

PROJECT PREPARATORY TECHNICAL ASSISTANCE

A. Justification

1. The project preparatory technical assistance (PPTA) is necessary on the following grounds:

- (i) The investment project is urgently needed in Pakistan.
- (ii) While the government has a plan to invest in the project, there is a need to conduct a detailed due diligence and pre-feasibility to process the investment project and loan.
- (iii) Executing agency's lack of capacity and resources to conduct the required due diligence.
- (iv) Expertise of competent international and national consultants is needed to prepare the project considering its technical complexity and scale.

B. Major Outputs and Activities

2. The major outputs and activities are summarized in Table A3.1.

Table A3.1: Summary of Major Outputs and Activities

Major Activities	Expected Completion Date	Major Outputs	Expected Completion Date
Assessment of the energy sector, regulatory framework, off-grid electrification policies	July 2016	Draft sector assessment report with recommendations for development conducive off-grid policies	August 2016
Develop business models for sustainable off-grid RE projects, including micro-hydropower	May 2016	Draft business model assessment report including recommendations for appropriate business models for the investment project	May 2016
Assess the market for local RE companies and identify local manufacturers and other private sector partners suitable to implement RE off-grid projects	July 2016	Draft RE market assessment report, including capacity assessment of local RE manufacturers, distributors and project developers	August 2016
Undertake site visits (sampling basis), conduct sample household surveys and energy needs assessment of the selected sites areas—both micro-hydropower and other pilot RE technologies	July 2016	Draft energy assessment and affordability level report	August 2016
Undertake technical due diligence to identify suitable hydro technologies for the investment project and other RE technologies for the planned pilot projects	July 2016	Draft pre-feasibility study report	August 2016
Based on the business model selected, prepare functional technical specifications, cost estimates, procurement strategy and plan, implementation arrangements and schedule, and disbursement projections	August 2016	Draft bidding documents and procurement strategy	September 2016
Assess the procurement capability of the implementing agencies	July 2016	Procurement capacity assessment report	August 2016
Program technical assessments covering program soundness, expenditure and financing, and results and links with	July 2016	Draft Funding Modality Assessment report	August 2016

disbursements, to determine the degree to which the RBL program can achieve its development results.			
Program system assessments which examine the monitoring and evaluation systems, the fiduciary systems, the environmental and social systems, and other institutional and system aspects, as relevant and appropriate to the program	July 2016	Draft Funding Modality Assessment Report	August 2016
Conduct Program Safeguard System Assessment	July 2016	Program Safeguard System Assessment	Aug 2016
Draft a program action plan to address the gaps and weaknesses identified in the program fiduciary and safeguards assessments	July 2016	Program Action Plan	Aug 2016
Propose appropriate contract packaging and prepare bidding documents	Sept 2016	Draft bidding documents	Sept 2016
Conduct economic and financial analyses with sensitivity analyses	July 2016	Economic analysis Financial analysis	August 2016
Economic viability for subprojects, or example subprojects, will be assessed for (i) the demand for electricity, (ii) supply alternatives from renewable resources; (iii) substitution for present energy sources, and new uses and activities with the project; (iv) overall viability; and (v) risks to viability and sustainability	July 2016	Economic analysis	August 2016
Prepare project financial plan and overall investment plan for the entire program	July 2016	Financing Plan Investment Plan	August 2016
Prepare financial projections for the project implementing agencies	July 2016	Financial projections	August 2016
Assess social impacts (including impacts during installation works) and prepare draft Land Acquisition and Resettlement Framework to cover subprojects that may not be finalized during project preparation.	June 2016	Social and poverty assessment report Summary poverty reduction and social strategy report Land Acquisition and Resettlement Framework	July 2016
Conduct rapid poverty and social assessment (including gender analysis) including site visits, survey, and consultations, for all the project regions as required.	May 2016	Social and poverty assessment report	June 2016
Assess environmental and social impacts and prepare relevant documents as per ADB's SPS Policy 2009	July 2016	Draft Land Acquisition and Resettlement Plans, Draft Due diligence reports, draft Framework IEE	July 2015
Prepare Gender Action Plan	July 2016	Gender Action Plan	August 2016
Prepare a communication and participation plan for the project	August 2016	Draft Communication and Participation Plan	Sep 2016
Assist the EA in preparing PC 1s and other supporting documents to obtain government approval of the feasibility study	Sept 2016	PC 1 document	Oct 2016
Draft PAM	August 2016	PAM	Sept 2016
Prepare bidding documents	August 2016	Final bidding document	Sept 2016

