

Japan Fund for Poverty Reduction Project Administration Manual

Project Number: 53365-001
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Kingdom of Bhutan: Alternative Renewable Energy
Pilot Project
Financed by the Japan Fund for Poverty Reduction

ABBREVIATIONS

BEA	–	Bhutan Electricity Authority
BPC	–	Bhutan Power Corporation
COBP	–	country operations business plan
DGPC	–	Druk Green Power Corporation
DPA	–	Department of Public Accounts
DRE	–	Department of Renewable Energy
DTE	–	Department of Technical Education
ERP	–	Enterprise Resource Planning
FMA	–	Financial Management Assessment
GHG	–	greenhouse gas
GNHC	–	Gross National Happiness Commission
INDC	–	Intended Nationally Determined Contribution
IRENA	–	International Renewable Energy Agency
JFPR	–	Japan Fund for Poverty Reduction
MOEA	–	Ministry of Economic Affairs
MOF	–	Ministry of Finance
PFM	–	Public Financial Management
PMU	–	project management unit
PEFA	–	Public Expenditure and Financial Accountability
PEMS	–	Public Expenditure Management System
RAA	–	Royal Audit Authority
REAP	–	Rural Economic Advancement Program
RGOB	–	Royal Government of Bhutan
TTI	–	Technical Training Institution
VEEET	–	Village Electrical Entrepreneur and Electrical Technician

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JFPR Project Administration Manual Purpose and Process

The JFPR project administration manual (PAM) describes the essential administrative and management requirements to implement the Japan Fund for Poverty Reduction (JFPR)-funded project on time, within budget, and in accordance with the government and Asian Development Bank (ADB) policies and procedures. The JFPR PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the JFPR PAM.

The Department of the Renewable Energy (DRE) and Bhutan Power Corporation (BPC) are wholly responsible for the implementation of the project, as agreed jointly between the grant recipient and ADB, and in accordance with the Royal Government of Bhutan and ADB's policies and procedures. ADB staff is responsible to support implementation including compliance by DRE and BPC of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

DRE, BPC and ADB shall agree to the JFPR PAM and ensure consistency with the grant agreement. In the event of any discrepancy or contradiction between the JFPR PAM and the grant agreement, the provisions of the grant agreement shall prevail.

After ADB Board approval of the project's grant assistance report, changes in implementation arrangements are subject to agreement and approval pursuant to relevant RGOB and ADB administrative procedures (including ADB's Project Administration Instructions) and upon such approval, they will be subsequently incorporated in the JFPR PAM.

I. PROJECT DESCRIPTION

1. The Alternative Renewable Energy Pilot Project aims to demonstrate viability and sustainability of solar power as an alternative energy and income source in Bhutan through: (i) conducting a study on regulatory requirements for alternative renewable energy resources and preparing a tariff structure for residential solar photovoltaic systems; (ii) assessing the adequacy of the national electricity grid and pilot-testing solar photovoltaic systems in rural villages; and (iii) enhancing energy-based livelihood skills through vocational education and energy-based livelihood equipment support. The project has strong pro-poor, socially inclusive and gender-sensitive features. The project will directly benefit 300 poor households in rural villages.

2. This project aims to enable the Royal Government of Bhutan to reduce electricity subsidies, and the households to secure reliable and sustainable energy supply while providing an opportunity to generate income for the rural households. One of the important programs of the government's rural poverty alleviation strategy is provision of a lifeline electricity supply to households with 100% subsidy (Nu5.81/kWh, 2017–2019) up to 100 kilowatt hour (kWh) of monthly consumption for each household.¹ In 2018 alone, Nu104.93 million was spent by the Ministry of Finance (MOF) as subsidy for the rural electricity supply, which is a significant component of the annual budget allocation for the energy sector.² Although 100% subsidy for electricity is aligned with poverty reduction efforts, it is not sustainable. Further, solar photovoltaic energy supports strong gender equality and social inclusion (GESI) elements by improving income generating sources through solar photovoltaic power trading and energy-based livelihoods with a focus on women.

3. The proposed project is included in the country operations business plan (COBP) 2020–2022 for Bhutan and is in line with 5 of the 7 operational priorities of ADB Strategy 2030 for addressing poverty reduction, accelerating gender equality, tackling climate change, promoting rural development and strengthening governance and institutional capacity. The impact is aligned with the energy security of the society enhanced by providing reliable and sustainable electricity supply through promotion of alternative renewable energy. The outcome will be viability and sustainability of solar power as an alternative energy and income source demonstrated in pilot rural villages. The project has three outputs which are described below.

4. **Output 1: Regulatory requirements for alternative renewable energy identified and a tariff structure for residential solar photovoltaic systems prepared.** RGOB adopted the Alternative Renewable Energy Policy in 2013 which aims to promote the development of alternative renewable energy resources, design appropriate tariffs and facilitate investment in the alternative renewable energy sector. To implement the policy, RGOB needs to develop guidelines, rules, and regulations to accommodate alternative renewable energy sources in the existing power generation and trading system. The project will support a study on key regulatory and development issues associated with different alternative renewable energy technologies and recommendations on the design and implementation of pricing and other regulatory arrangements consistent with the Policy and Electricity Act 2001. For the pilot testing of the residential solar photovoltaic systems, an indicative tariff structure for electricity purchase from residential households will be prepared considering market price of solar photovoltaic systems, cost of the transportation and installation, economic benefits, and poverty alleviation aspects. Based on the experience in installations and operation under output 2, further recommendations on the tariff structure for residential solar photovoltaic system will be provided.

¹ Bhutan Electricity Authority. 2017. *Electricity Tariff in Bhutan*. Table 2. Royal Government of Bhutan.

² RGOB's statistic in 2017 and 2018. It increased by 28% from the subsidy in 2017 which was Nu81.96 million.

5. **Output 2: Small-scale solar photovoltaic system pilot tested.** Technical adequacy of the grid will be assessed, and specifications and requirements for connecting solar photovoltaic systems to the grid will be identified. The grid connection is necessary as part of pilot testing solar photovoltaic systems, and purchase of excess electricity from the households under an indicative tariff structure is proposed. The small-scale solar photovoltaic systems will be procured and installed in 300 households in the rural villages selected based on Multidimensional Poverty Index (MPI), geographical and atmospheric conditions, technical viability, and availability of telecommunication³ and other infrastructures. The data of generation and consumption profile throughout a year will be collected and analyzed. To mobilize pilot rural villages, an awareness campaign on benefit and limitation of the solar photovoltaic system and safe and efficient use of the electricity will be conducted.

6. **Output 3: Energy-based livelihood skills enhanced.** A curriculum for solar photovoltaic system operation and maintenance (O&M) will be developed. Training programs on solar photovoltaic system O&M will be delivered to selected villagers and/or Village Electrical Entrepreneur and Electrical Technician (VEEET). The number of the trainees will be 300, and among them 30% will be women. Further, to maximize poverty reduction impact, energy-based livelihood equipment will be provided with the required skills training based on a needs assessment to the villages benefitted from the solar photovoltaic systems. About 10 to 15 villages are expected to be provided with the solar photovoltaic systems and at least 10 units of energy-based livelihood equipment will be installed.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Table 1: Project Readiness Activities

Indicative Activities	Month 2020										Responsible Unit
	1	2	3	4	5	6	7	8	9	10	
Advance contracting actions									X		DRE
Retroactive financing actions									X		DRE
Establish project implementation arrangements								X			DRE
ADB approval										X	ADB
Grant agreement and Project agreement signing										X	MOF/ BPC/ ADB
Government legal opinions provided										X	MOF/ DRE/ BPC
Grant effectiveness										X	MOF/ ADB

Source: Asian Development Bank and Department of Renewable Energy

³ To collect the data automatically from the solar photovoltaic systems and meters, the villages should be connected to either Bhutan Telecommunication Company or Tashicell network.

B. Overall Project Implementation Plan

Table 2: Implementation Schedule

Activities	Quarter	Year 2020				Year 2021				Year 2022				Year 2023				Year 2024			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
A. DMF																					
1. Regulatory requirements for the promotion of alternative renewable energy identified and a tariff structure for residential solar PV prepared																					
2. Grid adequacy assessed and small-scale solar PV system pilot-tested																					
3. Energy based livelihood skills enhanced																					
B. Management Activities																					
Consulting firm engagement																					
Bidding, evaluation and contract award																					
Project activities																					
Completion report																					
Solar PV system including data collection equipment																					
Bidding, evaluation and contract award																					
Installation																					
Smart meter																					
Selection and contract award																					
Delivery																					
Installation																					
Meter reading software upgrade																					
Selection and contract award																					
Development and installation																					
Energy-based livelihood equipment																					
Selection and contract award																					
Installation																					
Gender action plan key activities																					
Communication strategy key activities																					
ADB's project review missions																					
ADB's mid-term review																					
Project completion report																					

DMF = design and monitoring framework

Source: Asian Development Bank and Department of Renewable Energy

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations: Roles and Responsibilities

Table 3: Project Implementation Organizations: Roles and Responsibilities

Project Implementation Organizations	Management Roles and Responsibilities
Ministry of Finance (MOF)	<ul style="list-style-type: none"> • enter into the grant agreement with ADB and provide the grant to DRE • oversee fund flow
Executing Agency: Department of Renewable Energy (DRE), Ministry of Economic Affairs (MOEA)	<ul style="list-style-type: none"> • establish project steering committee with members from MOF, MOEA, BPC, and BEA • establish project management unit (PMU) headed by a project director, provision of counterpart staff for efficient operation of the PMU • provide operational support and budget for project activities including administration of PMU • coordinate with higher-level government and regulatory agencies, and BPC for successful implementation of the project • monitor and evaluate project activities and outputs • assure quality of project outputs • report project progress, status, and information to ADB • encourage participation of 100 % eligible women officials from DRE, PMU and other relevant agencies in workshops, and seminars regarding study on regulatory requirements for the alternative renewable energy regulatory framework
Project management unit ⁴	<ul style="list-style-type: none"> • undertake day-to-day project implementation activities • recruit a consulting firm for the project implementation • supervise contractors and consultants to focus on tasks assigned to them, and review performance and their progress reports • prepare bid documents, manage the bidding process, submit to ADB for required clearances • implement project design, procurement, and safeguards activities • review surveys, finalize selection criteria and select beneficiaries for the project • be responsible for overall project management including procurement, accounting, quality assurance, safeguards, and coordination with government agencies • review the study report on regulatory requirements for alternative renewable energy prepared • review the tariff structure prepared • coordinate regulatory agencies to achieve project outputs • prepare and submit withdrawal applications and meet reporting requirements including audit reports and financial statements • provide quarterly project progress reports to ADB and the steering committee
Project steering committee ⁵	<ul style="list-style-type: none"> • provide general oversight of project activities and decisions • provide policy guidance on project implementation • approve the study report on regulatory requirements for alternative renewable energy

⁴ The PMU will be operated by the two implementing agencies, DRE, and BPC.

⁵ MOF, MOEA, BEA and BPC are the members of the steering committee.

Project Implementation Organizations	Management Roles and Responsibilities
Bhutan Power Corporation (BPC) ⁶	<ul style="list-style-type: none"> • provide staff and resources to the PMU established with DRE • assess technical adequacy of the grid and identify specifications and requirements for connecting solar photovoltaic systems to the grid • prepare bid documents, manage the bidding process, submit to ADB for required clearances for output 2 • procure the solar photovoltaic systems (including installation), meters, and meter reading system upgrade • inspect the solar photovoltaic systems with necessary facilities installed by a contractor • install meters at the households • collect data from photovoltaic systems and meters • report project progress, status, and information to ADB through DRE
ADB	<ul style="list-style-type: none"> • undertake regular project reviews and facilitate in implementation of the project including compliance by the executing agency with obligations and responsibilities for project implementation
Contractors	<ul style="list-style-type: none"> • implement the project in accordance with the design guidelines, and the required safeguards stated in project documents • support grievance redress mechanism and safeguards implementation
Consultants	<ul style="list-style-type: none"> • provide services in a timely manner

ADB = Asian Development Bank. BEA = Bhutan Electricity Authority, BPC = Bhutan Power Corporation, DRE = Department of Renewable Energy, MOEA = Ministry of Economic Affairs, MOF = Ministry of Finance, PMU = project management unit.

Sources: Asian Development Bank and Department of Renewable Energy.

B. Key Persons Involved in Implementation

Executing Agency and Implementing Agency Department of Renewable Energy

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⁶ BPC is one of the two IAs, the parent company of which is Druk Holding and Investments (DHI). BPC is owned by MOF through the DHI.

Implementing Agency

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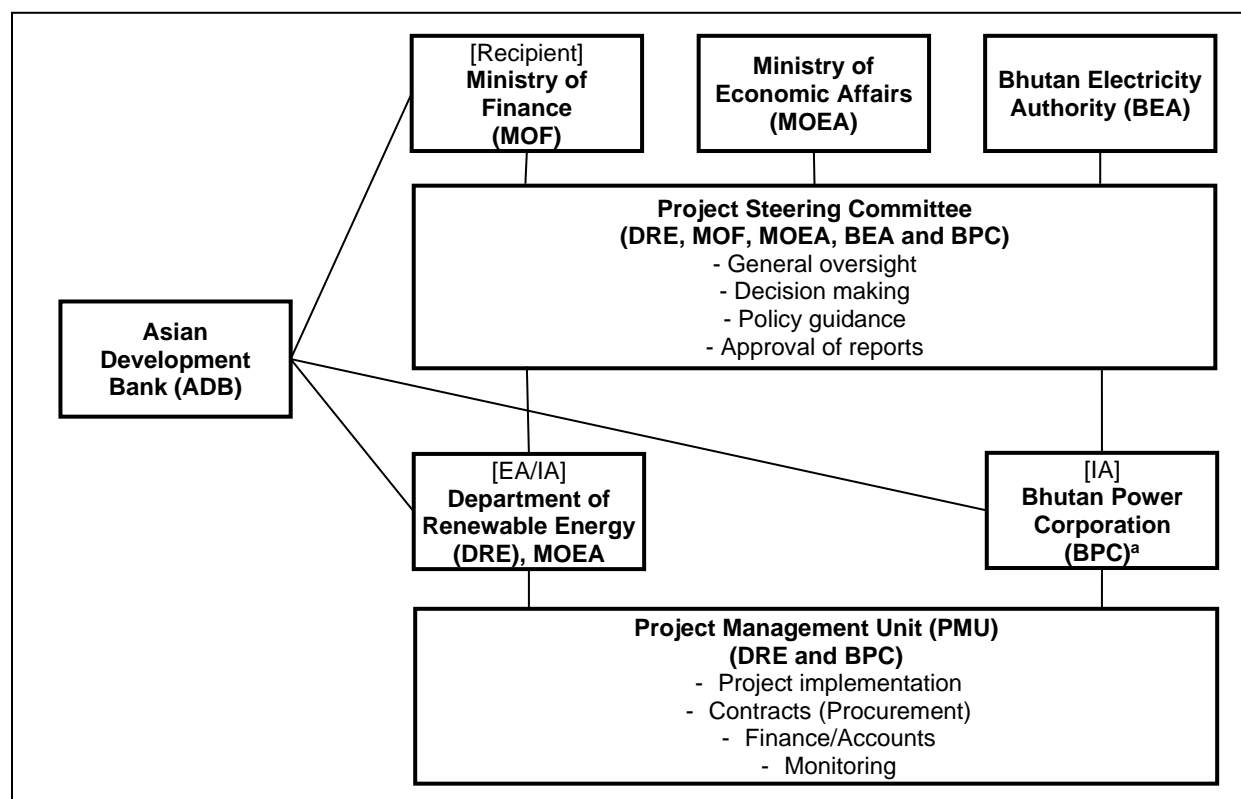
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C. Project Organization Structure



^a BPC will have an internal project management team which will liaise with PMU.

D. Grant Management

7. The project will be implemented over a period of 4 years and 3 months from October 2020 to December 2024. DRE will be the executing agency of the project, and a project management unit (PMU) will be established at DRE. DRE will also be the implementing agency responsible for outputs 1 and 3, while BPC will be the implementing agency for output 2. DRE will be responsible for disbursement of grant proceeds and preparation of audited project financial statement (APFS) covering all interventions. A project steering committee led by DRE will convene after project approval with members from MOF, MOEA, BPC, and BEA. A consulting firm will be recruited to support the PMU's project implementation. In addition, a project implementation analyst will be recruited for ADB's project supervision, review, and monitoring with the administrative budget⁷ of JFPR. Terms of References for the consulting firm and an individual consultant have been developed and attached to the PAM.

8. Currently, there are 42 poorest villages identified based on the MPI. To ensure proximity of the target project sites, the 42 villages are categorized into 4 zones based on their locality. During the project Implementation, the villages will be further shortlisted and among 4 zones, maximum of 2 will be selected with 10–15 villages for the solar photovoltaic system installation as per the selection criteria such as geographical and atmospheric condition, technical viability

⁷ Administrative budget support of up to 3% of the grant amount may be provided on exceptional circumstances where projects of unusual complexity would need additional resources beyond grant amount subject to JFPR's endorsement.

and availability of the telecommunication and other infrastructures. The final selection criteria will be developed based on the site assessments to be carried out during project implementation. In the selected villages, solar photovoltaic systems and energy-based livelihood equipment will be provided. Solar photovoltaic systems will be installed by an engineering, procurement, and construction contractor and ownership will be transferred to households. Bi-directional meters will be purchased, installed, and owned by BPC. For implementation of output 3, DRE with support from BPC will develop a curriculum on solar photovoltaic system O&M and deliver the training in consultation with Department of Technical Education (DTE). The trainings will be held at DTE's or affiliated organization's facilities around 10 times with 30 trainees per class. The selection of trainees will be based on socio-economic survey conducted during project implementation.

IV. COSTS AND FINANCING

A. Cost Estimates and Financing Plan

9. The estimated project cost is \$3.5 million equivalent (Table 4), of which \$3 million will be financed on a grant basis by JFPR⁸ to be administered by ADB.⁹ Government counterpart support of \$0.5 million will be in the form of counterpart staff, office space and equipment for the PMU, meeting venues, access to data and information, staff time to review outputs of consultants and periodic field visits, tax exemption, and other in-kind contributions.

Table 4: Cost Estimates

Item	Amount ^a (\$ million)	Share of Total (%)
A. Base Cost^b		
1. Regulatory requirements for alternative renewable energy identified and a tariff structure for residential solar photovoltaic system prepared	0.81	23.2
2. Small-scale solar photovoltaic system pilot tested	2.21	63.1
3. Energy-based livelihood skills enhanced	0.28	8.0
Subtotal (A)	3.30	94.4
B. Contingencies^c	0.20	5.7
Total (A+B)	3.50	100.0
C. Administrative Budget Support^d	0.09	

^a The Asian Development Bank will not finance any taxes and duties imposed in Bhutan. Income withholding tax will not be excluded from financing under this grant as guided in the ADB *Loan Disbursement Handbook*, (2017, as amended from time to time).

^b In end-2019 prices as of April 2020.

^c Maximum of 10% of the total project cost.

^d Includes remuneration for a project implementation analyst and activities for implementation support, review and monitoring. This additional budget support provided by JFPR for grant implementation is exclusive of the grant amount.

Source: Asian Development Bank estimates.

10. The Japan Fund for Poverty Reduction will provide grant financing equivalent to \$3.0 million, to be administered by ADB.

11. The financing plan is in Table 5. The government has assured ADB that it will cover any shortfall in financing required to meet the agreed outputs.

