> <p>(iv) Reconnaissance survey is validated and recommendations agreed by relevant agencies in Sindh.</p> <p>(v) Guidance on improved project planning, design, and appraisal are acceptable to relevant Government agencies. Agreement of Government on staffing needs, institutional strengthening, and training requirements under the proposed project. Agreement of P&amp;Ds, IPDs, SDOs, AgDs, and F&amp;WLDs. Implementation chart.</p>	<p>(iii) Tripartite review with P&amp;D, IPDs, SDOs, APDs, F&amp;WLDs, EPAs, and ADB agree on subproject selection criteria prior to draft final report submission.</p> <p>(iv) Peer review organized with ADB experts, government of Sindh experts, and independent experts before final draft report submission.</p> <p>(v) Design and appraisal manuals. Training plan at inception phase is validated by the Government, training attendance sheet, and training evaluation sheets. Tripartite meeting to discuss draft final report</p>	
<b>Activities with Milestones (the TA)</b>			<b>Inputs</b>
<p>1.1 Assess irrigated agriculture development in selected command areas of the small dams in Punjab and NWFP and review design assumptions (by December 2006).</p> <p>1.2 Undertake farming systems studies in both provinces to produce farming system typology and the conditions of production of subsystems (by November 2006).</p> <p>1.3 Recommend support packages for various farmer types and options for delivery (by February 2007).</p> <p>1.4 Analyze the key factors leading to catchment degradation in small dam project areas, assumptions regarding reservoir sedimentation, and its importance for people's livelihoods (by November 2006).</p> <p>1.5 Analyze success and failure of community-based NRM projects in NWFP and Punjab and lessons to be learned for the project and propose watershed protection and management models (by December 2006).</p> <p>1.6 Review and assess technical, social, and economic feasibility of various uses of water and provide recommendations for targeted multiple use including water supply and sanitation and reservoir fisheries (by January 2007).</p> <p>1.7 Review in detail social mobilization weaknesses and strengths in current small dam project implementation and provide recommendations, guidelines, and criteria to ensure subproject selection is demand driven (by November 2006).</p> <p>1.8 Undertake one sedimentation survey on sample small dams (December 2006).</p> <p>2.1 Based on outcome of planning and design workshop, incorporate new approaches into study review (December 2006).</p> <p>2.2 Examine a range of subproject feasibility studies and propose initial criteria for selecting and shortlisting core subprojects for consideration by ADB (by October 2006).</p> <p>2.3 Collect any additional social, environmental, technical, and economic information required by new design guidance and ADB policies (by December 2006).</p> <p>2.4 Undertake SEA for a sample sub-basin, EIAs, resettlement action plans, and economic analyses for the selected sample subprojects, and develop a resettlement framework for the entire project (by November 2006).</p> <p>2.5 Work with Government agencies to update subproject feasibility studies as required.</p>			<p>International consultants: 23 person-months</p> <p>Domestic consultants: 45 person-months</p> <p>ADB: \$900,000</p> <p>Government: \$225,000</p>

Activities with Milestones (the TA)	Inputs
<p>2.6 Prepare guidance material on preparing feasibility reports (by February 2007).</p> <p>3.1 On the basis of reviews of past performance, options assessment, and feasibility study reviews, propose a range of technical, economic, social, and environmental selection criteria to determine eligibility for ADB financing (by February 2006).</p> <p>3.2 Prepare an environmental framework and resettlement framework to guide subsequent subprojects (by February 2006).</p> <p>3.3 Develop an issues paper on areas of policy dialogue to be considered during processing of subsequent sector investment project (by March 2007).</p> <p>4.1 Review previous studies and recommendations on arid zone development and undertake a community water storage reconnaissance survey in Sindh with recommendations for future action (by December 2006).</p> <p>5.1 Assess Government staff capacities (by September 2006) and provide training (until March 2007).</p> <p>5.2 Review planning, design, and operations guidelines and technical options, and make recommendations for improvement and/or updating.</p> <p>5.3 Facilitate dialogue in the Working Group on Updating Planning and Design Procedures.</p> <p>5.4 Review safety procedures for small dams and make recommendations for improvement.</p> <p>5.5 Review implementation arrangements of similar projects in the rural sector and the lessons learned.</p> <p>5.6 Review in detail the proposed implementation structure and arrangements through intensive consultation with the Government (from October 2006 to March 2007).</p> <p><b>Other Activities with Milestones</b></p> <p>6.1 Organize participatory workshops and seminars for stakeholders, including government agencies, beneficiary communities, representatives, NGOs, to investigate issues, elaborate solutions, select subprojects, and validate findings and recommendations of TA (from October 2006 to March 2007).</p> <p>7.1. Complete social assessment, including gender and poverty (by January 2007).</p> <p>8.1 Complete financial and economic analyses (by January 2007).</p> <p>9.1 Finalize draft monitoring framework and mechanisms (by February 2007).</p> <p>10.1 Submit draft final report (by February 2007).</p> <p>11.1 Submit final report (by March 2007).</p>	