ADB = Asian Development Bank, EA = executing agency, IEE = Initial Environmental Examination, PAM = Project Administration Manual, PC 1 = Planning Commission 1, PSSA = Program Safeguard System Assessment, RBL = results-based lending, RE = renewable energy, SPS = Safeguard Policy Statement.
Source: Asian Development Bank.

C. Cost Estimate and Proposed Financing Arrangement

3. The technical assistance is estimated to cost \$1.8 million, of which \$1.5 million will be financed on a grant basis by the Technical Assistance Special Fund (TASF-V). The government will provide counterpart support in the form of staff, office space, office supplies, and other in-kind contributions. The detailed cost estimate is presented in Table A3.2.

Table A3.2: Cost Estimates and Financing Plan (\$ million)

Item	Total Cost
Asian Development Bank^a	
1. Consultants	
a. Remuneration and per diem	
i. International consultants (48 person-months)	850.0
ii. National consultants (54 person-months)	250.0
b. International and local travel	175.0
c. Reports and communications	20.0
2. Workshops, training, seminars, and conferences ^b	100.0
3. Vehicle ^c	10.0
4. Surveys	10.0
5. Miscellaneous administration and support costs	10.0
6. Contingencies	75.0
Total	1,500.0

^a Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-V).

^b Road shows will be held overseas and in Pakistan to encourage private sector investments while trainings under capacity building component will be held in Pakistan.

^c Vehicle will be hired for site visits and commuting between different offices.

Source: Asian Development Bank

D. Consulting Services

4. The PPTA will employ (i) an international consulting firm to conduct the feasibility study, technical, financial and economic due diligence, prepare bidding documents and functional technical specifications, prepare a hydro power development plan for Khyber Phaktunkhwa (KPK), scoping for investment project, and conduct sector assessment; and (ii) individual experts to assist in evaluating bids, conduct due diligence required for results-based lending, scoping for introduction of technical education on maintenance and operations of micro-hydropower plants, and other required services are summarized in Table A3.3. For hiring firm, quality- and cost-based selection method (90:10) will be used with full technical proposal.

Table A3.3: Summary of Consulting Services Requirement (in person-months)

International	pm	National	pm
Individual			
Procurement Expert (Evaluation)	3	Procurement Expert (Evaluation)	3
Gender Expert	4	Fiduciary Risk Assessment Expert	2
Monitoring and Evaluation Expert (Risk assessment)	3	Gender Expert	6
Fiduciary Risk Assessment Expert	2	Project Coordination Expert	10
Technical and Vocational Education Expert	2	Energy Sector Expert	4
Firm			
Renewable Energy Expert – Team Leader	5	Capacity Development Expert	3
Regulatory Expert	4	Micro-Hydropower Development Policy Expert	3
Micro-Hydropower Expert	4	Solar Systems Expert	2
Economic Expert	3	Economic Expert	3
Financial Expert	3	Environment Expert	3

Procurement Expert	3	Social Development expert	3
RE Business Model Expert	4	Financial Expert	3
Energy Efficiency Expert	4	Energy Efficiency Expert (Project Support)	4
Power Sector Assessment Expert	4	Private Sector Engagement Expert	3
		Climate Change Expert	2
Total	48		54

pm = person-months

Source: Asian Development Bank

5. The outline terms of reference for the PPTA consultants are described in Appendix 4.

E. Implementation Arrangements

6. Pakhtunkhwa Electricity Development Organization in KPK and Office of the Secretary, Energy Department in Punjab will be the executing agencies for the project. Each executing agency will establish project management units at each of their offices.