⁸ JFPR is the funding source of the project and it was approved by the Government of Japan on 20 August 2020.

⁹ An additional budget support of \$90,000 is to be provided by JFPR for grant implementation, which is exclusive of the grant amount. The administrative budget support is not included in the project cost of \$3.5 million.

Table 5: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Japan Fund for Poverty Reduction ^a	3.0	85.7
Government ^b	0.5	14.3
Total	3.5	100.0

^a Administered by the Asian Development Bank.

^b in-kind contribution.

Source: Asian Development Bank estimates.

12. JFPR will finance eligible expenditures in relation to the mechanical and equipment, consulting service, training, and workshop. JFPR will not finance ineligible expenditures such as academic research, purchase of vehicles for project administration, salaries for civil servants, and foreign travel, scholarships or long internships, and detailed engineering. RGOB will provide in-kind counterpart support, through executing agency and implementing agencies, in the form of project management (including project audit costs) and remuneration of counterpart staff, office space, furniture and equipment, general purpose vehicles for the project management unit, tax exemption and other required in-kind contributions for implementation.

13. **Administrative budget support.** The project needs additional resources beyond those provided by the regular administration budget considering the complexity of the project implementation. A project implementation analyst will be recruited for ADB's project supervision, review, and monitoring. The detailed cost is provided in Table 6 for this purpose. Administrative budget support will be financed from the JFPR administrative budget separately, not from the project grant of \$3 million.

Table 6: Administrative Budget Support Details

Administrative Budget Support	Details
Total amount requested	\$90,000
Justification	The project includes various interventions with 5 procurement packages. Checking invoices and withdrawal applications will occupy substantial working hours. In addition, livelihood skills enhancement activities required lots of administrative work including organizing workshops from ADB as well as executing agency and implementing agencies. Due to remoteness and geographical hardness of the project sites, working days required for review mission would be longer than other projects, which needs teamwork and support from the consultant. BHRM has grown since 2017 and established working units including a finance and administration unit, an economic and knowledge unit, and a project administration unit. However, it is still under-staffed to digest required workload and address requests from project stakeholders.
Type of work to be rendered by ADB	In close coordination with the ADB project officer, executing agency, implementing agencies, and consulting firm, the consultant will oversee the grant's financial transactions and maintain a financial management system in a manner that is compliant with generally accepted accounting principles and harmonized with ADB's policies and procedures in close coordination with concerned officers within ADB (e.g. SDPF, CTL, PPF). The consultant will report to the ADB project

	officer, on an intermittent bases, and will report for work to ADB. The TOR is attached in the Appendix 3 of the PAM.
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ADB = Asian Development Bank, PAM = project administration manual, TOR = Terms of Reference.
Source: Asian Development Bank estimates.

Table 7: Cost Estimate of Administrative Budget Support

Expenditure Category	Quantity	Unit Cost	Total
A project implementation analyst (International/national staff consultant)			
Remuneration (22 days/month, 3 months/year, 4 years)	264 Days	\$220	\$58,080
Travel Expenses (4 review and 1 project completion missions, 5 days/mission)	5 Times	\$5,890	\$29,450
Communication (Lumpsum)	1 Time	\$500	\$500
Insurance (30 days/month, 4 years)	1,440 Days	\$0.84	\$1,210
Contingency	1	\$760	\$760
Total Cost			\$90,000

B. Allocation and Withdrawal of Grant Proceeds**Table 8: Allocation and Withdrawal of Grant Proceeds**

CATEGORY		ADB FINACING BASIS	
Number	Item	Amount Allocated for ADB Financing (\$ million)	Percentage and Basis for Withdrawal from the Grant Account^a
1	Equipment	1.99	100% of total expenditure claimed
2	Training	0.19	100% of total expenditure claimed
3	Consulting service	0.59	100% of total expenditure claimed
4	Capacity Development ^b	0.03	100% of total expenditure claimed
5	Unallocated	0.20	
	Total	3.00	

^a Exclusive of taxes and duties imposed within the territory of the recipient.

^b It includes costs related to workshops, seminars, and meetings of executing agency and implementing agencies with major stakeholders.

ADB = Asian Development Bank.

Source: Asian Development Bank estimates.

C. Detailed Cost Estimates by Financier

Table 9: Detailed Cost Estimate by Financier
(\$ million)

Item	ADB		RGoB		Total Cost
	Amount	% of Cost Category	Amount	% of Cost Category	Amount
A. Investment costs					
1 Mechanical and Equipment	1.99	100.0%	0.00	0.0%	1.99
2 Training Costs	0.19	100.0%	0.00	0.0%	0.19
3 Consulting Services	0.59	100.0%	0.00	0.0%	0.59
4 Capacity Development	0.03	100.0%	0.00	0.0%	0.03
Subtotal (A)	2.80	100.0%	0.00	0.0%	2.80
B. Recurrent Costs					
1 Project Administration	0.00	0.0%	0.50	100.0%	0.50
Subtotal (B)	0.00	0.0%	0.50	100.0%	0.50
Total Base Cost	2.80	84.9%	0.50	15.1%	3.30
C. Contingencies	0.20	100.0%	0.00	0.0%	0.20
Total Project Cost (A+B+C)	3.00	85.7%	0.50	14.3%	3.50
% Total Project Cost		85.7%		14.3%	

Note: In mid-2019 prices. Numbers may not sum precisely because of rounding.
Source: Asian Development Bank estimates.

D. Detailed Cost Estimates by Outputs

Table 10: Detailed Cost Estimate by Outputs
(\$ million)

Item	Total Cost	Output 1		Output 2		Output 3	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category
A. Investment costs							
1 Mechanical and Equipment	1.99	0.00	0.0%	1.96	98.5%	0.03	1.5%
2 Training Costs	0.19	0.00	0.0%	0.00	0.0%	0.19	100.0%
3 Consulting Services	0.59	0.30	50.1%	0.24	40.7%	0.05	9.2%
4 Capacity Development	0.03	0.02	59.3%	0.01	20.3%	0.01	20.3%
Subtotal (A)	2.80	0.31	11.2%	2.21	78.8%	0.28	10.1%
B. Recurrent Costs							
1 Project Administration	0.50	0.50	100.0%	0.00	0.0%	0.00	0.0%
Subtotal (B)	0.50	0.50	100.0%	0.00	0.0%	0.00	0.0%
Total Base Cost (A+B)	3.30	0.81	24.6%	2.21	66.8%	0.28	8.6%
C. Contingencies	0.20	0.05	24.6%	0.13	66.8%	0.02	8.6%
Total Project Cost (A+B+C)	3.50	0.86	24.6%	2.34	66.8%	0.30	8.6%

Note: In mid-2019 prices. Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

E. Estimated Disbursement Schedule by Year

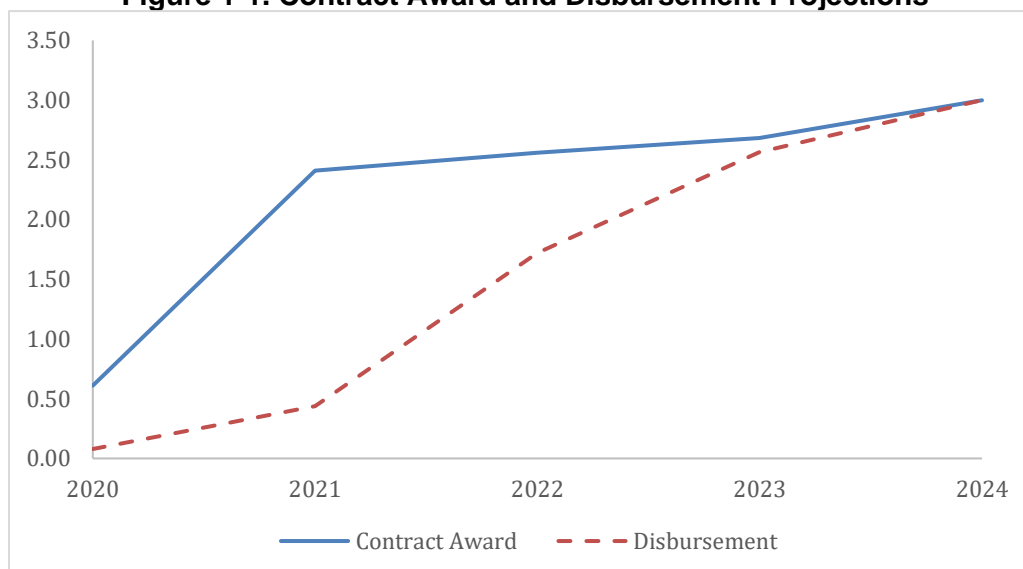
Table 11: Estimated disbursement schedule by year

Fiscal Year (FY)	Amount (\$)
FY2020	79,000
FY2021	360,000
FY2022	1,283,000
FY2023	843,000
FY2024	435,000
Total Disbursements	3,000,000

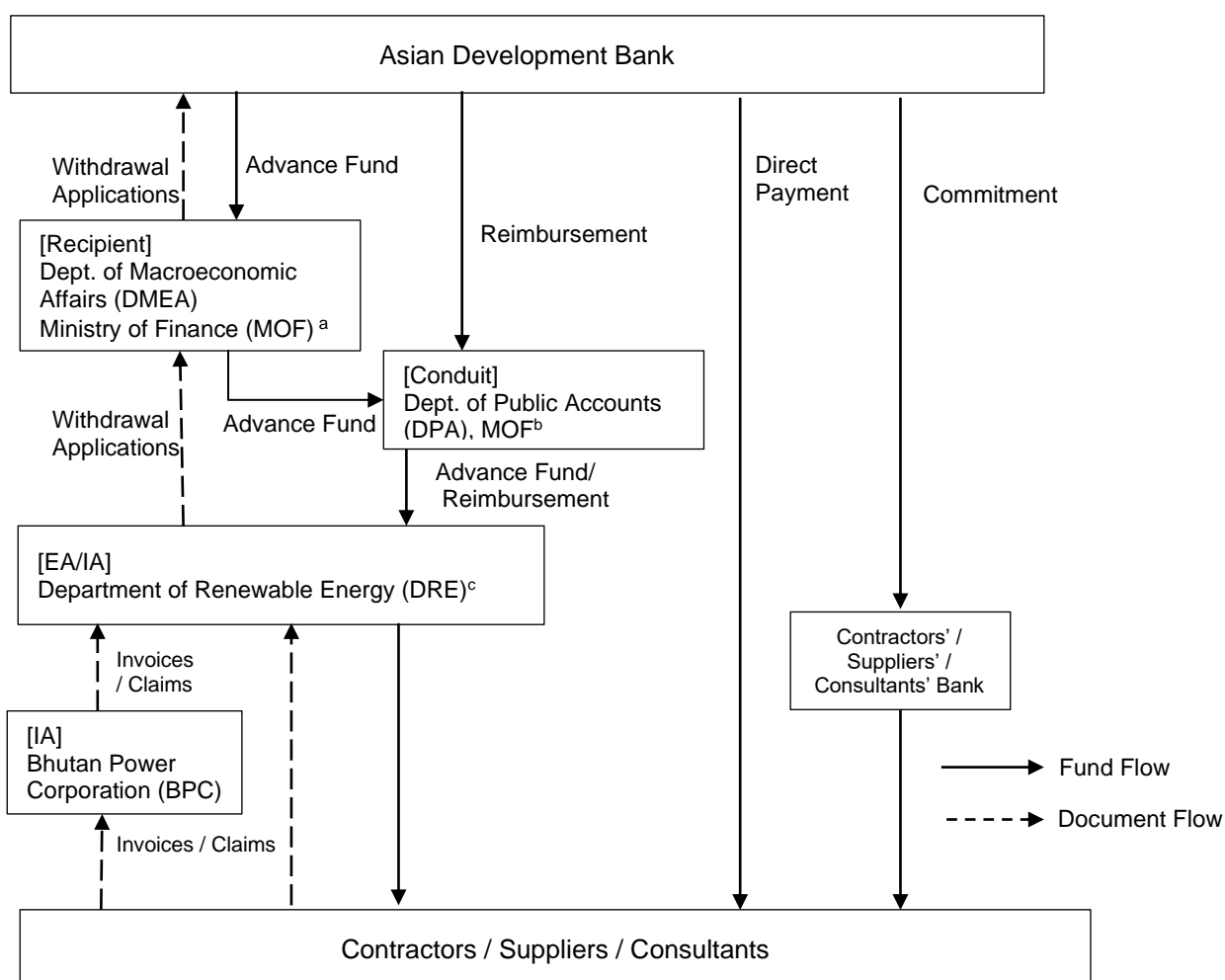
Source: Asian Development Bank estimates.

F. Contract and Disbursement S-Curve

Figure 1-1. Contract Award and Disbursement Projections



G. Funds Flow Diagram



^a An advance account is opened and managed by DMEA, MOF.

^b It is a pass-through account managed by DPA, MOF.

^c A project account is opened and managed by DRE.

V. FINANCIAL MANAGEMENT¹⁰

14. The financial management assessment (FMA) was conducted in November 2019 following ADB's Guidelines for the Financial Management and Analysis of Projects (2005), Financial Due Diligence Methodology Note (2009), and Financial Management Technical Guidance Note (2015).¹¹ The FMA considered the capacity of DRE and BPC as implementing agencies including funds flow arrangements, staffing, accounting and financial reporting systems, financial information systems, and internal and external auditing arrangements.

15. DRE, a department under MOEA, Bhutan has the mandate to serve as the central coordination agency and the focal point of RGOB on all matters related to renewable energy

¹⁰ Refer to the Technical Guidance Notes for Financial Management: <http://www.adb.org/projects/operations/financial-management-resources>.

¹¹ ADB. 2005. *Financial Management and Analysis of Projects*. Manila; ADB. 2009. *Financial Due Diligence: A Methodology Note*. Manila; ADB. 2015. *Financial Management Technical Guidance Note*. Manila.

development. DRE is classified as general government sector units (GGSU), which are primarily engaged in nonmarket operations (e.g., ministries and departments). Following the guideline, for GGSUs, the proposed financial management arrangements would tend to adopt the country's Public Financial Management (PFM) arrangements.

16. BPC has the mandate of distributing electricity throughout the country, transmission access for generating stations for domestic supply and exports, and acts as the system operator. It purchases power generated by the Druk Green Power Corporation (DGPC) and sells the power to its customers through its transmission and distribution network. BPC, as a public corporation, its own financial management arrangements are assessed.

17. **Strengths.** Based on the assessment, DRE and BPC's financial management has the following strengths and no significant weakness are identified:

BPC

- (i) Has significant experience in managing externally financed projects including ADB-funded projects and has qualified personnel who are familiar with the requirements for reporting, financial management and disbursement of ADB projects.
- (ii) Has good corporate governance, complied with the statutory provision and proper board processes and compliance mechanism in place.
- (iii) Fixed asset and inventory register are properly maintained in Enterprise Resource Planning (ERP) system and the assets have been physically verified by the management in a phased/periodical manner.
- (iv) Robust risk management and internal control framework is in place.
- (v) Effective human resource management by the management and board is in place based on strong manpower.
- (vi) Adequate and effective IT access management in the financial reporting process and ERP is fully functional.

DRE

- (i) Has experience in managing externally financed projects including ADB-funded projects and has qualified personnel who are familiar with the requirements for reporting, financial management and disbursement of ADB projects.
- (ii) Equipped with effective financial reporting and monitoring system using a web-based government-wide software which is Public Expenditure Management System (PEMS).
- (iii) Finance section is staffed with qualified and experienced accountants.
- (iv) Effective budgetary planning and control are in place.
- (v) Has improved transparency and government service through online grievance redressal system called "eKaaSel".
- (vi) Robust external audit system and well-established supreme audit institution exists.

18. The FMA reviewed two types of risks: (i) inherent risks (risks outside the direct control of the DRE and BPC financial management) and (ii) control risks (risk concerning the internal functioning and control of the DRE and BPC's finance and accounting section). Based on the assessment, no specific risks are identified to hamper the achievement of project outcomes and/or outputs and hinder effective project implementation. Therefore, it is concluded that the overall pre-mitigation financial management risk of DRE and BPC is *moderate*.

Table 12: Financial Management and Internal Control Risk Assessment (DRE)

Risk description	Risk Rating	Risk Mitigation Measures
Inherent risks		
The 2016 Public Expenditure and Financial Accountability assessment indicates that the country has made good progress in PFM since the previous assessment in 2010. The PFM reforms are, however, still incomplete. If progress in national PFM reforms stall, line ministries will also be affected, and the PFM performance in the project may be lower than expected.	Moderate	While the country PFM systems are more robust than comparable countries, implementation of PFM Reforms Strategy 2017–2021 is still underway. The Royal Government of Bhutan, with World Bank support, is expected to establish a multi-donor trust fund to support PFM reform program., Implementation progress will be monitored closely by the World Bank. ADB will closely coordinate with DRE to discuss emerging issues.
Executing and/or Implementing Entities	Low	DRE has good track record of implementing the projects from ADB and other multilateral donor agencies.
Overall Inherent Risk Rating	Low	
Control risks		
Funds Flow The government has issues with timely release of counterpart funds in other donor funded projects and this experience may be repeated with this project.	Low	Government counterpart support in this project will be in-kind and in the form of counterpart staff, and administrative support to avoid any potential delays in counterpart financing.
Staffing MOEA/DRE will depute full-time accounts officer for this project, but all government accounting staff are centrally recruited and frequently rotated across ministries. Continuity in project management support may be disrupted if movement of account staff assigned to the project are frequent and delay project implementation.	Moderate	There is a clear and systematic way of handing/taking overs that needs to be undertaken between the incoming and the moving out accounts officer. Also, the incoming finance personnel have similar experience to the transferred personnel and as such there are no major issues envisaged.
Accounting Policies and Procedures DRE prepares its accounts based on 2016 Financial Rules and Regulations. These rules incorporate the latest trends in finance & accounts and are in line with the computerized Multi-year Rolling Budgets (MYRBS) and PEMS software.	Low	The DRE maintains the project related data in MYRBS and PEMS software.
Internal Audit There is an internal audit unit with 3 auditors, but additional manpower is required for the project to have proper recording.	Moderate	DRE will engage a consultant for proper accounting and documentation.

Risk description	Risk Rating	Risk Mitigation Measures
External Audit Compliance Risk—Audit requirements are not fully complied with due to external auditor's limited understanding of ADB's requirements.	Moderate	Royal Audit Authority (RAA) has a good understanding of audit requirements for donor-funded projects. It provides audit reports for certification of donor-assisted projects implemented by various agencies, both budgetary and non-budgetary. However, an update on ADB's requirements would be beneficial for RAA's staff.
Reporting and Monitoring/Information System MOEA uses PEMS for preparation of financial statement. The PEMS is a web-based government-wide system for financial reporting and monitoring, but PEMS cannot generate customized financial reports for donor funded projects.	Moderate	The PEMS will be used for the accounting purposes for the project, but financial data will be transferred to Microsoft Excel sheet to generate reports.
Overall Control Risk	Moderate	

ADB = Asian Development Bank, DRE = Department of Renewable Energy, MOEA = Ministry of Economic Affairs, PEMS = Public Expenditure and Financial Accountability, PFM = Public Financial Management.