ADB = Asian Development Bank, AgD = Agriculture Department, EIA = environmental impact assessment, EPA = Environment Protection Agency, ESD = Extension Service Department, FD = Fisheries Department, F&WLD = Forest and Wild Life Department, IPD = Irrigation and Power Department, MOU = memorandum of understanding, MT = metric ton, NGO = nongovernment organization, NRM = natural resource management, OFWMD = On-Farm Water Management Department, O&M = operation and maintenance, P&D = Planning and Development Department, PPTA = project preparatory technical assistance, SDO = small dam organization, SEA = strategic environmental assessment, TA = technical assistance.

<sup>a</sup> Targets to be verified during PPTA.

## INITIAL POVERTY AND SOCIAL ANALYSIS

### A. Linkages to the Country Poverty Analysis

Is the sector identified as a national priority in country poverty analysis? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Is the sector identified as a national priority in country poverty partnership agreement? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Contribution of the sector or subsector to reducing poverty in Pakistan:</b>	
<p><b>National Impact on Poverty.</b> Agriculture is a crucial sector in Pakistan's economy and for poverty reduction since it accounts for about 25% of the gross domestic product and employs about half of the labor force. Access to water for irrigation or other purposes is considered similarly important. Pakistan is considered one of the world's most water-stressed countries, and yet projections are that over 30% more water will be needed over the next 20 years to meet increased agricultural, domestic, and industrial demand due to high population growth and a quickly changing economy. Since Pakistan uses almost all of its available surface and underground water, water storage and improved water management will play an essential role in helping Pakistan cope with this situation both in the Indus Basin and outside in the <i>barani</i>, or arid areas.</p> <p>Pakistan's Poverty Reduction Strategy Paper (PRSP) recognizes poverty as a predominantly rural phenomenon and rural development as the key to fighting poverty in Pakistan. The PRSP pro-poor rural development strategy focuses on developing land and water resources, rural electrification, and other subsectors like fisheries, as well as on increasing crop and livestock productivity. The proposed community water storage project's expected outputs are in line with this strategy.</p> <p>Similarly, the project is expected to contribute substantially to increasing access to drinking water and addressing inadequate sanitation, which are seen as important elements under pillar III of the PRSP and recognized in the Medium-Term Development Framework as a national priority if Pakistan is to achieve its non-income-related objectives in connection with the Millennium Development Goals.</p> <p><b>Regional Impact on Poverty.</b> The project concentrates on <i>barani</i> areas of Punjab and NWFP where the extreme variability of rainfall and lagging development support in irrigated areas keep agricultural productivity low and poverty levels high compared with the rest of the country. In dry years, these <i>barani</i> areas are severely affected and the resulting economic losses and their repercussions on poverty are significant. At a time when the country is about to make major investment in large storage dams to increase water availability for future generations in the Indus River system, simultaneous investment in multipurpose small to medium dams in <i>barani</i> areas reflects sound and balanced planning toward reducing poverty gaps between different regions.</p> <p><b>Project-Specific Impact on Poverty.</b> By making irrigation water available to currently rainfed farming areas, the project will enable farmers to achieve higher yields per hectare of existing traditional subsistence crops like wheat, maize, and millet, as well as encourage the cultivation of short-duration, labor-intensive cash crops like seasonal vegetables, and thereby increase the income of beneficiaries. However, by promoting the development of irrigated agriculture, the project will benefit mainly landowners and not the most vulnerable groups in rural communities, who own hardly any land. What may, however, directly benefit the most vulnerable people is increasing water availability for purposes other than agriculture. It may also offer indirect benefits by generating job opportunities, since the project will promote the production of higher-value irrigated crops, and these crops are generally much more labor intensive than subsistence agriculture. In rural areas of Pakistan, agricultural labor is usually provided mostly by poor, landless households. Poor men and women work on farmland mostly as seasonally and/or permanently hired labor to supplement their income or to earn a marginal living, and for meeting their such needs as healthcare and education.</p>	