7. The proposed technical assistance processing and implementation schedule is listed in Table A3.4.

Table A3.4: Technical Assistance Processing and Implementation Schedule

Major Milestones	Expected Completion Date
PPTA Approval	December 2015
Individual consultant recruitment	January–April 2016
Consulting firm recruitment	April 2016
Physical completion	April 2017
Financial closure	August 2017

PPTA = project preparatory technical assistance

Source: Asian Development Bank

OUTLINE TERMS OF REFERENCE FOR THE PROJECT PREPARATORY TECHNICAL ASSISTANCE CONSULTANTS

- 1. Renewable Energy Expert (international and national, 5 person-months each).** Qualified RE expert with an engineering degree in related field, and at least 15 years of relevant working experience, including experience of working as team leader. Identify suitable renewable energy technologies and conduct preparatory work required for design of renewable energy installation, including cost estimates for different renewable energy technologies suitable for implementation. The program technical assessments will cover the program soundness, expenditure and financing, and results and links with disbursements. It will determine the degree to which the results-based lending program (RBL) can achieve its development results.
- 2. Regulatory Expert (international, 4 person-months).** Qualified regulatory expert with a degree in law, finance, business, engineering or related field, and at least 15 years of relevant working experience in developing regulations. Review and assess the regulatory framework of the energy sector including off-grid electrification policies and tariff models, develop the framework required for this project and make recommendations for respective suitable off-grid electrification policies including suitable tariff schemes.
- 3. Micro-Hydropower Expert (international, 4 person-months).** Qualified hydropower expert with an engineering degree in related field, and at least 15 years of relevant working experience, including experience in design and operations of micro or mini hydro power plants. The expert will conduct due diligence on technology selection, technical viability, roll-out and installation strategy to develop a program for the next 10 years for the implementation of micro-hydropower plants in KPK and identify 500 micro-hydro projects for prioritized investment.
- 4. Economic Expert (international and national, 3 person-months each).** Qualified economist with a Masters degree in related field, and at least 15 years of relevant working experience, including experience in conducting economic analysis of at least 5 projects in the energy sector. Conduct project's economic analysis in accordance with the Guidelines for ADB's Economic Analysis of Projects. Assess economic viability for subprojects, or example subprojects, for (i) the demand for electricity, (ii) supply alternatives from renewable resources; (iii) substitution for present energy sources, and new uses and activities with the project; (iv) overall viability; and (v) risks to viability and sustainability.
- 5. Financial Expert (international and national, 3 person-months each).** Qualified financial expert with a master's degree in finance, business or related field, professional certification and at least 15 years of relevant working experience, including in financial due diligence. S/he will conduct project's financial analysis of the project in accordance with ADB's requirements, conduct financial management assessment of Pakhtunkhwa Energy Development Organization, design the fund flow and disbursement mechanisms of the ensuing project based on the results of the financial management assessment and identify a need for use of the imprest fund and state-owned enterprises procedures including assessment of the executing agency/implementing agency's capability to manage these procedures in line with Midterm Review Action Plan and conduct a financial management assessment of two executing agencies.
- 6. Procurement Expert (2 international and 1 national, 3 person-months each).** Qualified procurement expert with a degree in related field, and at least 15 years of relevant working experience, including knowledge of procurement guidelines of international financing institutes like ADB and WB. The national expert must have in debt knowledge of Public

Procurement Regulatory Authority rules and regulations. Both International and national, expert must have experience in procuring similar equipment and civil works as used in the project. Develop a detailed procurement plan, including a list of procurement packages and mode of procurement, prepare draft bid documents in accordance with ADB Procurement Guidelines for each of the procurement packages, conduct procurement capacity assessment of the executing agency and support the executing agency in evaluation of bids. Conduct procurement risk assessment and procurement capacity assessment of the executing agencies and recommend suggestions to build capacity and cover gaps.