Table 13: Financial Management and Internal Control Risk Assessment (BPC)

Risk Type	Risk Rating	Risk Description	Risk Mitigation Measures
1. Implementing entities	Moderate	No significant risk	BPC has good track record of implementing the Rural Renewable Energy Development Project.
2. Funds Flow	Moderate	No significant risk	BPC is familiar with the ADB procedures through the previous project. Fund from ADB is managed primarily by direct payments.
3. Staffing	Moderate	No significant risk	BPC has experienced staff in all project executing departments led by General Manager such as Transmission, Distribution Department etc.
4. Accounting Policies and Procedures	Moderate	No significant risk	Accounting policies and procedures are in place based on international best practice and are also being implemented.
5. Internal Audit	Moderate	BPC has a strong Internal Audit Department, which is headed by a qualified accountant, reports to the audit committee.	The internal audit committee will also periodically audit the activities.
6. External Audit	Moderate	RAA appoints an external auditor from its panel to audit BPC on an annual basis. However, ADB	PAM includes detailed audit requirements.

Risk Type	Risk Rating	Risk Description	Risk Mitigation Measures
		specific audit requirements will be communicated to the auditor if any.	
7. Reporting and Monitoring	Moderate	No significant risk	BPC has experienced set of staff.
8. Information Systems	Moderate	No significant risk	An integrated computerized system has already been introduced. Continuous training in the use of the ERP by BPC has been provided to concerned staff.
Overall Control Risk	Moderate		

ADB = Asian Development Bank, BPC= Bhutan Power Corporation, ERP = enterprise resource system, PAM = project administration manual, RAA = Royal Audit Authority.

19. DRE together with BPC and ADB have agreed on an action plan to address the following issues that the financial management assessment identified. The financial management action plan is provided in Table 14.

Table 14. Financial Management Action Plan

Key Risk	Description	Timeline	Responsibility
Delays in release of funds	MOF will release funds for project activities within 5 working days upon receiving request from the MOEA-DRE.	Within 5 working days upon receipt of request from the MOEA-DRE	MOF
Lack of dedicated financial management staffs may result in delays in execution of project's related activities.	Appoint adequate staffs in PMU for implementation of this project.	Before grant negotiation	MOEA, DRE
Timely monitoring of project and addressing issue	DRE, executing agency, will develop quarterly physical and financial targets for the project with respect to activities to be undertaken and budget required. Submit regular progress reports to ADB including financial progress.	Quarterly	DRE
Documentation for adequate internal audit may not be conducted.	There will be a consultant under the consulting firm to be hired by DRE for proper accounting and documentation.	Hiring a consulting firm in 2020.	DRE

ADB = Asian Development Bank, DRE = Department of Renewable Energy, MOEA = Ministry of Economic Affairs, MOF = Ministry of Finance, PAM = project administration manual.

A. Disbursement

20. The JFPR grant proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time),¹² and detailed arrangements agreed upon between the government and ADB.

21. Online training for project staff on disbursement policies and procedures is available.¹³ Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

22. **Advance fund procedure.** The advance account will be opened and managed by Department of Macroeconomic Affairs (DMEA), MOF. The currency of the advance account will be dollar. A signed withdrawal application for the advance account will be submitted to ADB by DRE through DMEA. The advance fund will be converted to local currency and transferred to DRE's sub-account through a conduit account of Department of Public Accounts (DPA), MOF upon DRE's request. It will take 3–5 working days for the fund to pass through the conduit account. In case of reimbursement, the fund will be transferred by ADB to the Borrower's nominated account indicated on the withdrawal application. All withdrawal applications and payments under the project will be initiated by DRE. For expenses under output 2, BPC will verify and forward the invoices from consultants and contractors to DRE for payment.

23. The total outstanding advance to the advance account should not exceed the estimate of JFPR's share of expenditures to be paid through the advance account for the forthcoming 6 months. DRE may request for initial and additional advances to the advance account based on an estimate of expenditure sheet¹⁴ setting out the estimated expenditures to be financed through the account for the forthcoming 6 months. Supporting documents should be submitted to ADB or retained by DRE in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time) when liquidating or replenishing the advance account.

24. **Statement of expenditure (SOE) procedure.**¹⁵ The SOE procedure may be used for reimbursement of eligible expenditures or liquidation of advances to the advance account. The ceiling of the SOE procedure is the equivalent of \$100,000 per individual payment. Supporting documents and records for the expenditures claimed under the SOE should be maintained by DRE and made readily available for review by ADB's disbursement and review missions, upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit. Reimbursement and liquidation of individual payments more than the SOE ceiling should be supported by full documentation when submitting the withdrawal application to ADB.

25. Before the submission of the first withdrawal application, the borrower should submit to ADB enough evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the government, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is US\$20,000 equivalent. Individual payments below this amount should be paid: (i) by DRE and subsequently claimed to ADB through reimbursement or (ii) through the advance fund procedure, unless otherwise accepted by ADB.

¹² Available at http://www.adb.org/Documents/Handbooks/Loan_Disbursement/loan-disbursement-final.pdf.

¹³ Disbursement eLearning. http://wpqr4.adb.org/disbursement_elearning.

¹⁴ See 8A of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

¹⁵ SOE forms are available in Appendix 7B, 7D, or 10B of ADB's *Loan Disbursement Handbook* (2017, as amended from time to time).

B. Accounting

26. DRE will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project by adopting the cash-based accounting system following the government's financial regulations. DRE will prepare consolidated project financial statements in accordance with the government's accounting laws and regulations, which are consistent with international accounting principles and practices.

C. Auditing and Public Disclosure

27. DRE will cause the detailed consolidated project financial statements to be audited in accordance with the International Standards for Supreme Audit Institutions, by an independent auditor acceptable to ADB. It is proposed that, there will be a project account created only by DRE. As such one audited project financial statement (APFS) covering entire project interventions will be prepared and submitted to ADB. The audit of the project financial statements will be conducted by the Royal Audit Authority (RAA). The audited project financial statements together with the auditors' opinion will be submitted in the English language to ADB within 6 months of the end of each fiscal year by the DRE.

28. BPC will cause the entity-level financial statements to be audited in accordance with International Standards for Supreme Audit Institutions, by an independent auditor acceptable to ADB. The audited entity-level financial statements, together with the auditors' report and management letter, will be submitted in the English language to ADB within 1 month after approval, but no later than 6 months from the end of each fiscal year, by the relevant authority.

29. The annual audit report for the project accounts will include an audit management letter and audit opinions which cover: (i) whether the project financial statements present a true and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting framework; (ii) whether loan and grant proceeds were used only for the purposes of the project or not; and (iii) the level of compliance for each financial covenant contained in the legal agreements for the project.

30. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

31. The government and DRE have been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.¹⁶ ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the

¹⁶ ADB approach and procedures regarding delayed submission of audited project financial statements:

- (i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that: (i) the audit documents are overdue; and (ii) if they are not received within the next 6 months, requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.
- (ii) When audited project financial statements have not been received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (i) inform the executing agency of ADB's actions, and (ii) advise that the loan may be suspended if the audit documents are not received within the next 6 months.
- (iii) When audited project financial statements have not been received within 12 months after the due date, ADB may suspend the loan.

auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

32. Public disclosure of the project financial statements, including the audit report on the project financial statements, will be guided by ADB's Access to Information Policy (2018).¹⁷ After review, ADB will disclose the project financial statements for the project and the opinion of the auditors on the financial statements within 14 calendar days of the date of their acceptance by posting them on ADB's website. The audit management letter will not be disclosed.

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing¹⁸

33. All advance contracting and retroactive financing will be undertaken in conformity with ADB's Procurement Policy (2017, as amended from time to time)¹⁹ and Procurement Regulations for ADB's Borrowers (2017, as amended from time to time).²⁰ The issuance of invitations to bid under advance contracting and retroactive financing will be subject to ADB approval. The recipient, DRE and BPC have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the project.

34. **Advance contracting.** To expedite project implementation, ADB endorsed the government's request for advance contracting actions for procurement of goods, works and consulting services. The steps to be concluded in advance includes: (i) recruitment of consultants; and (ii) preparation of tender documents, inviting and receiving bids for contract packages, and awarding contracts.

35. **Retroactive financing.** ADB also endorsed the government's request for retroactive financing for the eligible expenditures up to \$600,000, the equivalent of 20% of the total grant, incurred before grant effectiveness, but not more than 12 months before the signing of the grant agreement.

B. Procurement of Goods, Works, and Consulting Services

36. All procurement of goods, works and consulting service will be undertaken in accordance with ADB's Procurement Policy (2017, as amended from time to time). An 18-month procurement plan indicating review procedures, goods, works, and consulting service contract packages is in section C.

37. Open competitive bidding (OCB) procedures will be used for the procurement of goods, works and consulting service, except for direct contracting procedure for the bi-directional meters and update of existing meter-reading software. Entire OCB process only for 300 meters is less efficient, because less competition is expected. Also, the update of the existing software should be done by its original supplier due to requirement for the integration with the current system. In

¹⁷ Available at <https://www.adb.org/documents/access-information-policy>.

¹⁸ Prior approval on the use of advance contracting and retroactive financing must be obtained from the management.

¹⁹ Available at <https://www.adb.org/documents/adb-procurement-policy>.

²⁰ Available at <https://www.adb.org/documents/procurement-regulations-adb-borrowers>.

addition, request for quotation procedure will be used for energy-based livelihood equipment. The strategic procurement plan has been prepared with details of the procurement options.

38. The terms of reference for all consulting services are detailed in section D. A consulting firm will be engaged requiring an estimated 77.5 person-months (25 international, 52.5 national) input to: (i) study regulatory requirements for alternative renewable energy and prepare a tariff structure for residential solar photovoltaic systems; (ii) support the executing/implementing agency in technical adequacy assessment and small-scale photovoltaic system installation; (iii) undertake an awareness campaign on the benefits of the solar photovoltaic system and safe and efficient use of energy including socio-economic baseline data collection; (iv) make record of the project progress and achievement; and (v) assist PMU in implementation of the project. Consulting firms will be engaged using the quality and cost-based selection (QCBS) method with a quality-cost ratio of 90:10.

C. Procurement Plan

Basic Data		
Project Name: Alternative Renewable Energy Pilot Project		
Project Number: 53365-001	Approval Number: G9211	
Country: Bhutan	Executing Agency: Department of Renewable Energy, Ministry of Economic Affairs	
Procurement Risk: Low	Implementing Agency: Department of Renewable Energy, Ministry of Economic Affairs; and Bhutan Power Corporation Limited	
Project Financing Amount: \$3.5 million ADB Financing: \$0 Cofinancing (ADB Administered): \$3 million Non-ADB Financing: \$0.5 million (in-kind support)	Project Closing Date: 31 December 2024	
Date of First Procurement Plan: 21 October 2020	Date of this Procurement Plan: 21 October 2020	
Procurement Plan Duration: 18 months	Advance contracting: yes	eGP: no

ADB = Asian Development Bank.

D. Methods, Review and Procurement Plan

39. Except as the Asian Development Bank (ADB) may otherwise agree, the following methods shall apply to procurement of goods, works, nonconsulting services, and consulting services.

Procurement of Goods, Works, and Nonconsulting Services	
Method	Comments
Open competitive bidding (OCB) with international advertising for goods	As there are not many contractors for solar photovoltaic systems within the country, international advertising is warranted.
Request for quotation for goods	For energy-based livelihood equipment, ready-made products can be purchased from local market. There are several well-known suppliers in the country.

Direct contracting for goods	<p>For electric meters, entire OCB process is less efficient, because less competition is expected for this small amount of package.</p> <p>For the update of the existing software, it should be done by the original supplier due to technical requirements.</p>
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Consulting Services	
Method	Comments
Open competitive bidding with international advertising, using quality- and cost-based selection for consulting services	One consulting firm is required to conduct a study and to assist the executing/implementing agency's implementation. International advertising is warranted.

E. List of Active Procurement Packages (Contracts)

40. The following table lists goods, works, nonconsulting, and consulting services contracts for which the procurement activity is either ongoing or expected to commence within the procurement plan's duration.

Goods, Works, and Nonconsulting Services							
Package Number	General Description	Estimated Value (\$)	Procurement Method	Review	Bidding Procedure	Advertisement Date	Comments
1	Supply and installation of solar photovoltaic systems including remote monitoring device	1,655,500	OCB	Prior	1S2E	Q2 2021	Advertising: International Prequalification of bidders: No Domestic preference: No Bidding documents: Goods Advance contracting: Yes E-procurement: No
2	Supply of bi-directional electric meters with modem	99,330	Direct contracting	Prior		Q4 2020	Bidding documents: Goods Advance contracting: Yes E-procurement: No
3	Update of existing software for metering	25,000	Direct contracting	Prior		Q4 2020	Bidding documents: Goods Advance

							contracting: Yes E-procurement: No
4	Supply of energy-based livelihood equipment	30,000	Request for Quotation	Prior		Q3 2021	Bidding documents: Goods Advance contracting: Yes E-procurement: No

1S2E = single-stage-two-envelope, OCB = open competitive bidding, Q = quarter.

Consulting Services							
Package Number	General Description	Estimated Value (\$)	Selection Method	Review	Type of Proposal	Advertisement Date	Comments
5	(i) Study regulatory requirements and prepare a tariff structure for photovoltaic systems. (ii) Support of technical adequacy assessment. (iii) Awareness campaign and baseline data collection. (iv) Make record of project progress, challenges, and achievement. (v) Assist PMU in project implementation.	\$ 590,000	QCBS	Prior	STP	Q4 2020	Quality-Cost Ratio: 90:10 Advertising: International Advance contracting: Yes E-procurement: No

Q = quarter, QCBS = quality- and cost-based selection, STP = simplified technical proposal.

F. List of Indicative Packages (Contracts) Required under the Project

41. The following table lists goods, works, nonconsulting, and consulting services contracts for which the procurement activity is expected to commence beyond the procurement plan

duration and over the life of the project (i.e. those expected beyond the current procurement plan's duration).

Goods, Works, and Nonconsulting Services						
Package Number	General Description	Estimated Value (\$)	Procurement Method	Review	Bidding Procedure	Comments
[None]						

Consulting Services						
Package Number	General Description	Estimated Value (\$)	Selection Method	Review	Type of Proposal	Comments
[None]						

G. List of Awarded and Completed Contracts

42. The following table lists the awarded contracts and completed contracts for goods, works, non-consulting, and consulting services.

Goods, Works and Nonconsulting Services					
Package Number	General Description	Contract Value	Date of ADB Approval of Contract Award	Date of Completion	Comments
[None]					

ADB = Asian Development Bank.

Consulting Services					
Package Number	General Description	Contract Value	Date of ADB Approval of Contract Award	Date of Completion	Comments
[None]					

ADB = Asian Development Bank.

H. Non-ADB Financing

43. The following table lists goods, works, nonconsulting, and consulting services contracts over the life of the project, financed by non-ADB sources.

Goods, Works and Nonconsulting Services				
General Description	Estimated Value (cumulative, \$)	Estimated Number of Contracts	Procurement Method	Comments
[None]				

Consulting Services				
General Description	Estimated Value (cumulative, \$)	Estimated Number of Contracts	Recruitment Method	Comments
[None]				

I. Consultant's Terms of Reference

44. A consulting firm will be recruited to support the PMU's project implementation. Terms of Reference (TOR) for the consulting firm have been developed and attached as Appendix 3.

VII. SAFEGUARDS

45. The safeguard categories for environment, involuntary resettlement, and indigenous peoples are all proposed as "C." The project has only one physical component, which is installation of the solar photovoltaic systems within the existing premises of the households. The project has a minimal or minor environmental impact and does not require any land acquisition. The installation of residential solar photovoltaic systems is not included in the list of activities published by National Environment Commission (NEC) requiring environmental clearance. A safeguard checklist (Appendix 4) has been developed for screening and selection of the households and sites. The PMU of the project will be responsible for screening locations based on the checklists to ensure the project's compliance with ADB's Safeguard Policy Statement (2009). For safety, rooftop structures will be examined to check its solidity and presence of asbestos and necessary measures will be taken by implementing agencies and contractor in accordance with the safeguard checklist. The project activities will not trigger any impact on indigenous people. At the end of the life cycle of the solar photovoltaic system, it will be retrieved by DRE and will be handed over to the Department of National Properties (DNP) under MOF for disposal. For grievances redressal, DRE will provide the contact details of the nearest Electricity Service Division (ESD) under BPC which has offices in all 20 districts for any queries/questions regarding the project interventions. DRE will try to solve issues raised at the working level together with BPC engineers and technicians and escalate the issues to management, if required. Guideline on risks of and prevention measures against COVID-19 has been developed and attached to the safeguard checklist.

46. **Climate change impact.** The project has low climate change risk as it is renewable energy pilot testing. The amount of climate change mitigation financed by ADB is \$3 million. The total amount of the CO₂ reduction is expected as 720tCO₂ per annum or 14,401 tCO₂²¹ in total considering 20 years lifetime of the solar photovoltaic systems.

²¹ Assumptions for calculation are 2 kW unit capacity, 300 number of households, 4.0 sun hours per day, 365 days per year, 0.7%/year degradation of the solar photovoltaic system, and 20 years lifetime of the solar photovoltaic systems. Thus, 16,402 MWh of generation is expected in 20 years. In Bhutan, the national electricity demand is met by domestic generation of hydropower except for dry season and the excess energy has been exported to India through the grid connected. Assuming the total demand in Bhutan will be maintained, it is fair to assume that equivalent amount of electricity with the generation from this project will be additionally exported and contribute to the CO₂ reduction in India. During the dry season when the hydropower generation does not meet the demand in Bhutan, electricity has been imported from India. Thus, the solar photovoltaic system of this project will reduce the amount of electricity to be imported by replacing it with domestic generation by the solar photovoltaic systems. As the solar photovoltaic generation of this project will solely contribute to the increase of export (other than dry season) or reduction of import (dry season) without replacing the generation of hydropower in Bhutan, using India emission factor (0.878 tCO₂/MWh) for the project is justifiable, and 14,401 tCO₂ of reduction is expected in 20 years.

47. **Prohibited investment activities.** Pursuant to ADB's Safeguard Policy Statement (2009), ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement (2009).

VIII. GENDER AND SOCIAL DIMENSIONS

48. **Gender.** The project is categorized as effective gender mainstreaming and a gender action plan (GAP) has been prepared. The persistent poverty in rural areas is also caused by labor-intensive unpaid care work of women. Women and girls in Bhutan, particularly in rural areas, shoulder the responsibility for many of the household work such as cooking, washing, and cleaning. This has been caused by high level of household workload and low skill sets due to limitations such as lack of reliable energy supplies and educational opportunities, among others. Having access to clean and efficient energy offers the potential to reduce the time and effort spent by women and girls on household work, which can have positive impacts not only on their health and level of educational attainment but can also enhance their economic opportunities. In project outputs 2 and 3, the project stresses on ensuring women's participation in the design and implementation of relevant activities, 50% women participation in awareness raising campaigns and 30% women participation in training programs. In addition, to further encourage women participation in solar photovoltaic O&M skills training, preferential scoring system will be established and included in trainee selection criteria.