**B. Poverty Analysis****Targeting Classification:** General intervention**What type of poverty analysis is needed?**

A social assessment specialist will be responsible for carrying out poverty, social, and gender assessments in the proposed project areas in the NWF and Punjab provinces of Pakistan, focusing especially on the selected 3–4 initial core subprojects to be implemented. The specialist will carry out a socioeconomic profile of potential beneficiary and affected communities according to the requirements of ADB's *Handbook on Poverty and Social Assessment*, and by using participatory rural appraisal (PRA). The PRA techniques to be used in the field study will include, but not be limited to, (i) secondary data collection, (ii) key informant interviews, (iii) participatory mapping (showing ethnic distribution, poverty and problem areas, etc.), (iv) focus group discussions (with both men and women) for collecting community data, (v) Individual Interviews (with both men and women) for collecting data on sample households, and (vi) participatory ranking (sources of income, major problems, perceived positive and negative impacts of the project, and suggestions for improving project design). The study will focus especially on the following aspects of the communities:

- (i) socioeconomic formation and structure of the benefiting villages, by ethnicity, occupation, land tenure, income level, poverty distribution, etc.;
- (ii) availability, quality, and utilization of the basic social services and facilities, including roads, drinking water, health, education, employment, agricultural inputs and extension service, and the like;
- (iii) community response to the proposed project interventions and their concerns, interests, and suggestions for improvements and/or alterations in the project design;
- (iv) the situation regarding social cohesion or conflict and the possibility of organizing communities to actively participate in project planning, implementation, and subsequent operation and maintenance;
- (v) identification of vulnerable groups (e.g., households headed by women, landless labor, sharecroppers, families with disabled people) and ways to enhance project impact on these specific groups; and
- (vi) status and roles of women in the community, especially in agriculture and animal husbandry.

Recommendations should include feasible poverty reduction and mitigation measures, along with an indicative budget and implementation strategies.

**C. Participation Process**

**Is there a stakeholder analysis?**  Yes  No

Stakeholder analysis and consultations will be conducted during project preparatory technical assistance (PPTA), through PRA and other techniques, to inform the poverty, social, and gender analysis and the design of the proposed project.

**Is there a participation strategy?**  Yes  No

Technical assistance will prepare a stakeholder participation strategy for the project based on pilot experiences with the 3–4 initial subprojects. The participation strategy covers the entire project lifecycle, including the identification, design, and construction phases.

**D. Gender Development****Strategy to maximize impacts on women:**

The strategy will focus on (i) providing drinking water supplies, (ii) constructing village water collection tanks, (iii) the watering of animals, (iv) washing, and (v) vegetable farming to create labor-intensive opportunities for poor rural women. Specific women's groups will have to be formed and involved in project planning and design to ensure their particular constraints are well understood and that irrigation schemes and water delivery facilities are designed according to these needs and constraints. Detailed gender action plans will be prepared during PPTA.