7. Renewable Energy Business Model Expert (international, 4 person-months). Qualified renewable energy modeling expert with a degree in finance, business, engineering or related field, and at least 7 years of relevant working experience, including experience in developing business models for such renewable energy projects with community and private sector engagement structured in the design. The models previously developed by the expert, should be in operation for at least 3 years. Conduct due diligence on technology selection, technical viability, roll-out and installation strategy to develop multiple business models for implementation, maintenance and operations of selected renewable energy projects. Models should encourage private sector engagement, involve community participation and gender.

8. Energy Efficiency Expert (international and international, 4 person-months each). Qualified energy expert with an engineering degree in related field, and at least 10 years of relevant working experience, including experience in designing energy efficiency projects such as efficient buildings, energy efficient equipment standards and specifications. Assess the regulatory framework for energy efficiency, support the executing agency by providing technical advice on current and planned energy efficiency initiatives and recommend suitable measures, policies and schemes for implementation.

9. Power Sector Assessment Expert (international, 4 person-months). Qualified power sector expert with a degree in finance, business, engineering or related field, and at least 15 years of relevant working experience in sector assessment and policy review, including experience in developing countries. Assess the power sector and provide overview, including off-grid, on generation, distribution, relevant stakeholders in Pakistan in general, and in KPK and Punjab in detail.

10. Gender Expert (international, 4 person-months; national 6 person-months). Qualified sociologist (preferably post-graduate) with at least 7 years of experience in the development sector working with the non-government and government agencies in developing countries, developing and implementing gender projects, conducting sector specific gender analysis preferably in energy sector and has strong written and communication skills. S/he will be responsible for conducting the gender analysis of the areas selected under the project, identify gender entry points and develop gender action plan for the project and conduct social and poverty analysis with focus on conducting analysis on gender issues and the preparation of an action plan to address gender issues and effective gender mainstreaming. The expert is required to refer to ADB's Tool Kit on gender and energy for more details. The expert will also be required to work closely with the Technical and Vocational Education expert and the Capacity development expert. The national expert will support the International expert and will provide guidance to executing agencies in initiating actions under the Gender Action Plan.

11. Capacity Development Expert (national, 4 person-months). Qualified expert with a master's degree in finance, business, engineering or related field, professional certification and at least 15 years of relevant working experience specially, including experience in developing

training modules and conducting trainings on micro-hydropower development, maintenance and operation. In depth knowledge of micro-hydro power plants operations and community based projects is essential. Prepare training needs assessment and develop training program modules. Conduct trainings as required under the investment project.

12. **Climate Change Expert (national, 2 person-months).** Qualified climate change expert with a degree in related field, and at least 10 years of relevant working experience. The expert is expected to gather data and prepare climate change screening, adaptation financing and mitigation plan. Expert will also provide calculations for CO² emissions etc.

13. **Micro-Hydropower Development Policy Expert (national, 3 person-months).** Qualified hydro expert with an engineering degree in related field, and at least 15 years of relevant working experience, including experience in design, policy making and operations of micro, mini or small hydro power plants. Assess current micro-hydropower development plans and policies in KPK and in collaboration with the Micro-Hydropower Expert and develop a program for the next 10 years for implementation of micro-hydropower in KPK, and develop policies required for further development of such projects, effective implementation, and engagement of private sector to maintain and operate these projects on commercial basis.

14. **Solar Power Systems Expert (national, 2 person-months).** Qualified solar power systems expert with an engineering degree in related field, and at least 5 years of relevant working experience, including designing of solar projects, developing technical specifications and experience in operations of solar plants. Conduct due diligence on technology selection, technical viability, roll-out and installation strategy to develop projects in KPK and Punjab and develop a program for implementation of solar PV projects in the provinces.