Table 15. Gender Action Plan

Activities	Indicator and Targets	Responsibility	Timeline
Output 1: Regulatory requirements for alternative renewable energy identified and a tariff structure for residential solar photovoltaic system prepared			
1.1 Capacity building for project implementation and monitoring in terms of gender equality and social inclusion (GESI) supported	1.1.1 One-time training provided to DRE and PMU staff on mainstreaming GESI in renewable energy projects 1.1.2 GESI design features of the project integrated and highlighted in the project's visual clip	DRE, PMU, and consulting firm	2021 2024
1.2 Participation of women officials in project's workshops and seminars encouraged	1.2.1 100% eligible women officials from DRE and PMU participated in workshops and seminars for dissemination of the study on requirements for the alternative renewable energy regulatory framework.		2021
Output 2: Small-scale solar photovoltaic system pilot-tested			
2.1 Awareness campaign conducted in poor rural villages selected for installation of small-scale solar photovoltaic systems	2.1.1 Awareness campaign on benefit of solar photovoltaic systems and safe and efficient use of electricity delivered to 600 people, of whom 50% are women with distribution of GESI-sensitive campaign material in English and Dzongkha 2.1.2 Informative street signs on safety and energy conservation posted in JFPR grant-supported villages	DRE, PMU, BPC, and consulting firm	2023 2023
Output 3: Energy based livelihood skills enhanced			
3.1 Solar photovoltaic O&M technical skills training provided	3.1.1 Preferential scoring system to promote women's participation in solar photovoltaic O&M technical skills training established and included in trainee selection criteria	DRE, PMU, and consulting firm	2022
3.2 Energy based livelihood equipment and skills training provided	3.1.2 Solar photovoltaic O&M technical skills training provided to 300 individuals, of whom 30% are women 3.2.1 Energy-based livelihood equipment provided to all benefitted villages with skills training on operation of the equipment to 300 benefitted households. The skills trainings will be provided separately to male and female members. ²²		2023 2023

²² There will be separate sessions, one for male and another for female.

3.3 Conduct socio economic and end-line survey	3.3.1 Sex-disaggregated data collected by the consulting firm during baseline and end-line surveys to enable the monitoring of gender-related impacts of the project, including: (i) number of women villagers trained and continue working for solar photovoltaic O&M, (ii) change in women's time spent on household chores, and (iii) change in women's earnings		2024
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BPC = Bhutan Power Corporation, DRE = Department of Renewable Energy, JFPR = Japan Fund for Poverty Reduction, O&M = operation and maintenance, PMU = project management unit.

49. **Health.** DRE and BPC will ensure that contractors adequately provide health and safety measures for the construction workers and further ensure that bidding documents include clauses on how contractors will address this, including an information and awareness raising campaign for construction workers on sexually transmitted diseases, including HIV/AIDS and COVID-19 and human trafficking.

50. **Labor.** DRE and BPC will ensure that works contractors comply with all applicable labor laws and regulations including: (i) no employment of child labor for construction activities, (ii) provision of appropriate facilities for women and children in construction campsites, and (iii) no difference in wage between men and women for work of equal value. DRE and BPC will ensure that specific clauses ensuring these will be included in bidding documents.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

A. Project Design and Monitoring Framework

Impact the Project is Aligned with Energy security of the society enhanced. ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Social and economic benefits of solar power demonstrated in pilot rural villages	By 2024 a. Improved electricity supply reported by 80% of the households benefitted with small-scale solar photovoltaic systems (2019 baseline: 0) b. Average income of the 300 benefitted households increased by 7% in the selected villages of the solar photovoltaic intervention (2019 baseline: 0) c. Government subsidy for the 300 benefitted households reduced by 20% (2019 baseline: 0)	a-c. DRE reports, and project completion report	Lack of consensus on the indicative tariff for the pilot test and unsynchronized timeline between project implementation and BEA's tariff approval

<p>Outputs</p> <p>1. Regulatory requirements for alternative renewable energy identified and a tariff structure for residential solar photovoltaic system prepared</p> <p>2. Small-scale solar photovoltaic system pilot-tested</p>	<p>By 2024</p> <p>1a. A study report on regulatory requirements for alternative renewable energy prepared (2019 baseline: NA)</p> <p>1b. A tariff structure for power purchase from residential solar photovoltaic systems drafted (2019 baseline: NA)</p> <p>By 2023</p> <p>2a. Technical adequacy of the electricity grid assessed and specifications/requirements for connecting solar photovoltaic systems to the grid identified (2019 baseline: 0)</p> <p>2b. 300 households in poor rural villages provided with small-scale solar photovoltaic systems (2019 baseline: 0)</p> <p>2c. Awareness campaign on benefit of the solar photovoltaic system and safe and efficient use of the electricity conducted for 600 people from the benefitted households of which 50% are women participants (2019 baseline: 0)</p>	<p>1a. DRE report</p> <p>1b. DRE report</p> <p>2a. BPC report</p> <p>2b-2c. Quarterly project progress reports and project completion report</p>	<p>The project result not leading to formulating regulatory framework due to inadequate intragovernmental coordination</p> <p>Rugged geographical condition and lack of infrastructure imposing challenges</p>
<p>3. Energy based livelihood skills enhanced</p>	<p>By 2023</p> <p>3a. A curriculum for solar photovoltaic system operation and maintenance (O&M) developed (2019 Baseline: 0)</p> <p>3b. Improved solar photovoltaic O&M technical skills demonstrated by 300 trainees of which 30% are women (2019 baseline:0)</p> <p>3c. Energy-based livelihood equipment with skills training provided to at least 10 benefited villages of the solar photovoltaic systems (2019 baseline: 0)</p>	<p>3a-3c. Quarterly project progress reports and project completion report</p>	<p>Reduced household income during training participation leading to low attendance rate</p>

Key Activities with Milestones	
1. Regulatory requirements for alternative renewable energy identified and a tariff structure for residential solar photovoltaic system prepared	
1.1	Advertise recruitment of a consulting firm [Q4 2020]
1.2	Recruit a consulting firm [Q4 2020]
1.3	Draft a study report on regulatory requirements for alternative renewable energy resources [Q2 2021]
1.4	Finalize the study report [Q4 2021]
1.5	Prepare an indicative tariff for pilot-testing solar photovoltaic systems with 300 households [Q4 2021]
1.6	Draft a tariff structure incorporating the pilot-testing result for power purchase from the residential solar photovoltaic systems [Q2 2024]
2. Small-scale solar photovoltaic system pilot tested	
2.1	Undertake an assessment and identify specifications and requirements for the grid connection of the solar photovoltaic system [Q3 2020–Q4 2020]
2.2	Prepare selection criteria and select 300 households [Q1 2021]
2.3	Float bidding for solar photovoltaic systems [Q2 2021]
2.4	Award contract for solar photovoltaic systems [Q4 2021]
2.5	Install solar photovoltaic systems [Q1 2022–Q4 2023]
2.6	Conduct an awareness campaign on benefit of the solar photovoltaic system and safe and efficient use of electricity [Q4 2021–Q3 2023]
2.7	Issue RFQ for smart meters [Q4 2020]
2.8	Award contract for the smart meters [Q2 2021]
2.9	Install the smart meters [Q1 2022–Q4 2023]
2.10	Issue RFQ for updating metering software [Q4 2020]
2.11	Contract award for the metering software [Q1 2021]
2.12	Update the metering software [Q2 2021–Q4 2021]
2.13	Data collection on generation and consumption profile [Q1 2022–Q2 2024]
3. Energy based livelihood skills enhanced	
3.1	Establish a curriculum for solar photovoltaic system O&M [Q1 2022]
3.2	Prepare selection criteria for training participants and select 300 participants [Q2 2022–Q3 2022]
3.3	Provide solar photovoltaic system O&M training based on the curriculum developed [Q4 2022–Q4 2023]
3.4	Conduct socio economic survey and needs assessment for energy-based livelihood equipment [Q2 2021]
3.5	Issue RFQ for energy-based livelihood equipment [Q3 2021]
3.6	Contract award for the energy-based livelihood equipment [Q1 2022]
3.7	Install the energy-based livelihood equipment [Q2 2022–Q4 2023]
3.8	Undertake end line survey on livelihood enhancement through power purchase, skills training, and equipment support [Q1–Q2 2024]
Inputs	
Japan Fund for Poverty Reduction (JFPR): \$3 million grant (Administered by ADB)	
Government: \$0.5 Million	
Assumptions for Partner Financing	
Not Applicable	

ADB=Asian Development Bank, BEA=Bhutan Electricity Authority, DRE=Department of Renewable Energy, Q=quarter, RFQ = request for quotation.

^a Gross National Happiness Commission. 2018–2023. *12th Five-Year Plan*. Thimphu.

Source: Asian Development Bank.

B. Monitoring

51. **Project performance monitoring.** Overall monitoring of each project component in terms of progress will be undertaken by the DRE and DRE will submit quarterly project progress report to ADB. These quarterly reports will provide information necessary to update ADB's project performance reporting system.²³ In addition, ADB will undertake semi-annual review missions and provide guidance to the project director, the project PMU, and to project consultants. ADB and DRE will regularly monitor the: (i) project output quality; (ii) implementation arrangements; (iii) implementation progress; and (iv) disbursements. Performance will be monitored based on indicators and targets stipulated in the design and monitoring framework.

52. **Compliance monitoring.** The grant and project agreements specify undertakings and covenants that will be monitored through regular review missions and on a quarterly basis in discussion with DRE and BPC. Compliance with undertakings and grant covenants, social and environmental safeguards, and financial and economic aspects will be jointly monitored by ADB and DRE.

53. **Safeguards monitoring.** An environment and social safeguard checklist has been developed for the project. ADB will ensure that the eligibility requirements are adhered to and the safeguard categorization is "C" for all installations.

54. **Gender and social dimensions monitoring.** The compliance with labor standards, health and gender aspects will be monitored through review of bidding documents, contract awards, and progress reports.

C. Evaluation

55. ADB will conduct regular semi-annual review missions to review, discuss progress, and report on the project performance. A midterm review will be carried out two years after effectiveness of the grant. Within 6 months of physical completion of the project, DRE will submit a project completion report to ADB.²⁴

D. Reporting

56. The DRE will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance monitoring including the status of grievance redress mechanism (GRM) implementation and the use of environment and social safeguard screening checklist; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets against the baseline data, (b) key implementation issues and solutions, (c) updated procurement plan, and (d) updated implementation plan for next 12 months; and (iii) a project completion report within 6 months of physical completion of the project. Financial and disbursement information, variance analysis of physical and financial progress, details of utilization of funds and reconciliation with ADB loan financial information system (LFIS) should be included in the quarterly progress report and be reviewed periodically by the team. The consolidated project financial statements and BPC audited financial statements, together with the associated auditor's report, will also be adequately reviewed. DRE, as the project executing

²³ ADB's project performance reporting system is available at:

<http://www.adb.org/Documents/Slideshows/PPMS/default.asp?p=evaltool>.

²⁴ Project completion report format is available at:

<http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar>.

agency, will have overall responsibility for submission of project reports and shall coordinate with BPC and other agencies as necessary for these purposes.

E. Stakeholder Communication Strategy

Table 16: Stakeholder Communication Strategy

Project Information to be Communicated	Means of Communication	Responsibility	Audience	Frequency
Grant Assistance Report with linked documents	ADB website	ADB	ADB, RGOB, development partners, civil society, and individuals	Once
Project information while planning/ designing	Discussions and stakeholder consultations	DRE	Project beneficiaries	Regular intervals during planning and design
Status of implementation during construction	Boards at site	DRE/BPC/ contractors	Project beneficiaries	All time at construction sites
Project performance reports and project information documents	ADB website	ADB	ADB, RGOB, development partners, civil society, and individuals	Every quarter
Periodic progress reports	Website of DRE	DRE	ADB, RGOB, development partners, civil society, and individuals	Quarterly
Project completion report	ADB website	ADB	ADB, RGOB, development partners, civil society, and individuals	Once

ADB = Asian Development Bank, BPC = Bhutan Power Corporation, DRE = Department of Renewable Energy, RGOB = Royal Government of Bhutan.

X. ANTICORRUPTION POLICY

57. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy (1998, as amended to date) relating to the project.²⁵ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all project contractors, suppliers, consultants, and other service providers. Individuals and entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.²⁶

²⁵ Available at <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>.

²⁶ ADB's Integrity Office web site is available at: <http://www.adb.org/integrity/unit.asp>.

58. To support these efforts, relevant provisions are included in the grant and project agreements and the bidding documents for the project.

XI. ACCOUNTABILITY MECHANISM

59. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The accountability mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the accountability mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the accountability mechanism.²⁷

XII. RECORD OF CHANGES TO THE JFPR PROJECT ADMINISTRATION MANUAL

60. All revisions and/or updates during course of implementation should be retained in this section to provide a chronological history of changes to implemented arrangements recorded in the JFPR PAM.

²⁷ For further information, see: <http://www.adb.org/Accountability-Mechanism/default.asp>.

JAPAN FUND FOR POVERTY REDUCTION GUIDANCE NOTE ON JAPANESE VISIBILITY

I. Introduction

1. The Revised Operating Framework for the Japan Fund for Poverty Reduction (JFPR) was approved on 6 October 2009, combining Japan's project grant and technical assistance support under one umbrella, and paving the way for a more comprehensive approach to the use of these funds towards addressing poverty, building up human resources, and empowering institutions and communities in the region. Japan has been making generous contributions for technical assistance activities through the Japan Special Fund, and for poverty reduction projects through JFPR, since they were established in 1988 and 2000, respectively. It is but fitting and proper that said contributions are acknowledged and the recipients and general public are informed of the source of the funding assistance both at the Fund level and at the level of the individual TA and project grants. The purpose of this note is to provide guidance on measures to ensure that the contribution of Japan in supporting JFPR is widely recognized.¹

II. Statement on Japanese Visibility

2. Project teams are required to help promote the visibility and local awareness of JFPR in recipient countries through the following:
 - (a) All press releases issued by ADB with respect to JFPR should refer to the financial contribution from the Government of Japan (GOJ);²
 - (b) Signing ceremonies and other publicity events should be encouraged, inviting Japan embassy officials, JICA staff, local and international press;³
 - (c) Civil works, project billboards/signages, vehicles, and equipment must carry the JFPR and Japan ODA logos (see below). Likewise, all publications and training programs must bear the said logos, including all collaterals used (i.e., training materials, banners, posters, flyers, etc.) that are financed by JFPR; these logos are available in the SDPF-JFPR website;⁴



¹ A copy of the Guidance Note on Japanese Visibility is appended to the Project Administration Manual as guide to the project team and the government, during project implementation.

² Staff may coordinate with the Department of Communications.

³ Coordination with resident missions are necessary.

⁴ <https://lnadbg1.adb.org/oco0006p.nsf/0/EEE594E105EAC26A482576C7002240AB/?OpenDocument>

- (d) Publications, reports, training programs, seminars and workshops financed by JFPR should acknowledge receipt of funding from GOJ;
- (e) Recipients should be encouraged to ensure that JFPR-financed activities are well covered by local print and electronic media, and that all related publicity materials, and official notices explicitly acknowledge funding from GOJ. Below is the suggested standard text to be used by those who prepare publicity materials:

"The grant fund for (project name/activity) was received from the Japan Fund for Poverty Reduction financed by the Government of Japan through the Asian Development Bank".

III. Participation of Japanese Entities in Implementation

- 3. It is also important to generate visibility of the project within Japan. Involvement or cooperation with Japanese experts, financial resources and technologies are encouraged; occasional information sessions on JFPR for Japanese organizations may also be conducted. It is also highly recommended that ADB involve and cooperate with Japanese organizations including NGOs, civil society organizations, aid agencies in particular JICA and JBIC, the private sector enterprises or academic institutions.

IV. Reporting

- 4. At the end of the project, the completion report submitted by the project team should include evidences of Japanese visibility such as photos (preferably high resolution), press releases, articles or write-ups, and testimonials from project recipients and/or implementers. Sample products generated from the project grant are requested to be made available to SDPF for inclusion in future exhibits. Copies of publications⁵ that are outputs of the project should also be provided to SDPF.

V. Visibility Support by ADB

- 5. SDPF promotes visibility of JFPR by: (i) informing Office and Department Heads of the importance of achieving high visibility in order to garner support for JFPR from Japanese officials and taxpayers; (ii) informing Country Directors of the importance of signing ceremonies to Japanese officials and the public to ensure recognition and support for JFPR funding; and (iii) continuing widespread distribution of the JFPR Annual Report, inclusion of JFPR information in relevant ADB documents, and occasional information sessions for Japanese organizations.
- 6. Resident Mission staff are requested to forward copies of all visibility materials, such as press releases, newspaper and magazine articles, and photographs (including descriptive captions) to SDPF's assigned focal staff for JFPR or e-mail to (jfpr@adb.org).

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⁵ This particularly applies to knowledge and support TAs. Links to publication available online may be provided in lieu of print copy.

JAPAN FUND FOR POVERTY REDUCTION

GUIDANCE NOTE ON COORDINATION WITH THE EMBASSY OF JAPAN AND JICA

I. INTRODUCTION

1. The Final Report on the Review of Japanese Official Development Assistance¹ (ODA) underscores the need for strategic and effective aid. One way to ensure alignment of Japan Fund for Poverty Reduction (JFPR) projects and technical assistance (TA) with Government of Japan's (GOJ) bilateral assistance strategy for a particular developing member country (DMC) is by bringing on board the comments and suggestions of the Embassy of Japan (EoJ) and the Japan International Cooperation Agency (JICA).² Thus, the summary of consultations with EoJ and JICA (to include, date of consultation, name and position of staff met, and EoJ and JICA's response) should be included in the proposal submitted to SDPF.³ This Guidance Note provides detailed instructions regarding coordination activities with EoJ and JICA.⁴

II. EOJ AND JICA CONTACT PERSONS

2. As soon as project officer informs SDPF of the intent to apply for JFPR funding,⁵ SDPF will identify the appropriate contact persons in EoJ and JICA. The contact persons' information⁶ will be provided by SDPF to the project officer to start consultation.

III. CONSULTATION WITH EOJ AND JICA – PROPOSAL PREPARATION

3. At concept stage, project officer should consult with EoJ and JICA⁷ through e-mail the proposed project to, (i) seek if it is in line with Japan ODA priorities; (ii) ensure no duplication; and (iii) present the concept itself, with copy to SDPF.
4. Upon SDPF's confirmation to proceed with proposal preparation, the project officer may arrange the project design meeting with EoJ and JICA. This meeting intends to explain and discuss the actual project design. This is ideally conducted during the fact-finding mission.⁸ The proposal,⁹ should be provided to EoJ and JICA with copy to SDPF at least 5 working days before the meeting to give ample time for review and consideration. After the meeting, if needed, SDPF in coordination with the project officer, may follow-up with EoJ and JICA, and respond to requests for clarification.
5. In the case of regional TAs, the draft TA Summary and Report should be sent by email to EoJ and JICA contact persons on no-objection basis.

¹ Ministry of Foreign Affairs of Japan. 2010. ODA Review - Summary of the Final Report. Tokyo.

² Incorporated administrative agency in charge of administering Japan's ODA.

³ GOJ gives importance on the inputs provided EoJ and JICA during the internal approval process.

⁴ A copy of the Guidance Note on Coordination with Embassy of Japan and JICA is appended to the Project Administration Manual as guide to the project team and the government, during project implementation.

⁵ Project name and brief outline of proposal should be provided to SDPF. ⁶ Name, status, telephone number and email address.

⁶ Name, status, telephone number and email address.

⁷ Please refer to the contact persons provided by SDPF.

⁸ If a meeting with EoJ and/or JICA is not possible, email exchange, telephone discussion or any other form of communication may be used.

⁹ Draft Grant assistance report (for project grants) and draft TA Summary and Report (for TAs).

IV. ROLE OF THE RESIDENT MISSION AND SDPF

6. Project officer's communications with EoJ and JICA should be done in coordination with the resident mission¹⁰ with copy to SDPF. If needed, SDPF supports to identify the appropriate staff to be consulted.
7. Resident mission also arranged the Grant Agreement/TA letter signing event (section V) and in the overall coordination/relationship management with EoJ and JICA.
8. SDPF's role are as follows: (i) provide contact details of relevant staff from EoJ and JICA for project consultation; (ii) liaise any need for clarification by EoJ and JICA in coordination with the project officer, during project consultation; (iii) inform EoJ and JICA when there is withdrawal or cancellation of a project; and (iv) forward all completion reports to both agencies.