**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 checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	<p>Based on the findings of the field visits, a large proportion of the land likely to be affected by the proposed project is barren nonagricultural land sparsely covered by native scrub and tree species. The land is owned both privately and communally and used predominately for livestock grazing. In valley bottoms, agricultural land belongs to individual landowners and is watered mostly by rain but also by soil moisture retained following flood recession.</p> <p>Land acquisition for community storage dams may be necessary, but the impact of likely land acquisitions is not known yet and will be examined during PPTA. The impact may be significant. PPTA will prepare a resettlement framework and sample resettlement plans, as individual subprojects will be selected during project implementation.</p>	<input checked="" type="checkbox"/> Full <input type="checkbox"/> Short <input type="checkbox"/> None
<b>Affordability</b>	<input checked="" type="checkbox"/> Significant <input type="checkbox"/> Not significant <input type="checkbox"/> None	<p>Depending on the irrigation strategy chosen, a sizable percentage of farmers may face difficulty financing the transition from rainfed to irrigated agriculture and from subsistence to cash crops (leveling land, purchasing irrigation equipment and farm inputs, and transporting produce to markets, etc.). Credit is necessary to support farmer's initial investments. A number of credit agencies currently operate in almost all project areas, such as agricultural and commercial banks, the micro credit-dispersing Khushali Bank, and nongovernment organizations. The project may need to link up with these and other similar agencies. PPTA will explore these possibilities in detail and design an appropriate plan.</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>Labor</b>	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	<p>The main civil works will be awarded by the project to registered construction contractors through competitive bidding and formal contracts that meet standard labor recruitment laws and rules. The contractors normally bring in their permanently hired labor, and they often hire local labor in the short term according to standard procedures and terms and conditions, paying them locally acceptable wages. The contracting agency, the project in this case, will ensure that Pakistan's standard labor law, rules, and terms and conditions are met by the contractor before awarding the contract and during the course of civil works. If complaints are received, the situation will be remedied and, in extreme cases, the contract may be cancelled.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Indigenous Peoples</b>	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	<p>Tribal groups may be present in the proposed multi-province project implementation area. They will be further studied by the PPTA consultant in relation to the indigenous peoples policy,<sup>a</sup> and an indigenous peoples development framework will be developed as appropriate. For instance, the Fact-Finding Mission revealed that the catchments of some of the proposed subprojects in NWFP fall partly in the adjacent Federally Administered Tribal Areas, These communities are strongly linked to the mainstream social and economic structures of the country</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> To be determined

		and so are not considered to be indigenous peoples. However, the Kalash, a non-Muslim ethnic minority group in Bamburet Valley of Chitral District (NWFP), may trigger the ADB policy, though the district is not included in the project area.	
<b>Other Risks and/or Vulnerabilities</b>	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	Other risks and vulnerabilities will need to be examined during TA and will be reflected in the final report and Summary Poverty Reduction and Social Strategy	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

<sup>a</sup> ADB. 1999. *Policy on Indigenous Peoples*. Manila.

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

Item	Total Cost
<b>A. Asian Development Bank (ADB) Financing<sup>a</sup></b>	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	515.2
ii. Domestic Consultants	180.0
b. International and Local Travel	46.8
2. Surveys and Studies	28.0
3. Workshops	5.0
4. Equipment (office and other)	13.2
5. Miscellaneous Administration	8.0
6. Vehicle Rental	19.2
7. Representative for Contract Negotiations	3.0
8. Contingencies	81.6
<b>Subtotal (A)</b>	<b>900.0</b>
<b>B. Government Financing<sup>b</sup></b>	
1. Office Accommodation	25.0
2. Counterpart Staff	50.0
3. Feasibility Studies	100.0
4. Data Collection	20.0
5. Workshop Facilitation Support	10.0
6. Logistics and Field Support	20.0
<b>Subtotal (B)</b>	<b>225.0</b>
<b>Total</b>	<b>1,125.0</b>

<sup>a</sup> Financed by the Japan Special Fund, funded by the Government of Japan.

<sup>b</sup> Sums represent in-kind contribution.

Source: ADB estimates.

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The consultants will address the following complementary and interacting elements: (i) agriculture and irrigation system options, (ii) watershed management, (iii) dam and reservoir design, (iv) multiple uses of water, (v) social and environmental assessment, and (vi) financial analysis. Participatory processes are integral to each of these elements. A subgroup of the team will undertake a reconnaissance-level assessment of the potential for community storage in Sindh.

### A. Agriculture and Irrigation System Options

2. **Community Water Management and Institutions Specialist (Team Leader)** (international 6 person-months). The specialist and team leader will perform the following tasks:

- (i) Review past small dams projects' performance and draw lessons to be learned including organizational options to ensure coordination and integration of activities.
- (ii) Carry out a water sector assessment, particularly on the institutional reforms needed to ensure efficient and sustainable use of the proposed small dams and their water.
- (iii) Develop a preliminary list of subproject eligibility criteria during the inception phase, with recommendations for 3–4 candidate sample subprojects.
- (iv) Review the status of community organizations in Pakistan and propose options for promoting farmers' organizations' handling of operation and maintenance (O&M), watershed management, command area development, and agricultural production.
- (v) Assess the capacity of nongovernment organizations or consultants in community mobilization and farmers' organizations and define options for their support role.
- (vi) Provide overall direction to TA, managing all experts' inputs, activities, and outputs; handling quality control of reports; and ensuring that all international consultants take responsibility to manage domestic consultants' activities and output.
- (vii) Manage relations with provincial and federal agencies and other stakeholders and ensure smooth coordination and synergies between the provinces.
- (viii) Prepare a project design including subproject selection criteria, implementing and financing arrangements, and a monitoring and evaluation framework.
- (ix) Coordinate institutional capacity assessment and the delivery of capacity-building activities by the consultant team and recommendations for inclusion in the project.
- (x) Assist in drafting a procurement plan for the loan project in line with Asian Development Bank (ADB) guidelines.