15. **Environment Expert (national, 3 person-months).** Qualified environment expert with a degree in related field, and at least 15 years of relevant working experience, including working with an international financing institute like ADB, WB, EIB, ISDB etc. The consultants must be familiar with development of environmental frameworks and IEEs. The consultant will carry out, but will not be limited to, the following tasks:

- (i) Conduct a Program Safeguards System Assessment (PSSA) as due diligence for the RBL prior to conducting the initial environmental examination IEE.
- (ii) Design and conduct IEE and Environment Mitigation Plan (EMP) to ensure it conforms to ADB's Safeguard Policy Statement.
- (iii) Based on environmental information of the project area, identify the major concerns to be assessed in the IEE including impacts on (a) noise and air quality, (b) socio-economic conditions, (c) rare flora and fauna (d) rivers (e) road safety and potential spills of hazardous or toxic chemicals, and (f) communities from construction activities and operation.
- (iv) Assess the direct, indirect and cumulative environmental impacts of the project.
- (v) Prepare the draft IEE and EMP and ensure that investigations and analysis are adequate, impacts are quantified, and appropriate mitigation measures and management procedures are specified.
- (vi) Prepare contractor specifications for environmental management and monitoring.
- (vii) Assist the executing agency with public consultation and involvement during the IEE preparation to promote broad-based acceptance of the project and ensure full disclosure, propose measures for public consultation and involvement during project construction, and provide training to the executing agency staff on environmental management and monitoring.

16. **Social Development Expert (national, 3 person-months).** Qualified expert with a degree in related field, and at least 15 years of relevant working experience. Conduct social and poverty analysis for the preparation of a summary poverty reduction plan and social strategies with focus on conducting analysis on gender, affordability and tariff collection. Prepare land acquisition and resettlement plans, due diligence reports, Land Acquisition and Resettlement Framework, and Program Safeguard System Assessment.

17. **Project Coordination Expert (national, 10 person-months).** Qualified expert with a degree in finance, business, or engineering, and at least 10 years of relevant working experience in KPK or Punjab in the development sector. Support the implementation of the project, develop an effective coordination strategy for integration of inputs provided by different individual experts and consulting firm, coordinate between implementing agencies, consultants and ADB.

18. **Private Sector Engagement Expert (national, 4 person-months).** Qualified expert with a Masters degree in finance, business, banking or related field, and at least 10 years of relevant working experience. The expert will develop options for private sector involvement for the implementation of micro-hydropower and other renewable energy off-grid projects and increase of private sector investment into micro-hydropower and other renewable energy off-grid projects. The expert will also conduct an assessment of the market to assess private sector potential and capacity for such operations, and requirements/incentive for encouraging private sector participation in development and operations of micro-hydropower plants..

19. **Technical and Vocational Education Expert (international, 2 person-months).** Qualified education sector expert (Masters in relevant discipline) with at least 10 years' experience. To identify relevant existing institutes that can be utilized for such trainings and certifications, conduct training needs assessment, develop different trainings modules and mechanism to make it financially sustainable and credible and consult with regional universities for establishing courses, and research and development centers for renewable energy technologies.

20. **Monitoring and Evaluation Expert (Risk Assessment) (international, 3 person-months).** Qualified monitoring and evaluation (M&E) expert with a degree in finance, business or related field, and at least 15 years of relevant working experience, including experience in assessment of monitoring, fiduciary systems and designing appropriate monitoring and evaluation systems for a results based program. Program system assessments which examine the monitoring and evaluation systems, fiduciary systems, environmental and social systems, and other institutional and system aspects, as relevant and appropriate to the program. The M&E system assessment seeks to determine whether the M&E system will enable transparent and reliable monitoring of RBL program performance, and support the implementation of timely remedial measures when problems occur. Develop disbursement-linked indicators for a result based program with M&E systems designed to effectively monitor such program based indicators.

21. **Fiduciary Risk Assessment Expert (international and national, 2 person-months each).** Qualified financial expert with a degree in finance, business or related field, professional certification and at least 15 years of relevant working experience, including in financial management assessment. Conduct the fiduciary system assessment to determine the degree to which the RBL program systems provide reasonable assurance that the RBL program financing will be used for intended purposes, with due consideration to economy and efficiency. The

fiduciary system includes the program's financial management, procurement, and anticorruption systems. Conduct financial management assessment in accordance with ADB Guidelines.