V. COORDINATION WITH EOJ AND JICA – UPON APPROVAL OF THE PROPOSAL

9. Project officer should inform EoJ and JICA about ADB's approval. Project officers are strongly encouraged to conduct signing or launching ceremonies with the attendance of EoJ officials.¹¹
10. In coordination with the resident mission, the project officer should inform EoJ and SDPF of the signing ceremony– at least 10 working days in advance. SDPF then informs GOJ of this activity. The project officer should also draft news release in consultation with the Department of communications and coordinate arrangements with the resident mission. Local and international press are invited to these ceremonies.

VI. COORDINATION WITH EOJ AND JICA – DURING PROJECT IMPLEMENTATION AND UPON PROJECT COMPLETION

11. Throughout implementation, the project officer should inform EoJ about project progress, milestones, and outcomes, and discuss when major changes in scope and objectives are required. Progress and outcomes of JFPR projects are also requested to be shared with JICA. From time to time, EoJ and JICA may also wish to join completion review missions in order to see project results and to interact first-hand with project recipients. Lessons from the JFPR projects are also requested to be shared to enable both sides to explore and seek potential collaboration. Completion reports are required to be submitted by the project officer to SDPF for forwarding to EoJ and JICA.¹²

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¹⁰ Please inquire respective resident missions on their protocols or coordination arrangements with EoJ and JICA.

¹¹ Please refer to the Guidance Note on Japanese Visibility for details on visibility requirements under JFPR. ¹² Links to the completion reports will suffice.

¹² Links to the completion reports will suffice.

TERMS OF REFERENCE

ALTERNATIVE RENEWABLE ENERGY PILOT PROJECT

1.1 Background

1. The Royal Government of Bhutan requested ADB's assistance to pilot test the installation of small-scale solar photovoltaic systems to the marginalized rural households and integrate them to the national grid. This will enable rural households to produce energy for their own consumption and RGOB to reduce electricity subsidies, while also lessening electricity import during winters when solar radiation is at its peak. For the proposed intervention, ADB applied for \$3 million grant financing from Japan Fund for Poverty Reduction (JFPR), and it was approved by the Government of Japan on 20 August 2020.

2. This project pursues to enable the RGOB to reduce budget for expenditure on electricity subsidies, and the households to secure reliable and sustainable energy supply and generate income by selling power to enhance their livelihoods. An important program of the government's rural poverty alleviation strategy is a provision of a lifeline electricity supply to households with 100% subsidy (Nu5.81/kilowatt hour (kWh), 2017–2019) up to 100 kWh of monthly consumption for each household.¹ In 2018 alone, Nu104.93 million was spent by the Ministry of Finance (MOF) as subsidy for the rural electricity supply, which is a significant component of the annual budget allocation for the energy sector.² Although 100% subsidy for electricity is aligned with poverty reduction efforts, it is not sustainable. Further, solar photovoltaic energy supports strong gender equality and social inclusion (GESI) elements by improving income generating sources through solar photovoltaic power trading and energy-based livelihoods with a focus on women.

3. The Alternative Renewable Energy Pilot Project aims to demonstrate viability and sustainability of solar power as an alternative energy and income source in Bhutan through: (i) conducting a study on regulatory requirements for alternative renewable energy resources and preparing a tariff structure for residential solar photovoltaic systems; (ii) assessing the adequacy of the national electricity grid and pilot-testing solar photovoltaic systems in rural villages; and (iii) enhancing energy-based livelihood skills through vocational education and energy based livelihood equipment support. The project has strong pro-poor, socially inclusive and gender-sensitive features. The project will directly benefit 300 poor households in rural villages.

4. For the interventions, the Department of Renewable Energy (DRE) plans to hire an international consulting firm to assist the project management unit (PMU) to implement project components under the grant. The international consulting firm has experience of implementing similar initiatives for at least 5 years with access to international and national experts and specialists required for the different outputs. Experience in developing member countries in the region is desirable.

1.2 Objective of the Assignment

5. The key objective of the assignment is to implement the planned activities under the JFPR grant in line with international best practices and as described in grant assistant report (GAR) and provide required deliverables.

6. The assignment is expected to commence in the first quarter of 2021 and will continue until the third quarter of 2024.

¹ Bhutan Electricity Authority. 2017. *Electricity Tariff in Bhutan*. Table 2. Royal Government of Bhutan.

² RGOB's statistic in 2017 and 2018. It increased by 28% from the subsidy in 2017 which was Nu81.96 million.

1.3 Scope of Services

7. The consultant team will have access to PMU, DRE, and Bhutan Power Corporation (BPC) offices particularly for interactions with their staff. There is a staff member under PMU who is assigned as a focal point for the task. A renewable energy policy specialist (team leader) of the grant consultant team will lead the team and support the PMU's project implementation.

8. The consultant team will carry out following tasks to achieve the objectives of the assignment:

- (i) Review the GAR and project administration manual (PAM) and prepare an inception report with a detailed plan and timeline for implementation of the grant and hold an inception workshop with DRE, BPC, and BEA staff.
- (ii) Review related laws, policies, reports etc., including Alternative Renewable Energy Policy (2013) and regulatory frameworks in other countries, and outline the regulatory requirements for the promotion and development of alternative renewable energy³ in Bhutan (herewith "pre-requisite for regulatory framework") and finalize the outline with DRE, BPC, and BEA.
- (iii) Draft the pre-requisite for regulatory framework in coordination with DRE, BPC, BEA, relevant agencies, and ADB to finalize the draft of the pre-requisite for regulatory framework after incorporating views/comments.
- (iv) Prepare selection criteria for solar photovoltaic system installation and conduct site assessments at the 42 villages (list will be provided by DRE) and assist PMU in selecting 10–15 villages with 300 households from the list provided. Efforts will be made to ensure that all households with the selected villages will be provided with the solar photovoltaic systems subjected to the detailed assessments carried out.
- (v) Visit and conduct feasibility analysis with the 300 selected households and figure out necessary measures (i.e. strength of rooftops, roof strengthening measures, accessibility, special transportation needs) to be undertaken by contractor and households.
- (vi) Assist BPC to assess capacity and adequacy of the existing distribution networks nationwide⁴ and impacts of connecting residential solar photovoltaic systems to the network, and to identify specifications and requirements for the connection of residential solar photovoltaic systems to the grid of the selected rural area and recommend solutions, if any.
- (vii) Assist BPC in preparing bidding documents and procurement of: (a) the residential solar photovoltaic systems; (b) smart meters; and (c) update of existing metering software.
- (viii) Estimate the cost for installation and operation & maintenance (O&M) of residential solar photovoltaic systems and identify nationwide benefit in scaling up the installation of more small-scale solar photovoltaic systems and other renewable energy resources.
- (ix) Assist PMU to prepare an indicative tariff⁵ based on the estimation described in the para (viii) above for power purchase from the residential solar photovoltaic systems, and support DRE, BPC and BEA to endorse the indicative tariff for this

³ This includes expectation of the availability and capacity of the renewable energy resources in Bhutan considering climate change impacts.

⁴ For nationwide, the kinds and settings of protection relays will be checked, and capacity of feeders and substations will be assessed considering future investment. In the selected rural villages, more detailed and in-depth assessment will be undertaken based on field conditions identified through site visits.

⁵ This will be applied to this pilot project with 300 households only.

- pilot project. Assess and outline the incentives and any other mechanisms to make this intervention economically and financially viable.
- (x) Analyze data of generation and consumption profile, and support PMU to draft the tariff structure for residential solar photovoltaic system based on the data collected and analyzed.
 - (xi) Conduct baseline socio economic survey with the 300 households for the solar photovoltaic systems to gather baseline household income level and undertake needs assessment to find the most effective livelihood enhancement equipment for each selected village. During the survey, sex disaggregated baseline data collected to enable monitoring project impacts toward women including: (a) number of women villagers trained and continue working for solar photovoltaic O&M, (b) change in women's time spend on household chores; and (c) change in women's earnings.
 - (xii) Develop awareness campaign materials on (a) introduction of solar photovoltaic system installation and operation; (b) benefit of the solar photovoltaic system including power selling opportunities; (c) readiness requirement for power selling such as creating bank account; and (d) safe and efficient use of electricity and facilitate trainings on these with at least 600 persons from the selected 300 households of which 50% must be female.
 - (xiii) Support DRE to procure livelihood enhancement equipment based on the needs assessment and distribute them to the selected villages and provide skills enhancement trainings on these equipment's.
 - (xiv) Support PMU in preparing selection criteria for solar photovoltaic system O&M training and select 300 trainees among 300 households and/or Village Electrical Entrepreneur and Electrical Technicians (VEEETs).
 - (xv) Conduct end line survey with 300 households selected for the solar photovoltaic system to understand: (a) reliability⁶ improvement of the electricity supply, and (b) income generation through selling power from the solar photovoltaic systems and using the energy-based livelihood units considering the baseline information collected during the socio-economic survey with sex disaggregated data.
 - (xvi) Conduct end line survey with 300 participants of the solar photovoltaic system O&M to assess the level of their knowledge improvement and change in incomes with sex disaggregated data.
 - (xvii) Support PMU to consult the MOF to evaluate the subsidy savings after the project implementation. Also assess whether part of the subsidy savings could be used to enable the households fetch better tariff from sale of their surplus electricity to the grid.
 - (xviii) Provide training to DRE and PMU staff on mainstreaming GESI in renewable energy projects
 - (xix) Support PMU in undertaking activities for gender action plan (GAP), safeguard checklist, grievance redress mechanism, information dissemination and consultation with ensuring informative signs on safety and energy conservation posted in the villages properly with JFPR logos.
 - (xx) Support the PMU to implement the GAR and PAM and report the project implementation progress to PMU for them to submit quarterly progress report to ADB.
 - (xxi) In close coordination with PMU, executing agency, implementing agencies, and ADB, plan and carry out tasks to organize preparation, record, and production of the video clip. This is to capture the key implementation of the planned activities

⁶ The reliability indicator (i.e. number of outage) will be developed and included in the end-line survey sheet.

under the project and as described in GAR, analyze, and record the impacts of the project intervention.

- (xxii) Draft a final grant report based on all tasks undertaken including end line survey result.

1.4 Team composition, qualification requirements and tasks

9. **International firm** shall have at least 5 years of experience in overall project management of similar assignments. They shall also have experience in regulatory work for alternative renewable energy and understanding on gender equality and social inclusion in development. The firm shall have international and national consultants with relevant expertise. Experience in implementing similar projects in Bhutan will be an added advantage. The approach and methodology for the project, the qualifications of each proposed expert will need to be detailed by each shortlisted firm in their proposal. Outline terms of references (TORs) associated with international and national experts are presented below.

10. The team composition of the key consultants along with their estimated person months is provided in table 1 and the required qualification of the key experts are provided in following paragraphs:

Table 1: Indicative Expertise and Person-Months

Positions	Number	Person-Months
International		
Renewable energy regulation specialist (Team leader)	1	12
Electricity distribution and photovoltaic connection specialist (Deputy team leader)	1	4
Procurement Specialist	1	4
Energy tariff specialist	1	5
Sub-total (international)	4	25
National		
Photovoltaic System data analyst	1	12
Gender Equity and Social Inclusion specialist	1	12
Survey specialist	1	12
Administration staff	1	12
Recording specialist	1	4.5
Sub-total (national)	5	52.5
Total	9	77.5

11. **Renewable energy regulation specialist (Team leader, international, 12 person-months, intermittent).** The specialist should have at least 10 years working experience related to policy/regulation of renewable energies. The specialist will be the team leader for the grant implementation team and manage all planned activities. The specialist will supervise consultant team members, will take responsibility for reporting to ADB in consultation with PMU with relevant deliverables and will maintain day-to-day coordination with assigned staff(s) of PMU at the field level. The specialist will draft the inception report, quarterly project progress reports, final grant report and other reports indicated in Table 2. Indicative List of Reports in coordination with the team members, PMU, and relevant agencies. The specialist should have a master's or higher degree in Energy Economics, Policies or Engineering.

12. **Electricity distribution and photovoltaic connection specialist (Deputy team leader, international, 4 person-months, intermittent).** The specialist should have at least 10 years working experience in planning, design and operation of power distribution grid, together with installation, connection and operation of solar photovoltaic systems. The specialist will assist BPC to assess the impact on the existing distribution grid in rural areas by connecting residential solar photovoltaic systems, to assess the grid's adequacy including the capacity of solar photovoltaic systems which can be accommodated in the existing grid, and to identify the specifications and requirements for the connection of residential solar photovoltaic systems to the grid in the rural areas. The specialist will support the team leader to draft the inception report, quarterly project progress reports, final grant report and other reports required under the TOR in coordination with the team members, PMU, and relevant agencies. The specialist should have a master's degree or above in electrical engineering or relevant renewable energy technology field.

13. **Project procurement specialist (international, 4 person-months, intermittent).** The specialist will support and monitor the procurement activities of the equipment under the project including, not limited to, drafting bidding documents, and bid evaluation reports. The specialist will identify areas to garner community support such as transportation and strengthening structures with a support from the survey specialist. The specialist will provide inputs for the team leader to draft the inception report, quarterly project progress reports, final grant report and other reports required under the TOR. A minimum of 10 years' working experience in procurement for international development project is required. Master's degree in engineering, finance, economics, or related fields is required.

14. **Energy tariff specialist (international, 5 person-months, intermittent).** The specialist will assist PMU to determine an indicative tariff for power purchase from the residential solar photovoltaic systems under this pilot project based on the estimation of cost and benefit in keeping with the extant rules and regulations, and assist DRE, and BPC to get the indicative tariff endorsed by the regulator, BEA. The specialist will also assist PMU to prepare tariff structure for power purchase from residential solar photovoltaic systems based on the analysis of the data of generation and consumption profile obtained from the pilot project. The specialist will provide inputs for the team leader to draft the inception report, quarterly project progress reports, final grant report and other reports required under the TOR. The specialist should have at least 10 years work experience in financial/economic analysis related to electricity tariff. Master's degree in Finance, Economics and/or Engineering is required.

15. **Photovoltaic system data analyst (national, 12 person-months, intermittent).** The expert will analyze the data of generation, consumption and injection to the grid from the households, and provide the energy tariff specialist with the inputs which contribute to preparation of tariff structure. The data will be collected by BPC from smart meters and power conditioning systems (PCS) and be provided to photovoltaic system data analyst. The specialist will provide inputs for the team leader to draft the inception report, quarterly project progress reports, final grant report and other reports required under the TOR. The expert should have at least 5 years work experience in data analysis in energy sector. Bachelor's degree in Engineering or related field is required.

16. **Gender equity and social inclusion specialist (national, 12 person-months, intermittent).** The specialist should be familiar with gender analysis tools and methodologies in the energy sector. The specialist will be in charge of implementation and reporting of the GAP and be responsible for checking whether the gender targets for each activity have been achieved and taking necessary actions to achieve. The specialist will support PMU to prepare selection criteria for both solar photovoltaic system installation, and solar photovoltaic system O&M training. The

specialist will identify nationwide social benefit from adopting more solar photovoltaic systems and developing renewable energy resources. In coordination with the survey specialist, the specialist will analyze social economic survey and needs assessment results and end line survey result. The specialist will provide necessary inputs to prepare awareness campaign materials and deliver related trainings together with the survey specialist. The specialist will also assist PMU in information dissemination, consultation, and grievance redress activities. In addition, the specialist will support the PMU in implementation of the livelihood activities under output 3. Lastly, the specialist will provide inputs for the team leader to draft the inception report, quarterly project progress reports, final grant report and other reports required under the TOR. The specialist should have at least 5 years work experience in gender and social sector. Bachelor's degree in Social Sciences or related discipline is required and an additional degree in engineering is an advantage.

17. Survey specialist (national, 12 person-months, intermittent). The survey specialist will be responsible for socio economic survey, needs assessment, and end line survey. In addition, the survey specialist will also prepare the set of questionnaires and carry out the necessary site assessments to help the PMU in selecting the 300-potential solar photovoltaic beneficiaries from the list of 42 villages provided by DRE. Also, the specialist will provide necessary inputs to prepare awareness campaign materials and deliver related training together with the social and gender specialist. The specialist will identify areas which need communities' support such as transportation and strengthening structures in consultation with the procurement specialist. The specialist will also assist PMU in information dissemination, consultation, and grievance redress activities. The specialist will take the lead in preparation including development of methodology, protocols and questionnaires and administration of the socio-economic survey, needs assessment, solar photovoltaic beneficiary identification and the end line survey. In addition, the specialist works as a liaison between PMU and relevant agencies to undertake these surveys. The specialist will recruit, train, and prepare enumerators for conducting the surveys and take lead in data analysis, presentation, and finalization of the survey findings in a format acceptable to PMU and ADB. Lastly, the specialist will provide inputs for the team leader to draft the inception report, quarterly project progress reports, final grant report and other reports required under the TOR. The specialist should have at least 5 years work experience in socio-economic survey. Bachelor's degree in development or related disciplines is required.

18. Recording specialist (national, 4.5 person-months, intermittent). The recording specialist will develop the video concept, scripts, and scenarios. The person should be available for major stakeholder's workshops and important site visits to the benefitted villages to record video and take photographs. The specialist will process full usage rights for music and scenes that need to be used in the video and carry out video editing, narration/translation in English/Dzongkha with English subtitles wherever necessary. The specialist should have all necessary equipment in-house to undertake the assignment and provide a report on all photography and filming locations including names and contact details of all individuals photographed or that will appear on film. Also, the specialist will provide overall guidance to the executing agency, implementing agencies, and PMU for visual recording. The specialist should have a minimum of 5 years experience in similar assignments and possess at least a bachelor's degree in Media, Mass Communications or Publication or related studies. The person should demonstrate strong communications skills and ability to work well with others and excellent writing and interpersonal skills.

19. Administration staff (national, 12 person-months, intermittent). The administrator will provide project implementation support to accounting, reporting, recording, submission of withdrawal applications for the grant, selecting trainees and participants, and facilitate fund

requests and releases and other administrative support required by the PMU. The administrative specialist's office will be based in the DRE office to provide timely ad-hoc support to the PMU. The specialist should have at least 5 years of relevant finance experience at national level and familiarity with government accounting system and ADB standards. The administrator will have at least a bachelor's degree in Accounting, Finance or Administration and a qualification of certified public accountant from a national recognized institute of accountancy.

Table 2: Indicative List of Reports

Nº	Activity	Due by Month
1	Inception report and workshop	3
2	Social economic survey and need assessment results	6
3	Draft a study report on pre-requisite for regulatory framework	6
4	Finalize the study report on pre-requisite for regulatory framework	12
5	Indicative tariff for residential solar photovoltaic system of the pilot project	12
6	Awareness campaign material on benefit of the solar photovoltaic system and safe and efficient use of Energy	12
7	Draft a tariff structure for residential solar photovoltaic system	42
8	Video clip recording project implementation and achievement	42
9	Draft a project completion report with end line survey result	45
10	Project progress report	Quarterly

PROJECT ADMINISTRATION ANALYST – INDIVIDUAL CONSULTANT

Project: BHU 53365-001 Alternative Renewable Energy Pilot Project
 Expertise: Implementation, Administration, Coordination, and Management
 Source: International

Objective and Purpose of the Assignment

The consultant will support the ADB project officer in the implementation of the project. The consultant will oversee financial as well as administrative aspects of the project. Will also be in close coordination with the executing agency, implementing agencies, and consulting firm other than the ADB project officer.