3. **Irrigated Agriculture Development Specialists** (international 3.5 person-months, domestic 6 person-months). The specialists will perform the following tasks:

- (i) Assess irrigated agriculture development and productivity in selected command areas of small dams and make recommendations for future investments.
- (ii) Lead farming systems studies in both provinces to produce farming system typology, including the identification of persisting or emerging bottlenecks in long value chains and other constraints and their remedies, including crop input financing and financing markets for land improvement investments, marketing, and processing.
- (iii) Analyze the subsystems of each farming system, and identify constraints to the adoption of more intensive cropping or livestock systems.
- (iv) Assess specific farmers' practices in different command areas and make recommendations on water-use and crop-production practices, extension services (public and private), changes in cropping patterns, and marketing strategies.
- (v) Identify possible links with the Government's livestock national programs and institutions to enhance livestock benefits from increased water availability.

- (vi) Review and assess government strategies, institutions, and cooperation linking community water storage development with increased agricultural productivity.
- (vii) Provide pragmatic recommendations on options to address obstacles and constraints to irrigation water efficiency and sustainable agriculture productivity.
- (viii) Review feasibility studies of sample subprojects to develop alternative models for the irrigated network and for water use and production subsystems.
- (ix) Make specific recommendations for project components, including their implementation arrangements, and assist the economist(s) in the costing exercise.

4. **Irrigation Planning and Design Specialist** (domestic 6 person-months). The specialist will perform the following tasks:

- (i) Review farmers' practices in command areas related to the efficiency, equity, and reliability of irrigation systems and the scope for improvement.
- (ii) Recommend options for irrigation system planning, design, and management.
- (iii) Study the state of *warabandi* (rotational system of water distribution) in existing projects and evaluate options for improvement.
- (iv) Review planning and design procedures for canal and watercourse alignment and recommend participatory design procedures including domestic uses of canal water.
- (v) Prepare a development strategy for transition from surface to pressurized conveyance systems and irrigation technology where appropriate.
- (vi) Review current practices for command area development and recommend ways to integrate it, as well as on-farm water management, into subproject implementation.
- (vii) Review feasibility studies of the sample subprojects and make recommendations for improvements to be considered in the technical design.
- (viii) Assess the institutional capacity of irrigation design agencies to adopt new design principles and develop recommendations for capacity building.
- (ix) Make specific recommendations for project components, including their implementation arrangements, and assist the economist(s) in the costing exercise.

5. **Agricultural Economist** (domestic 4 person-months). The economist will perform the following tasks:

- (i) Conduct economic analyses of core subprojects and of the overall sector project, in accordance with ADB guidelines on the economic analysis of projects.
- (ii) Assess the poverty impact of subprojects, in particular the potential for benefit-sharing among affected people.
- (iii) Consider alternative institutional options and requirements, including leasing and management arrangements, to promote the water-user community as the main beneficiary of reservoir fisheries and its retention of revenues.
- (iv) Review the cost estimates of proposed subprojects, against targets for command area development and establish acceptable investment benchmarks.
- (v) Assist in identifying project components and associated activities.
- (vi) Prepare a financing plan for ADB, the Government and the beneficiaries.
- (vii) Assess the institutional capacity of the small dams organizations (SDOs) in Punjab and NWFP to prepare economic analyses of subprojects and recommend staffing and training requirements.