Scope of Work

In close coordination with the ADB project officer, executing agency, implementing agencies, and consulting firm, the consultant will oversee the project's financial transactions and maintain a financial management system in a manner that is compliant with generally accepted accounting principles and harmonized with ADB's policies and procedures in close coordination with concerned officers within ADB (e.g., SDPF, CTL, and PPFD). The consultant will report to the ADB project officer on an intermittent basis.

Detailed Tasks and/or Expected Output

The international project implementation analyst, under the guidance of the ADB project officer, will undertake, including but not limited to, the following tasks:

- (i) Oversee the processing of project documents (e.g., project activities, claims, contracts, and other pertinent documents).
- (ii) Supervise the financial management and implementation of the project, including budget preparation and liquidation of all activities under the project.
- (iii) Help manage processing of contract variations, procuring other required inputs, and providing inputs to project performance and completion report.
- (iv) Engage in monitoring and progress tracking of all project activities and report to the ADB project officer to ensure that all the activities are carried out according to the activities listed in the project.
- (v) Monitor key technical and administrative milestones.
- (vi) Maintain an information system for technical and administrative purposes.
- (vii) Coordinate activities through working with the consulting firm.
- (viii) Provide timely inputs to the ADB project officer for preparation of relevant reports and documents.
- (ix) Liaise with concerned offices in securing appropriate decisions and actions to support project activities.
- (x) Provide overall support and management of the project, by following up on outstanding obligations of implementing agencies such as submission of project reports, financial statements, monitoring progress in terms of outputs and deliverables, assisting in processing disbursements and reviewing withdrawal applications, and preparing/reviewing data input for procurement contract summary sheet (PCSS) to update the Financial Information System (FIS).
- (xi) Participate in various missions as required such as review, mid-term review, and project completion report missions by providing support to the collection of data on contract awards and disbursements.

- (xii) Undertake other associated project support as required.

Minimum Qualification Requirements

The assignment requires a qualified university degree in business administration, finance, economics, or other related fields suitable for the assignment. At least 10 years of experience in project implementation and project management, including proficiency in up to date ADB project implementation procedures and systems, including consultant recruitment, disbursement, and project processing. The person must demonstrate ability to work well with others and excellent writing and interpersonal skills. Recent experience in ADB project implementation is required, preferably with gender and energy sector project in South Asian countries.

Safeguard Checklist for Alternative Energy Development Pilot Project

A. SOCIAL SAFEGUARD SCREENING CHECKLIST

Date:		Position:	
Completed by (name):		Signature:	

1. Household name (as on land & building certificate):

2. Location:

3. Installation description

i) Total capacity: kW

ii) Solar panels:

Number:

Capacity per panel: kW

iii) Connection line length: m

iv) Ownership of the land or facility: ☐ private ☐ government ☐ community

v) Ownership of the land and rooftop structure: ☐ single owner ☐ multiple owners

vi) Total area available for solar photovoltaic system installation: m²

To be completed for all solar photovoltaic installations

Social Impact Screening Questions Only installations with 'NO' checked against all social items can proceed with processing	Yes	No	Remarks
Will there be land acquisition for the installation?			
Will there be residential house demolition causing loss of shelter due to land acquisition or construction activities?			
Will there be any temporary occupation of land that affects the land, housing, assets or livelihoods/business of people except the beneficiaries?			
Will there be losses of crops, trees, graves and fixed assets of people except the beneficiaries during installation civil works?			
Are there socio-cultural groups present at the installation site who may be considered "tribes" (hill tribes, scheduled tribes, tribal peoples), "minorities" (ethnic or national minorities), or "indigenous communities"?			
Will the installation directly or indirectly target, displace or impact ethnic minority or indigenous households?			

Can the installation proceed at this location: ☐ Yes ☐ No

Attachments to Form:

- Υ Photo of installation location
- Υ Building/land ownership certificate

Social Screening Criteria:

All solar photovoltaic system installations shall meet the following social criteria:

- (i) All project sites will be screened through safeguards checklists.
- (ii) All installations are limited to rooftops of the existing structures or premises of the beneficiaries only. No installations with new grid connections that require the right of way will be financed.
- (iii) The installation does not involve any land acquisition or housing demolition and cause any adverse impacts on ethnic minorities.
- (iv) The installation does not support activities involving commercial development of cultural resources of indigenous peoples.

B. ENVIRONMENT SAFEGUARD SCREENING CHECKLIST

Date:		Position:	
Completed by (name):		Signature:	

1. Household name (as on land & building certificate):

2. Location:

3. Installation description

i) Total capacity: kW

ii) Solar panels: -

Number:

Capacity per panel: kW

iii) Connection line length: m

iv) Ownership of the land or facility: ☐ private ☐ government ☐ communityv) Ownership of the land and rooftop structure: ☐ single owner ☐ Multiple ownersVi) Total area available for solar photovoltaic system installation: m²***To be completed for solar photovoltaic installations***

Screening Questions	Yes	No	Remarks
A. PROJECT SITING Is the site adjacent to or within any of the following environmentally sensitive areas? Only the installations with 'No' checked against all siting items can proceed with processing.			
▪ Physical cultural heritage site			
▪ Located in or near to legally protected area or buffer zone			
▪ Located in or near to special habitats for biodiversity (modified or natural habitats)			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Offshore (marine)			
B. POTENTIAL ENVIRONMENTAL IMPACTS Will the installation cause... If more than 3 'Yes', then due diligence and EMP required			
▪ disturbance due to noise, vibration and dust from construction activities?			
▪ disturbance due to an increase in local traffic during construction?			
▪ environmental disturbances such as soil erosion, land contamination, water quality deterioration, air pollution, noise and vibrations during construction phase?			

Screening Questions	Yes	No	Remarks
▪ a threat to bird or bat life from colliding with the project facilities?			
▪ industrial liquid (dielectric fluids, cleaning agents, solvents, lubricating oils, compressor oils, and hydraulic fluids) and solid wastes generated during construction and operations likely to pollute land and water resources?			
▪ soil/water contamination due to use of hazardous materials or disposal of broken or damaged solar cells (photovoltaic technologies contain small amounts of cadmium, selenium and arsenic) during installation, operation and decommissioning?			
▪ noise disturbance during operation due to the proximity of settlements or other features?			
▪ visual impacts due to reflection from solar panels on roof tops?			
▪ is there any asbestos presence observed?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ medium-high risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during construction, installation, operation, and decommissioning?			
▪ medium-high risks to community health and safety due to the transport, storage, and use and/or disposal of materials and wastes such as explosives, fuel and other chemicals during construction and operation?			
▪ community safety medium-high risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			

Environmental Screening Criteria:

All sites shall meet the following criteria, in particular:

- (i) All sites will be screened through safeguards checklists.
- (ii) The installation has only minimal or no adverse environmental impacts.
- (iii) The facilities are not located in any designated environmental protection zone and cultural heritage site.
- (iv) The installations do not increase the amount of water consumption compared to prior status.
- (v) The installations do not directly or indirectly result in significant conversion or degradation of natural habitat.
- (vi) The facilities are not located within, abstract water from, or discharge to a critical habitat and a legally protected area.
- (vii) Each facility should be designed, constructed, and operated in accordance with all relevant domestic environmental and social regulations and must acquire necessary environment permits, if any.
- (viii) Based on the visual preliminary screening of asbestos presence in the selected households, in case asbestos is detected, it is suggested to avoid activities that could mobilize asbestos fibers in the environment. If the rooftop is already damaged or at risk of release, an asbestos removal should be arranged or an alternative location where no asbestos is present should be selected.
- (ix) The installations should be in compliance with relevant domestic occupational health and safety standard.
- (x) Persons involved in any field work should be trained on risks and prevention measures for COVID 19.

C. GUIDELINE FOR COVID 19

I. Overview

1. Objectives

- This guideline is designed with a set of procedures and actions to prevent and contain the spread of novel Coronavirus (COVID-19) in public and multi-purpose facilities.
- Examples of public facilities: schools, workplaces, facilities for youths and families, daycare centers, kindergartens, social welfare facilities, postnatal care centers, medical institutions, etc.
- Examples of multi-purpose facilities: performance halls, sports facilities, religious facilities, shopping malls (large-scale retail stores, markets, department stores, etc.), movie theaters, large-scale restaurants, public bathhouses, etc.
- This guidance outlines the strategies and actions that will be implemented by representatives or managers of the above-mentioned facilities (hereinafter “managers”) for effective prevention and control of COVID-19 within their facilities.

Characteristics of COVID-19

Symptoms

- The symptoms of COVID-19 are fever, fatigue, cough, shortness of breath, pneumonia, severe acute respiratory syndromes, etc. Most infected people experience mild symptoms, but those with underlying health conditions are likely to be at higher risk of developing a severe illness.
- Other symptoms include sore throat, headache, phlegm, hemoptysis, nausea, and diarrhea.

Mode of Transmission

- Droplets: Respiratory droplets (saliva) produced when a person infected with COVID-19 coughs or sneezes allow the virus to infiltrate another person’s mucous membranes in the respiratory system, thereby causing the infection.
- Contact: When droplets produced by an infected person land on objects, surfaces, etc., the virus can be transmitted to those who touch these objects or surfaces with their hands and then touch their eyes, nose, mouth, and other body areas.

Transmission characteristics

- (1) COVID-19 is highly contagious and can be transmitted even at early stages of infection with mild symptoms.
- (2) The scale of transmission can become much larger when people come into close contact with each other in confined spaces.

2. Guiding Principles

- Managers of public and multi-purpose facilities where a large number of people gather or stay should follow and implement “a National Preparedness and Response Plan for Outbreak of COVID-19 (National Plan for COVID -19)⁵¹ as well as a coordination mechanism with relevant agencies.
- Measures must be implemented to protect employees, users, and visitors from COVID-19, enhance early detection of the disease, and prevent community transmission.

⁵¹ <https://www.cabinet.gov.bt/wp-content/uploads/2020/03/National-Preparedness-and-Response-Plan-3rd-ed-1-1.pdf>.

- Specific measures include ensuring good hygiene practices, and routine cleaning, disinfection, and ventilation; improving working conditions; regularly monitoring for fever and other symptoms; excluding individuals with such symptoms from work.
- Any confirmed case must be immediately reported to a local public health center and necessary measures must follow suit to prevent further contraction.

II. Coronavirus Disease (COVID-19) Countermeasures

1. Establishment of a COVID-19 management and coordination mechanism

- Facilities should follow and implement National Plan for COVID-19, and to this purpose, facilities should designate specific persons who are responsible for COVID-19 infection control (called “Inspection Manager”) in order to ensure accountability in disease prevention and mitigation efforts.
- Also, it is highly advised for facilities to assign responsibilities to monitor employees’ symptoms, file reports of confirmed cases, locate hygiene supplies in facilities, etc. to specific persons.
- It is essential that facilities install and maintain a COVID-19 emergency hotline with relevant agencies (i.e. public health centers and medical institutions) for an effective and imminent response to possible and probable COVID-19 cases and other emergency situations.

2. Thorough management for infection prevention

Education and promotion for effective prevention

- Facilities should provide their employees, users, and visitors with information about COVID-19 and conduct education sessions on the code of conduct on proper handwashing, cough etiquette, etc.
- It is necessary to notify facility users and visitors that their access to the facilities can be limited if they have a fever or respiratory symptoms and display such notification in common areas.
- Also important is to exhibit a set of promotional materials in common areas within the facilities, including precaution guidelines for prevention of COVID-19 transmission, which cover handwashing, cough etiquette, etc.

Hygiene and environmental management

- Facilities should place hand wash, such as liquid soaps and hand sanitizers (containing at least 70% alcohol), paper towels, etc. in sufficient quantity on sinks (those with non-manual faucets, etc. preferred) in restrooms and other areas in the facilities.
- Waste baskets and trash cans should be placed at several locations in the facilities to allow the immediate disposal of tissues used for coughing.
- Cleaning, disinfection, and ventilation should be increased in common areas within facilities, commuter buses, dormitories, etc.
- Particular attention should be paid to enhance disinfection for areas and objects* that are frequently touched with hands.
- As to door handles, handrails, various touch devices, desks, tables, chairs, telephones, and computer keyboards, disinfection must be implemented at least once a day, while entrance doors, elevators and similar public-using objects should be disinfected on a more frequent basis.
- Also, it is necessary to regularly purify air and ventilate in the facilities.

3. Strengthening management of employees, users and visitors

- Facilities must conduct temperature checks for fever at entry points and in the office.
- Temperature and respiratory symptom screening of employees and others should be conducted twice a day.
- For facility users and visitors, temperature checks should be offered when they enter the facilities.
- A list of users and visitors which contains their personal details, contact information, temperature check results, etc. should be kept at the facilities.
- Employees or users who have fever or respiratory symptoms should not be permitted to work or use the facilities.
- Workers with a fever or respiratory symptoms will stay at home and refrain from contacting others or leaving home.
- No employee who recently travelled overseas will be permitted to work in office for three weeks and working from home (or telecommuting) and other cautionary measures should be recommended.
- Example: A person who entered Bhutan on March 6 will be prohibited from work in office until March 27 (21 days from the day of arrival).
- Children's absence from daycare centers, kindergartens, schools, etc. will be processed as attendance, and isolated children should be provided with temporary daycare. Other measures should be followed as needed.
- When staying at home, employees should refrain from making contact with others and going outside the house and keep monitoring themselves for any fever or respiratory symptoms.
- Employers or facility managers should grant leave or other forms of relief to workers who are excluded from work and ensure that these workers face no disadvantage.
- Employers, facility managers and others in relevant positions should actively provide advanced notice that workers are required to stay home if they develop a fever or respiratory symptoms.
- Those engaged in social care services, such as care workers, caregivers, home helpers, etc., should be thoroughly managed and allowed to work only after 21 days from the day of their arrival if they have an overseas travel record. They are prohibited from providing services until 21 days from their arrival.
- If there is a suspected patient of COVID-19, an isolation area where the suspected patient can stay should be secured within the facilities.
- The designated isolation space must be well-ventilated with doors that can be closed, and access to this space must be restricted to those who wear medical masks.

Excerpt from Guidance for COVID-19 Patients with Symptoms
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| <ol style="list-style-type: none"> 1. Stay home from school or work and refrain from going outside. 2. Take sufficient rest at home and monitor your health. 3. If there is an ongoing fever of 38°C or higher, or the symptoms do not improve, contact designated public health center. 4. Use your own vehicle and wear a mask when visiting a medical institution. 5. Inform the medial staff about your overseas travel history and any contact with a person showing respiratory symptoms. |
|--|

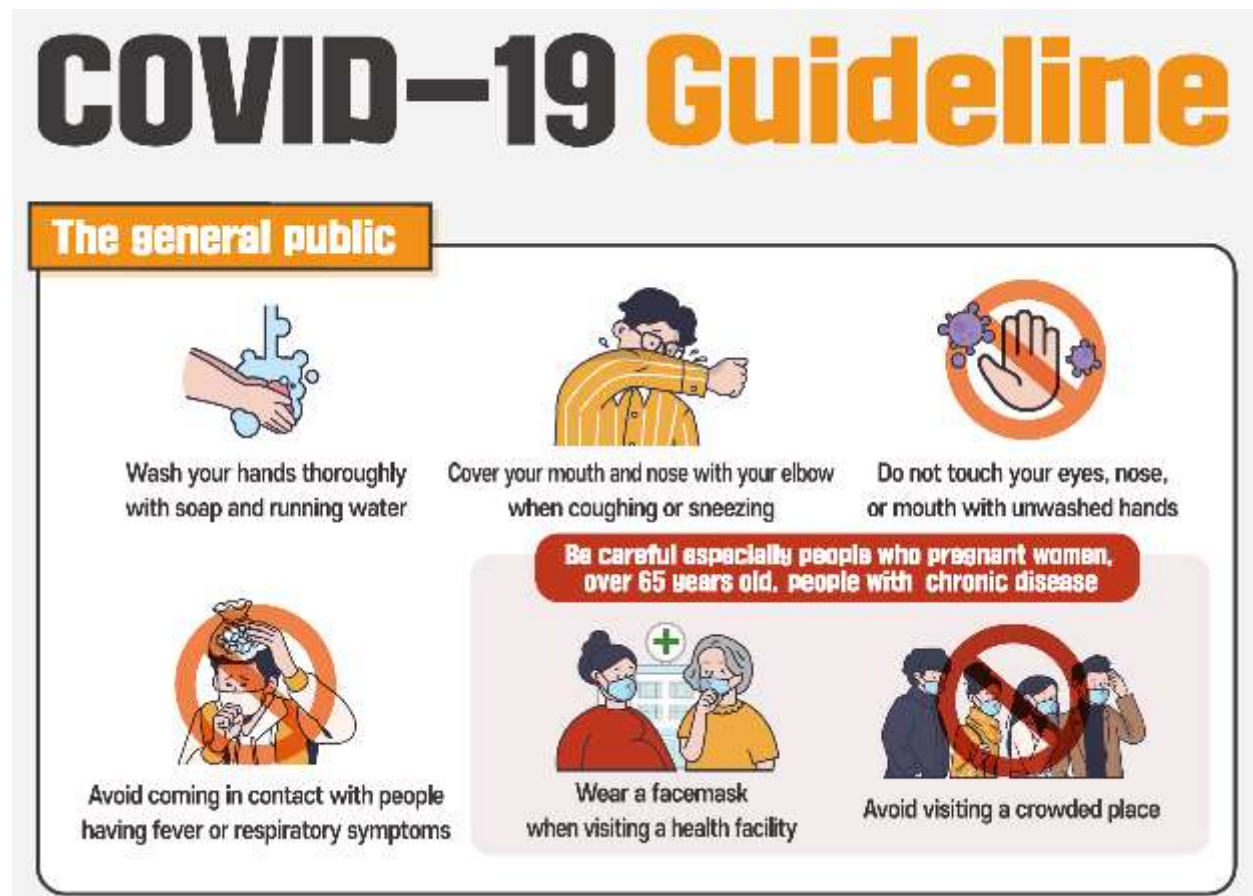
4. Practicing physical distancing

- Avoid physical contact including handshakes, etc. with other employees, visitors, etc.
- Improve the working environment, including enlarging the space between employees' seats in the office (keeping a distance of at least 1 meter).
- Adopt alternate start/end times for work and lunch hours.
- Use flexible work schedules and adjust lunch hours.
- Temporarily suspend the operation of public space such as indoor lounges and multi-functional spaces. Avoid having refreshments or lunch together in lounges, etc.
- Postpone or cancel mass gatherings, small-group events, business trips, etc. These gatherings and events include social functions at home and abroad, events, interest-based societies, hobby clubs, and company get-togethers.

5. Actions following detection of suspected patients

- Facility managers should immediately report to a public health center if a suspected patient is identified.
- The suspected patient should wear a mask and stay in a separated space until transferred to a screening station.
- After undergoing a test, the suspected patient should be placed in home quarantine until the test result comes out.
- After the suspected patient is transferred to a public health center, the place where the patient stayed should be properly disinfected with disinfectants such as alcohol, sodium hypochlorite, etc.

Figure 1. COVID-19 Prevention Measures



Source: www.cdc.go.kr (erased country specific instructions)

STRATEGIC PROCUREMENT PLANNING FOR BHU 53365-001

(July 2020)

Section 1: Project Concept

Project Title	Alternative Renewable Energy Pilot Project
Country	Bhutan
Executing agency	Department of Renewable Energy (DRE), Ministry of Economic Affairs (MOEA)
Implementing agency	- Department of Renewable Energy, Ministry of Economic Affairs - Bhutan Power Corporation Limited (BPC)
Project development objectives	Demonstrate viability and sustainability of solar power as an alternative energy and income source in pilot rural villages in Bhutan.
Project description	<p>The project intends to (i) conduct a study on regulatory requirements for the promotion of alternative renewable energy resources and prepare a tariff structure for residential solar photovoltaic systems, (ii) assess the adequacy of the national electricity grid and pilot-test solar photovoltaic systems in rural villages, and (iii) enhance energy-based livelihood skills through vocational education and energy based livelihood equipment support.</p> <p>The estimated cost is \$3.5 million. Out of the \$3.5 million, ADB is seeking \$3.0 million grant financing from Japan Fund for Poverty Reduction (JFPR). Royal Government of Bhutan will provide \$0.5 million of in-kind support. DRE will be the executing agency. DRE and BPC will be the implementing agencies.</p>
Description of indicative contract packages	<p>The contract packages are set out as below:</p> <ul style="list-style-type: none"> - Supply and installation of 300 residential solar photovoltaic systems (BPC); - Supply of 300 bi-directional electric meters (BPC); - Update of existing metering software (BPC); and - Supply of energy-based livelihood equipment (DRE).
Summary of the financing agreement	Out of \$3.5 million of estimated cost, ADB will provide 85.7% (\$3.0 million) which ADB is seeking grant financing from JFPR. RGOB will provide \$0.5 million of in-kind support.

ADB = Asian Development Bank, AREP = Alternative Renewable Energy Policy, BPC = Bhutan Power Corporation, DRE = Department of Renewable Energy, SCADA = supervisory control and data acquisition.

Section 2: Operating Environment

A. Capacity and capability assessment of the executing agency/implementing agency (DRE & BPC)

Strengths	Weaknesses
<ul style="list-style-type: none"> • Have a pool of professionals with prior experience in renewable energy projects and procurements • Experience in delivering ADB financed projects 	<ul style="list-style-type: none"> • Prosumer concept is the first of its kind and therefore less knowledge on the prosumer working modality. • No specific renewable energy equipment standards for Bhutan

<ul style="list-style-type: none"> • Robust oversight and governance requirements and a clear chain of accountability in place • DRE/BPC enjoys support of other relevant agencies. • Nodal agency for the implementation of AREP 2013 and have institutional linkages to most of the key stakeholders. • BPC has access to many competent suppliers and consultants providing proven design and new technologies. • All the stakeholders will provide the necessary support for the implementation of the project. 	<ul style="list-style-type: none"> • The funding and investment into renewable energy development is viewed as capital intensive. • Lack of fund support from the government for the promotion of renewable agency technologies
Opportunities	Threats
<ul style="list-style-type: none"> • New technology penetration in Bhutan related to solar photovoltaic (smart meters, solar photovoltaic and SCADA remote monitoring and control). • Livelihood improvement of villagers through energy sales. • Economic growth through energy displacement. • Project will help enhance reliability and energy security. • Adequacy assessment of the entire distribution networks can be undertaken which will help ascertain the networks capability for injection of electricity from such renewable energy technologies. • Promote private sector participation in renewable energy projects. • Platform for enhancing skills development on renewable energy technologies. 	<ul style="list-style-type: none"> • Lack of operating and maintaining skills among the beneficiaries • Transportation & logistics challenges. • Issues regarding possibility of disruption of the national grid due to integration of Solar photovoltaic with the existing grid. • Specific periods of the year would have issues with the works delivery due to the inherent difficulties arising from monsoon season. • Non availability of required tools, tackles, machines, and cranes in the remote villages during the project implementation.

ADB = Asian Development Bank, AREP = Alternative Renewable Energy Policy, BPC = Bhutan Power Corporation, DRE = Department of Renewable Energy, SCADA = supervisory control and data acquisition.

B. Support Requirements

Procurement capability and capacity	<p>As and when there is a project, Department of Renewable Energy (DRE) creates a specific project management unit (PMU) team to carry out all the project activities including the procurement. In addition, we have access to the skills and expertise of the Ministry's procurement officials.</p> <p>Within Bhutan Power Corporation (BPC), a dedicated team has been formed to deliver the project with expertise in procurement, monitoring and implementing the project.</p> <p>BPC has experience in tendering and procurement related to Japan International Cooperation Agency (JICA) and ADB funded projects as per their rules and guidelines.</p>
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	To avoid potential procurement risks, prior review of all contract packages should be considered by ADB.
Experience in implementing similar projects	<p>Most of the Projects carried out by DRE are ADB funded e.g. RREDP 0228, ACEF, Energy Plus, Japan Fund for Poverty Reduction (JFPR) 9158. Therefore, DRE have enough experience in implementing ADB funded projects.</p> <p>BPC has implemented rural electrification project funded by JICA and ADB. BPC has also implemented the wind power project and JFPR 9158 project funded by ADB. However, it is noted that the previous ADB funded projects followed ADB Procurement Guidelines (2015). Therefore, further training / support for the executing agency/implementing agency staff to conduct procurement activities under New Procurement Framework following ADB Procurement Policy (2017, as amended from time to time) / Procurement Regulations for ADB Borrowers (2017, as amended from time to time) should be considered by ADB.</p>
Contract management capability and experience	<p>As mentioned above, DRE has executed and implemented all the previous ADB and other donor funded projects without any issues. The RGOB has a clear set of rules & regulations for procuring such works/consultancy which DRE is very familiar with. In addition, the DRE is also well versed in the relevant ADB guidelines for procuring such works/activities.</p> <p>A project team (Renewable Energy Division in BPC) exists to oversee the implementation of the project including contract management and implementation however no contract management plan has been produced. The team has previous experience in delivering similar procurements and handling similar projects. The pilot wind power project was also handled by the same team.</p>
Level of reliance on external consultants	<p>DRE is the nodal agency of the RGOB which oversees and administers all the plans and policies regarding the promotion and development of renewable energy technologies in the country. The department is also responsible for outlining the long-term plans, policies, guidelines for setting out the overall national targets on the renewable energy front. Most of the aforesaid activities are carried out through International consultants while we also endeavour to entrust whatever is doable in-house to our national firms.</p> <p>BPC being a profit-making company and one of the highest revenue contributors to the government, it has a minimum reliance on external consultants regarding the energy business (distribution, transmission, and embedded generation system).</p>
Existence and description of complaints management system	<p>DRE has a clear mechanism to handle any complaints/grievances. At department level, the complaints will be brought out to PMU level which if cannot be resolved will be put up to the Director, DRE who will bring it in the departmental committee meeting. If the issue is still unresolved at the department level, it will then be directed to the ministerial committee where an amicable solution could be reached.</p> <p>Complaints can also be logged with RGOB's Anti-Corruption Commission and settled as arbitration in accordance with the laws of Bhutan.</p> <p>Any unresolved grievances could be also taken up in the court of law for final arbitrations.</p>

ACEF = Asia Clean Energy Forum, ADB = Asian Development Bank, RGOB = Royal Government of Bhutan,

RREDP = Rural Electrification and Renewable Energy Development Project.

C. Key Procurement Conclusions

DRE and BPC have procurement experience in ADB financed projects under ADB Procurement Guidelines (2015) for rural electrification projects and the pilot wind power projects. The project team is aware of the ADB's loan and grant disbursement and information system along with ADB's payment methods and withdrawal application system.

A dedicated team has been formed to deliver the project with expertise in procurement and work monitoring. There is wide range and depth of experience across not only the Procurement team but also delivering similar projects.

To avoid potential procurement risks, prior review of all contract packages is recommended and should be considered by ADB. BPC has a standard procurement manual and guidelines for any procurement related to distribution and transmission works. Any pilot projects shall be given in EPC basis depending upon the past work experience of the bidders and success history of their brand of the solar panels and equipment. In addition, training / support for the executing agency/implementing staff to conduct procurement activities under New Procurement Framework following ADB Procurement Policy (2017, as amended from time to time) / Procurement Regulations for ADB Borrowers (2017, as amended from time to time) should be considered by ADB.

D. External Influences Analysis

Governance	<ul style="list-style-type: none"> • There is a stable central and local government environment for this project to operate within. • There is a strong and established oversight and governance structures that oversees both national and international procurement. • There is a strong integrity pact established by Anti-Corruption of Bhutan that needs to be followed for any procurements • The project is delivered in an area which has no conflict.
Economic	<p>The economic environment presents a predictably stable environment for the life of the project.</p> <p>Economic Growth – Economic growth is high. At current prices, the Gross Domestic Product (GDP) of Bhutan stands at about Nu. 164,627.92 million in 2017– 2018. The GDP (in Nu) of Bhutan grew at the rate of 4.63% in 2017–2018, though it is envisaged to be 2.4% in 2020 due to COVID-19 pandemic.</p> <p>Inflation – Inflation rose moderately to 2.7 % in June 2019 from 2.6% in June 2018. It is envisaged to be 2.8% in 2020. Domestic CPI inflation over the medium term is projected at 4.7%, remaining within the range of Indian inflation target of 4 percent with a band +/-2 percent.</p> <p>Unemployment –Bhutan has an overall unemployment rate of 3.4% as of 2018.</p> <p>Exchange Rate–The Bhutanese Ngultrum is relatively stable/predictable and is pegged with the Indian Rupee. The import component to the project from other third countries is low.</p> <p>Labor Supply–Unskilled labor is relatively low cost and in supply. Skilled labor needs to be hired from other countries.</p>

Sustainability	<p>Climatic Change and Impact – Climate Change (CC) will have minimal impact on this project. This project would in fact support and promote the RGOB's effort in the mitigation of CC impacts, especially by way of curtailing firewood consumption through providing reliable electricity supply to the people.</p> <p>Waste Disposal and Recycling Capabilities – Waste disposal scheme is in place regulated by the government</p> <p>Local Environmental Standards – Strict standards and monitoring systems are in place which require adherence.</p> <p>Environmental Impact and Remedies – Potential impacts are mostly temporary, predictable, and reversible on air, water, soil and noise during construction period, and can be mitigated through adherence to national regulations and ADB's Safeguard Policy Statement (2009), design criteria, and implementation of Environmental Management Plan.</p>
Technology	<p>All the invoices/bills related to the procurement shall be through the government's EGP system. Project system module in EGP system shall be used to monitor the financial and physical progress of the project. Smart meters and optic fiber shall be used to monitor the generation, consumption, and injection of the energy from solar photovoltaic systems remotely. Net metering technology shall be used for energy accounting purposes.</p> <p>Manufacturing – Absence of a domestic manufacturing base in the country will entail us importing all the materials/ equipment from other countries.</p>

E. Key Procurement Conclusions

The external influences that could affect this project are low. There is a strong central and local government environment for the project to operate and a strong oversight and governance framework in place. Due to the need to import the materials and equipment from outside of the country there is some risk from exchange rate fluctuations and supply, but these will be minimal due to the low value of the pilot project.

F. Stakeholder Analysis and Communication Plan



Keep Satisfied	Key Stakeholders
<ul style="list-style-type: none"> • Policy and framework authorities • Utilities Sector • Regulatory Authorities • Department of Hydropower and Power Systems (DHPS), Ministry of Economic Affairs (MOEA) • Department of Technical Education (DTE), Ministry of Labour and Human Resources (MOLHR) 	<ul style="list-style-type: none"> • Ministry of Finance • Asian Development Bank • Beneficiary households • Bhutan Electricity Authority • Contracted suppliers • Consulting firm
Minimal Effort	Keep Informed
<ul style="list-style-type: none"> • Bhutan Chamber of Commerce and Industry • Druk Green Power Corporation Limited • Druk Holdings and Investments • Construction sector of Bhutan • National Environment Commission • DRC and Department of Trade for BSTEC/IDEC 	<ul style="list-style-type: none"> • Local governments (Dzongkhag & Gewogs) • Royal Monetary Authority (RMA) General Community/Public • Supplier market • Potential bidders • Internal staffs

G. Stakeholder Communication Plan

Key Stakeholder Group

Stakeholder name and role	<ul style="list-style-type: none"> • Ministry of Finance • Asian Development Bank • Beneficiary Households • Bhutan Electricity Authority • Contracted suppliers • Consulting firm
Interest in the project?	High Interest
Support and influence level	High Power and Influence High Level of Support

Objections, drivers, needs, and levers	<p>The objectives of the key stakeholder group are linked to knowledge on:</p> <ul style="list-style-type: none"> • Successful project delivery, • Fulfilment of the project requirements, • Timeframes, • Quality and cost, and • Compliance. <p>The drivers for this group are quite varied, and include:</p> <ul style="list-style-type: none"> • Project development objectives, • Benefit realization, and • Seeking information (to pass on to consumers).
Action	<p>Generally, the stakeholders in this group have a positive approach and outlook to the project.</p> <p>Actions required will support the continuation of this supportive approach and outlook.</p>
Responsible, accountable, consulted, or informed?	<p>The stakeholders in this group are either responsible, accountable or consulted depending on their drivers and involvement in the management of the project.</p>
Communicate what, when, and how?	<p>Most communication with the key stakeholders will be led by face-to-face communications for this stakeholder group, however face to face opportunities will also be supported by:</p> <ol style="list-style-type: none"> 1. Regular reporting; 2. Online content and communications; 3. Presentations; 4. Meetings; and 5. Paper documentation (as required). <p>DRE will have responsibility for communicating to this stakeholder group.</p> <p>Communication will be scheduled and regular, as well as ad-hoc as required.</p>

Keep Satisfied Stakeholder Group

Stakeholder name and role	<ul style="list-style-type: none"> • Policy and framework authorities • Utilities sector • Regulatory authorities • Department of Hydropower and Power Systems (DHPS), MOEA • Department of Technical Education (DTE), MOLHR
Interest in the project?	Low Interest
Support and influence level	High level of Power and Influence
Objections, drivers, needs, and levers	<p>The objectives of the keep satisfied stakeholder group are linked to knowledge on:</p> <ul style="list-style-type: none"> • General updates, • Scheduling, and specific impacts. <p>The drivers for this group are quite varied, and include:</p> <ul style="list-style-type: none"> • Joint inspections with contractors, • Least shutdown times, • Coordination of activities, and • Minimization of disruptions.
Action	<p>Generally, the stakeholders in this group have a positive approach and outlook to the project.</p>

	Administrative approvals and co-ordination of efforts to minimize disruption are an important part of the requirements of this group. Therefore, the important actions include: <ul style="list-style-type: none"> • Timely consultation/information on any disruptions, and • Advance information on co-ordination requirements.
Responsible, accountable, consulted, or informed?	The stakeholders in this group are to be informed and consulted.
Communicate what, when, and how?	Most communication will be electronic communication via email, website and online data or face to face.

Minimal Effort Stakeholder Group

Stakeholder name and role	<ul style="list-style-type: none"> • Bhutan Chamber of Commerce and Industry • Druk Green Power Corporation Limited • Druk Holdings and Investments • Construction sector of Bhutan • National Environment Commission • DRC and Department of Trade for BSTEC/IDEC
Interest in the project?	Low interest
Support and influence level	Low power and influence
Objections, drivers, needs, and levers	<p>The objectives of the minimal effort stakeholder group are linked to knowledge on:</p> <ul style="list-style-type: none"> • Project timings and schedule (especially in relation to implementation periods) • Development of works and impacts • Good news stories <p>The drivers for this group are quite varied, and include:</p> <ul style="list-style-type: none"> • Area development • Possible revenue • Public support • Business development
Action	<p>Generally, the stakeholders in this group have a positive approach and outlook to the project.</p> <p>The needs of the group are linked to:</p> <ul style="list-style-type: none"> • Timely information (especially for approval items which could delay the progress of the project), and • Compliance to regulations.
Responsible, accountable, consulted, or informed?	This stakeholders in this group are to be informed.
Communicate what, when, and how?	<p>Communication in this area will be a mixture of:</p> <ol style="list-style-type: none"> 1. Media-Based 2. Online 3. Marketing and Information dissemination materials (brochures, newsletters, flyers) <p>DRE will have responsibility for communicating to this stakeholder group.</p> <p>Communication will be scheduled and regular to ensure that the stakeholders are appropriately informed.</p>

Keep Informed Stakeholder Group

Stakeholder name and role	
<ul style="list-style-type: none"> • Local governments (Dzongkhag & Gewogs) • Royal Monetary Authority (RMA) General Community/Public • Supplier market • Potential bidders • Internal staffs 	
Interest in the project?	High Interest
Support and influence level	High to Medium Power and Influence
Objections, drivers, needs, and levers	<p>The objectives of the keep informed stakeholder group are linked to knowledge on:</p> <ul style="list-style-type: none"> • Project timings and schedule (especially in relation to implementation periods) • Development of works and impacts • Good news stories <p>The drivers for this group are quite varied, and include:</p> <ul style="list-style-type: none"> • Area development • Possible revenue • Public support • Business development
Action	<p>Generally, the stakeholders in this group have a positive approach and outlook to the project.</p> <p>The needs of the group are linked to:</p> <ul style="list-style-type: none"> • Timely information (especially for approval items which could delay the progress of the project) • Compliance to regulations
Responsible, accountable, consulted, or informed?	This stakeholders in this group are to be informed.
Communicate what, when, and how?	<p>Communication in this area will be a mixture of:</p> <ol style="list-style-type: none"> 1. Media-Based 2. Online 3. Marketing and Information dissemination materials (brochures, newsletters, flyers) <p>DRE will have responsibility for communicating to this stakeholder group.</p> <p>Communication will be scheduled and regular to ensure that the stakeholders are appropriately informed.</p>

H. Key Procurement Conclusions

There are many stakeholders that have a keen interest in this project. Communication with the stakeholder groups as mapped above include a range of methods that are deemed suitable in line with the mapping.

The project team is responsible for communicating with all stakeholder groups and should produce a communication schedule with a regular reporting as set out in the plan.

Section 3: Market Analysis

A. Porter's Five Forces

Supply and installation of 300 residential solar photovoltaic systems

Competitive rivalry	<p>There are several contractors in the international and domestic market to bid for the supply and installation of 300 residential solar photovoltaic systems packages such as:</p> <ul style="list-style-type: none"> • Trina Solar – PRC • Jinko Solar - PRC • Vikram Solar – India • Sunrun - US • Vivint Solar - US • Panasonic – Japan • Hanwha Solar – Korea • SunPower – US • Canadian Solar – Canada • Jattu Solar – Dealer (Bhutan)
Bargaining power of buyers	The bargaining power of buyer is medium as although there are multiple suppliers in the market the relatively low value of the packages may affect interest levels from suppliers.
Bargaining power of suppliers	All would be interested in taking up projects in Bhutan on EPC basis with project worth above \$1 million. The bargaining power of suppliers is medium due to the number of possible suppliers who can deliver the work on EPC basis.
Risk of new entrants	Risk of new entrant would be unlikely to impact the market significantly.
Risk of substitutes	There is a low risk of substitutes.

Supply of 300 bi-directional smart energy meters

Competitive rivalry	<p>There are several contractors in the international market to bid for the packages such as:</p> <ul style="list-style-type: none"> • Itron – America • Secure - India • Actaris – India • Siemens – Germany
Bargaining power of buyers	The bargaining power of buyers is medium due to the relatively low value of the package.
Bargaining power of suppliers	The bargaining power of suppliers is medium due to the number of possible suppliers who can deliver the work in EPC basis.
Risk of new entrants	Risk of new entrant would be unlikely to impact the market significantly.
Risk of substitutes	There is a low risk of substitutes.