## B. Watershed Management

6. **Watershed Conservation Specialists** (international 3 person-months, domestic 5 person-months). The specialists will perform the following tasks:

- (i) Analyze key factors causing watershed degradation and the contribution of watersheds to the livelihoods of local people.
- (ii) Analyze the success and failure of community-based natural resource management projects in NWFP and Punjab and identify lessons for watershed management.
- (iii) Investigate the best technical options for reducing sediment inflow.
- (iv) Review institutional aspects of watershed management and recommend reform or improvements, including legal frameworks and community empowerment.
- (v) Identify key stakeholders and implementing agencies (both public and private) to be involved in watershed regeneration and their capacity-building needs.
- (vi) Propose a set of strategies for sustainably regenerating and managing watersheds in existing and new dam projects and reflect these in subproject selection criteria.
- (vii) Facilitate a workshop to validate conclusions on watershed management.
- (viii) Make specific recommendations for project components, including their implementation arrangements, and assist the economist(s) in the costing exercise.

### C. Dam and Reservoir Design

7. **Hydrologists** (international 1.5 person-months, domestic 4 person-months). The hydrologists will perform the following tasks:

- (i) Review available studies on sedimentation and commission comprehensive surveys on 4–5 projects using modern survey and analysis techniques.
- (ii) Assess assumptions on sedimentation used in design and operation and options for flushing sediment, and propose changes to current planning and design procedures.
- (iii) Review procedures for determining reservoir inflow, evaporation, and water availability.
- (iv) Assess the potential for off-stream storage reservoirs, sediment detention basins, sediment excluders, and other options to reduce sediment inflow.
- (v) Review procedures for determining the design flood and make recommendations for updating design guidelines, taking into account international practice.
- (vi) Investigate the downstream uses of water and need for compensation flows.
- (vii) Review hydrological studies to determine the feasibility of the sample subprojects and make recommendations for future planning and technical design.
- (viii) Assist in assessing the contribution of dams to aquifer recharge, including changes due to sedimentation, and compare it with directly piped water from the reservoir.
- (ix) Undertake hydrological analysis for the strategic environmental assessment and environmental impact assessment (EIA), including cumulative impacts.
- (x) Assist in assessing the potential for hydropower development.

8. **Geologist** (domestic 2.5 person-months). The geologist will perform the following tasks:

- (i) Review general procedures for investigating geological aspects of small dam projects and make recommendations for future investigations.
- (ii) Review geological investigations and analyses for the sample subprojects and make recommendations for consideration in the technical design.
- (iii) Assess the potential for conjunctive groundwater use following the development of small dams.

9. **Geotechnical Engineer** (international 1.5 person-months). The geotechnical engineers will perform the following tasks:

- (i) Assist in reviewing the adequacy of geotechnical investigations.
- (ii) Review design procedures for dams' embankment and assess compliance with best practice on dam safety and opportunities for improving design cost effectiveness.

- (iii) Review feasibility studies of sample subprojects and propose changes as necessary.
  - (iv) Draft updated guidance for the planning and design manual.
10. **Dam Design Specialists** (international 3 person-months, domestic 6 person-months). The specialists will perform the following tasks:
- (i) Review the planning, selection, and design procedures for dams and appurtenant structures in accordance with international practice and seismic risks.
  - (ii) Examine the methodology for determining live and dead storage volumes and the operating rules related to the needs of downstream communities and dam safety.
  - (iii) Assess options for providing bulk water supplies, mini hydro, and downstream compensation flows and for flushing sediments or using sediment exclusion devices.
  - (iv) Conduct surveys of a sample of villages and review the needs and demand for improved rural water supply and sanitation in villages typically served by small dams.
  - (v) Make technical and institutional recommendations for the sustainable management and O&M of rural water supply and sanitation infrastructure.
  - (vi) Propose institutional arrangements for managing bulk water supply releases from the reservoir by the community and associated revenues.
  - (vii) Participate in the review of sample subproject feasibility studies to ensure that water supply and sanitation needs are addressed.
  - (viii) Review processes for preparing final designs, tender documents, and contract awards including pricing of tenders.
  - (ix) Review construction techniques, construction supervision, and quality control procedures and the capacity of local contractors.
  - (x) Review dam safety inspection reports and assess current procedures in relation to local regulations, international practice, and World Bank policy OP 4.37<sup>1</sup>. Make recommendations to institutionalize safety inspections, reporting, and follow-up.
  - (xi) Review the feasibility studies of sample subprojects and propose improvements to be considered in future planning and technical design.
  - (xii) Facilitate a cross-provincial working group and consider inputs of TA specialists to identify and adopt improved planning and design guidance for small dams.
  - (xiii) Make specific recommendations for project components, including their implementation arrangements, and assist the economist(s) in the costing exercise.
  - (xiv) Assess capacity-building requirements, including the adequacy of staffing resources and recommend reform measures and training to address these issues.

#### **D. Social and Environmental Assessment and Finance**

11. **Social Assessment/Resettlement Specialists** (international 2 person-month, domestic 5.5 person-months). The specialists will perform the following tasks:
- (i) Provide leadership in incorporating participatory processes into planning processes.
  - (ii) Carry out poverty, social, and gender assessments focusing especially on the selected sample subprojects.
  - (iii) Determine community responses to the proposed project interventions; formulate procedures to organize communities and encourage their active participation in project planning, implementation and O&M activities; and develop a participatory strategy in collaboration with the team leader.
  - (iv) Make recommendations for targeted poverty reduction measures and mechanisms to improve the livelihood of affected people and vulnerable groups.
  - (v) Assess the capacity of provincial agencies for social assessment and resettlement planning, and make recommendations for capacity development.

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<sup>1</sup> The World Bank. 2001. *Safety of Dams*, World Bank Operational Policies OP 4.37. Washington, DC.

- (vi) Develop options to minimize and mitigate adverse social and resettlement impacts.
- (vii) Assess the resettlement impacts of sample subprojects and develop a resettlement framework for sector-like project and resettlement plan(s) in accordance with ADB's *Policy on Involuntary Resettlement* and Pakistan's domestic laws and guidelines.
- (viii) Facilitate Government participation in developing resettlement outputs and ensure Government endorsement of the resettlement framework and plan(s).
- (ix) Assess the presence of indigenous people and ethnic minority groups in the project area. Prepare an indigenous peoples development framework according to ADB's *Indigenous Peoples Policy* and *Operation Manual on Indigenous People Policy*<sup>2</sup> and, if necessary, prepare an indigenous peoples action plan/development plan in accordance with the approved framework.
- (x) Assess women's participation, develop recommendations to ensure they are efficiently consulted, and prepare a gender action plan consistent with ADB policies.

12. **Environment Specialists** (international 2.5 person-months, domestic 4 person-months). The specialists will perform the following tasks:

- (i) Prepare an EIA of sample subprojects in accordance with Pakistan's regulations for EIA<sup>3</sup> and ADB's *Environmental Assessment Guidelines*.<sup>4</sup> Facilitate approval of the EIA by the relevant Government agency and the submission of the EIA and summary EIA to ADB for public disclosure.
- (ii) Make specific recommendations on the nature of the environmental management plan and assign responsibility for compliance with its various provisions.
- (iii) Review subproject proposals and develop a preliminary environmental screening format to determine the environmental assessment requirement of each subproject.
- (iv) In accordance with ADB's *Environmental Assessment Guidelines* for sector-like projects, prepare the Environmental Assessment and Review Procedures Framework.
- (v) Undertake a strategic environmental assessment of a river basin containing several small dams, addressing key issues likely to have cumulative impacts on the basin, and identifying impacts and issues that may not feature in the subprojects.
- (vi) Assess the institutional capacity of the SDOs in Punjab and NWFP to (a) prepare scoping of potential environmental impacts using the environmental screening format described above, (b) prepare project-specific terms of reference for environmental assessment, (c) supervise environmental assessment studies, and (d) implement measures recommended in initial environmental examinations and EIAs. Recommend staffing and training requirements.

13. **Financial Analysis Specialist** (domestic: 2 person-months). The financial analysis specialist will perform the following tasks:

- (i) In accordance with ADB's *Guidelines on Financial Management and Analysis of Projects* (2005), conduct financial analysis of the proposed Project and the SDOs.
- (ii) Perform financial impact assessments of existing small dams and selected subprojects to determine the project's financial rate of return.
- (iii) Complete a financial management assessment of the SDOs and recommend financial management measures to reduce risks of mismanagement.

<sup>2</sup> ADB. 2004. *Operations Manual*. OM Section F3/BP. Bank Policies, Indigenous People. Manila.

<sup>3</sup> The Government of the Islamic Republic of Pakistan. 2000. *Pakistan Environmental Protection (Review of IEE/EIA) Regulations (2000)*. Islamabad.

<sup>4</sup> Available: [http://www.adb.org/documents/Guidelines/Environmental\\_Assessment/default.asp](http://www.adb.org/documents/Guidelines/Environmental_Assessment/default.asp)