Supply of Energy Based Livelihood Equipment

Competitive rivalry	The equipment is small and off the shelf, there are many local suppliers in the market who be willing to provide quotations.
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Bargaining power of buyers	The bargaining power of buyer is high considering that there are multiple suppliers.
Bargaining power of suppliers	The bargaining power of suppliers is low due to the huge number of suppliers who can deliver the equipment.
Risk of new entrants	There will be new entrants, but the risk is low as this is small contract.
Risk of substitutes	There is a low risk of substitutes.

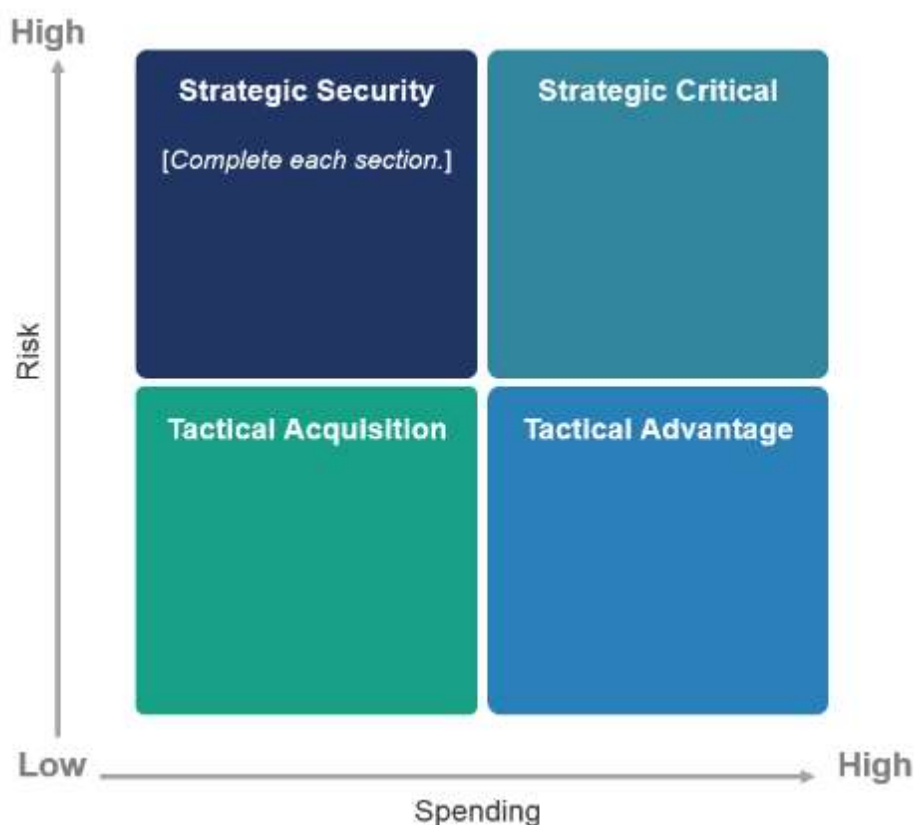
B. Key Procurement Conclusions

Overall, there is considerable interest from the market for supply of both the solar equipment, software and livelihood supplies. The relatively low value of the procurement items may increase the supply risk somewhat.

To combat these risks, bid packaging must be carefully considered to ensure maximum attraction of the bid to interested suppliers.

As most goods will be sourced from outside of Bhutan, packages must be advertised internationally to ensure maximum exposure to interested suppliers.

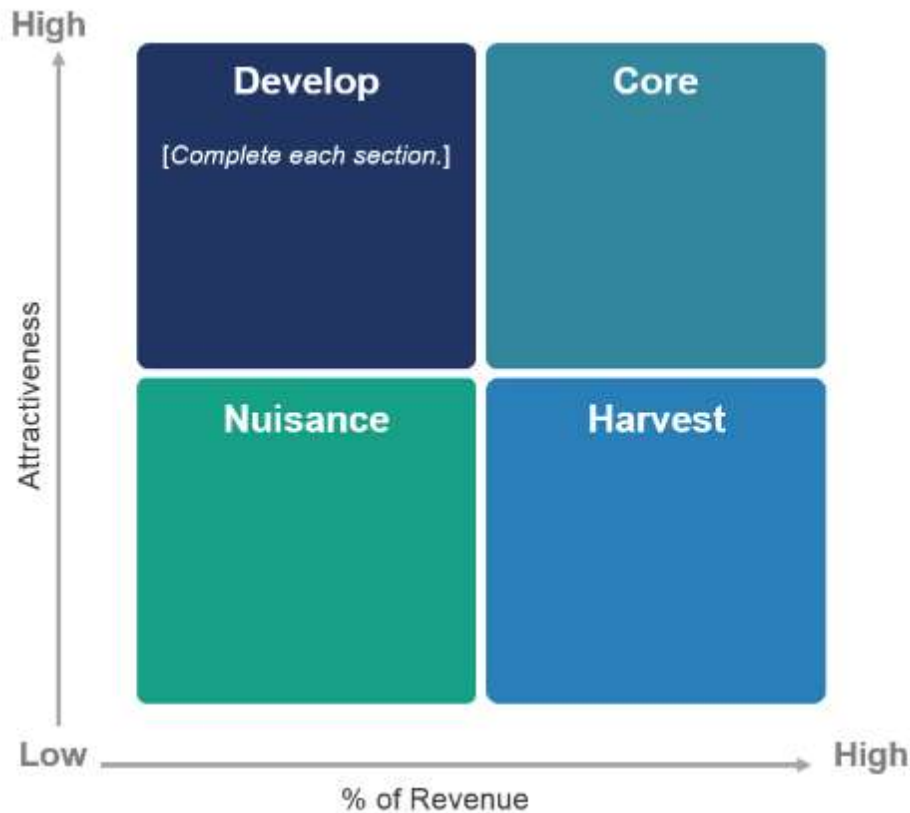
C. Supply Positioning



For all packages to be procured under this project, all suppliers would fall into the tactical acquisition category. Whilst the various packages are low in value, as this is a pilot project,

suppliers should be interested in providing the services due to the possibility of a larger project being procured after successful pilot implementation.

E. Supplier Preferencing



For most of the packages in this project the suppliers would be positioned in the develop category. As previously mention, as this is a pilot project, whilst the revenue would be relatively small for the supply market, there would be a reasonably high level of attractiveness due to the potential for future business.

For the equipment category, as the goods are routine and off the shelf, they may fall with the nuisance category, however due to the high number of suppliers this poses little risk to project delivery.

Section 4: Risk Management

A. Project Procurement Risk Assessment Risk Register

No.	Risk Type	Risk Description	Impact	(L) (1-5)	(I) (1-5)	Risk Score (L x I)	Proposed Mitigation	Risk Owner
1	Procurement risk	Risk of international bidders not bidding for the project.	The desired amount and quality of suppliers are unavailable to respond to the procurement resulting delaying the project.	2	2	4	Conduct pre-market engagement to raise awareness. Incentivize new entrants, attractiveness (including more lucrative), better management, communications and fast and easy payments or early completion incentives.	Project team
2	Procurement risk	Risk of complaints challenging the procurement process or outcome could cause delays due to legal action or changes required.	The procurement process is delayed.	1	4	4	Follow open and transparent process.	Project team
3	Procurement risk	Bids received are of a higher cost than the estimates indicated.	The project must secure extra funding, reduce the final project outputs or to rerun the procurement.	2	4	8	Pre-market engagement. More detailed cost estimation. More due diligence.	Project team
4	Contract implementation	Lack of capacity to implement the project.	Project implementation delays and cost increases.	2	3	6	Conduct capability building and formulate contract management plan along with the bidding documents.	Project team
5	Contract implementation	All relevant documents for the procurement are not submitted according to the schedule.	Project implementation delays and cost increases.	3	4	12	Suitable project monitoring. Install competent contract management team, provide damages for delaying time for completion.	Project team

6	Contract implementation	Sub-optimal collaboration with various departments and stakeholders.	Increased inefficiencies and potential disruption to project schedule.	3	3	9	Communication (between all parties and contractors).	Project team and selected contractor
7	Contract implementation	Selection of incompetent contractor/s (technically & financially).	Delays in supply of materials. Works may not be implemented professionally. These factors may lead to the cancellation of the contract and redoing the procurement all over. Such a situation will delay the project & increase costs.	1	5	5	Frame stringent criteria for selection; increase the work experience requirement of bidders; ask for similar prior work experiences; and increase the financial stability requirement of bidders.	Project team
8	Contract implementation	Quality of the works delivered is sub-optimal.	Delays as work needs to be re-completed and additional costs of sourcing potential replacements.	2	4	8	Photovoltaic systems have been widely adopted all over the world, and the technology is matured. While the likelihood is not high, implementing agency will conduct regular checks and inspections. Capable team of consultants for contract management and construction supervision.	Project team
9	Contract implementation	Reduced availability of raw materials needed to complete the project.	Project is delayed, and/or additional costs incurred.	3	3	9	Realistic schedule. Timely approval of orders. Bid evaluation criteria.	Project teams and selected contractor
10	Contract implementation	Quality standards of the equipment delivered is sub-optimal.	Reduces the project intervention value.	2	4	8	Conduct proper checks and inspections (if required at the manufacturer's premises). Consult with the experts before procurement.	Project team

11	Contract implementation	Timely approval of the relevant procurement documents.	Project implementation delays and cost increases.	1	4	4	Communication (between all parties and contractors). Proper scheduling.	Project team/ADB,
12	Contract implementation	Price escalation due to currency exchange.	Additional incurred costs	2	3	6	Accept the risk and reflect it in the contract condition. Prepare some price contingency.	Project team
13	Contract implementation	Change in scope of work.	Project is delayed, and/or additional costs incurred.	1	4	4	Detailed project planning. Well defined specifications. Clear mechanism in the contract to deal with the variations.	Project team
14	Contract implementation	Reputational risk damage to borrower due to contractors' behaviour.	Project delays.	2	3	6	Effective contract and supplier management.	Project team
15	Contract implementation	Scheduling of activity does not account for local activities such as festivals, harvests, holidays, or other specific local events.	Project is delayed, and/or additional costs incurred.	1	3	3	Effective scheduling and contract implementation schedule.	Project team
16	Contract implementation	Process of required permits, license, and clearances.	Project is delayed due to not getting permits, license, and clearances on time	1	2	2	Effective scheduling on permit documents before the start of the project.	Project team
17	Contract implementation	Transportation issues due to the rough and narrow terrain roads at villages.	Project is delayed due to transportation delay.	4	3	12	Effective transportation scheduling depending on the monsoon rainy season in Bhutan.	Project team

18	After project completion	Operation and maintenance of the solar photovoltaic system and smart meters.	Breakdown of the system.	2	3	6	BPC should take care of the system and mitigate by O&M training for better utilization of the asset.	Project team/DRE
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Section 5: Option Analysis

A. Option Analysis

Package	Option	Analysis
Solar photovoltaic system	Procurement Method	
	1. OCB with international advertisement	<p>This is the standard competitive bidding procedure which results in optimum transparency.</p> <p>This procedure introduces competition among bidders and make the bidders to propose the lowest rate or proper market rate.</p> <p>As the solar photovoltaic technology is mature and has been widely adopted, certain quality can be assured by preparing bidding documents with proper technical requirements. Also considering that there are enough potential suppliers, there are no disadvantages in using OCB method.</p>
	2. Merit-point evaluation	<p>Merit-point evaluation criteria for goods & works contracts is like QCBS on consulting service contracts. Instead of selecting the lowest price bidder, the executing agency may select a bidder that offers better quality at higher price based on the merit-point evaluation criteria.</p> <p>However, the executing agency must spend additional time to prepare detailed evaluation criteria for merit point evaluation and to evaluate the proposals submitted by the bidders.</p> <p>This evaluation method ensures that the executing agency will receive the highest quality product whilst still achieving a competitive price.</p>
	Bidding Documents	
	1. Goods 2. Plant	The executing agency may consider using the standard bidding documents (SBD) for plant due to the installation component. However, as the installation may be simple and shares a small proportion of the contract, the SBD for goods can be used.
<p>Preferred option:</p> <p>Department of Renewable Energy (DRE) and Bhutan Power Corporation (BPC) have experience in procurement of facility, equipment, and goods with OCB under ADB projects, and are familiar with this option. This will also save project implementation time compared with the other option, while the timespan is one of the challenges of the project implementation. The use of merit-point evaluation will balance quality with cost maximizing value for money. However, the solar photovoltaic market is homogeneous and competitive. The technical and/or geographical challenges of the project will be addressed through village selection criteria and the conditions in the bidding document. OCB is the preferred option using the SBD for goods with installation services.</p>		
Package	Option	Analysis
Bi-directional electric meter	1. OCB	This is the traditional and most prevail procurement method and transparent in terms of procedure.
	2. RFQ	Considering the low value of the package, RFQ would be an option to make the process more efficient.

	3. Direct contracting	The amount of the package is less than 100,000, it is eligible for the direct contracting.
<p>Preferred option:</p> <p>The project requires only 300 meters. To procure this small amount through OCB is not preferable as (i) there may be less or no competition as not many suppliers are expected to be attracted to this small package, and (ii) it is not efficient to go through all procedures spending much resource and time for this small package. Furthermore, as some customizations are required for the meters to make them compatible to the implementing agencies' existing metering system, lower price is not expected from other suppliers than the current supplier for this small package. Under the circumstances, direct contracting, with due diligence in the assessment of the reasonability of the offered prices and eligibility of the supplier (Secure Meters Limited), is the most preferred option.</p>		

Package	Option	Analysis
Software upgrade	Direct contracting	The amount of the contract is very small, which is \$25,000, and this is upgrading the existing software currently used by the BPC to add some functions for collecting data from bi-directional meters and integrating it to the existing billing system. Only the supplier who provided the existing software system can upgrade it without any interface issue. Direct contracting is considered only one option.

Package	Option	Analysis
Energy-based livelihood equipment	1. RFQ	The amount of the contract is very small which is \$25,000. As there have been country wide activities undertaken by the Ministry of Agriculture and Forest in Bhutan, the market is mature and there are several well know suppliers in the country.
	2. Direct contracting	This is eligible for direct purchase however it may cause the executing agency a problem in terms of reputation and fairness, the executing agency is not keen to this option for the package.
<p>Preferred option:</p> <p>To seek competition among the several suppliers in the market and to encourage them to proposed adequate market price with proper orientation, RFQ is more suitable and preferred option.</p>		

ADB = Asian Development Bank, OCB = open competitive bidding, QCBS = quality- and cost-based selection, RFQ = request for quotation.

Section 6: Procurement Plan

Procurement of Goods, Works, and Consulting Services

Advance Contracting and Retroactive Financing¹

61. All advance contracting and retroactive financing will be undertaken in conformity with ADB's Procurement Policy (2017, as amended from time to time)² and Procurement Regulations for ADB's Borrowers (2017, as amended from time to time)³. The issuance of invitations to bid under advance contracting and retroactive financing will be subject to ADB approval. The recipient, DRE and BPC have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the project.

62. **Advance contracting.** To expedite project implementation, ADB endorsed the government's request for advance contracting actions for procurement of goods, works and consulting services. The steps to be concluded in advance includes (i) recruitment of consultants; and (ii) preparation of tender documents, inviting and receiving bids for contract packages, and awarding contracts.

63. **Retroactive financing.** ADB also endorsed the government's request for retroactive financing for the eligible expenditures up to \$600,000, the equivalent of 20% of the total grant, incurred before grant effectiveness, but not more than 12 months before the signing of the grant agreement.

Procurement of Goods, Works, and Consulting Services

64. All procurement of goods, works and consulting service will be undertaken in accordance with ADB's Procurement Policy (2017, as amended from time to time). An 18-month procurement plan indicating review procedures, goods, works, and consulting service contract packages is in section C.

65. Open competitive bidding procedures will be used for the procurement of goods, works and consulting service, except for direct contracting procedure for the bi-directional meters and update of existing meter-reading software, and request for quotation procedure for energy-based livelihood equipment.

66. The terms of reference for all consulting services are detailed in section D. A consulting firm, estimated 77.5 person-months (25 international, 52.5 national), is required to (i) study regulatory requirements for the promotion of alternative renewable energy and prepare tariff structure for residential solar photovoltaic systems; (ii) support the executing agency/implementing agencies in technical adequacy assessment and small-scale photovoltaic system installation; (iii) undertake an awareness campaign on the benefits of the solar photovoltaic system and safe and efficient use of energy including socio-economic baseline data collection; (iv) make record of the project progress, challenges and achievement; and (v) assist PMU in implementation of the project. A consulting firm will be engaged using the quality- and cost-based selection (QCBS) method with a quality–cost ratio of 90:10.

¹ Prior approval on the use of advance contracting and retroactive financing must be obtained from the management.

² Available at <https://www.adb.org/documents/adb-procurement-policy>.

³ Available at <https://www.adb.org/documents/procurement-regulations-adb-borrowers>.

Procurement Plan

Basic Data		
Project Name: Alternative Renewable Energy Pilot Project		
Project Number: 53365-001	Approval Number: G9211	
Country: Bhutan	Executing Agency: Department of Renewable Energy, Ministry of Economic Affairs	
Procurement Risk: Low	Implementing Agency: Department of Renewable Energy, Ministry of Economic Affairs; and Bhutan Power Corporation Limited	
Project Financing Amount: \$ 3,000,000 ADB Financing: \$ 0 Cofinancing (ADB Administered): \$3,000,000 Non-ADB Financing: \$ 0	Project Closing Date: 31 December 2024	
Date of First Procurement Plan: 21 October 2020	Date of this Procurement Plan: 21 October 2020	
Procurement Plan Duration: 18months	Advance contracting: yes	eGP: no

ADB = Asian Development Bank.

A. Methods, Review and Procurement Plan

Except as the Asian Development Bank (ADB) may otherwise agree, the following methods shall apply to procurement of goods, works, nonconsulting services, and consulting services.

Procurement of Goods, Works and Nonconsulting Services	
Method	Comments
Open competitive bidding with international advertising for goods	As there are not many contractors for solar photovoltaic systems within the country, international advertising is warranted.
Request for quotation for goods	For energy-based livelihood equipment, ready-made products can be purchased from local market. There are several well know suppliers in the country.
Direct contracting for goods	For electric meters, entire OCB process is less efficient, because less competition is expected for this small amount of package. For the update of the existing software, it should be done by original supplier due to technical requirements.

Consulting Services	
Method	Comments
Open competitive bidding with international advertising, using quality- and cost-based selection for consulting services with 90:10 ratio.	One consulting firm is required to conduct a study and to assist the executing agency/implementing agencies implementation. International advertising is warranted.

B. List of Active Procurement Packages (Contracts)

The following table lists goods, works, nonconsulting, and consulting services contracts for which the procurement activity is either ongoing or expected to commence within the procurement plan's duration.

Goods, Works, and Nonconsulting Services							
Package Number	General Description	Estimated Value (\$)	Procurement Method	Review	Bidding Procedure	Advertisement Date	Comments
1	Supply and installation of solar photovoltaic systems including remote monitoring device.	1,655,500	OCB	Prior	1S2E	Q2 2021	Advertising: International Prequalification of bidders: No Domestic preference: No Bidding documents: Goods Advance contracting: Yes E-procurement: No
2	Supply of bi-directional electric meters with modem	99,330	Direct contracting (Supplier: Secure Meters Limited)	Prior		Q4 2020	Bidding documents: Goods Advance contracting: Yes E-procurement: No
3	Update of existing software for metering	25,000	Direct contracting (Supplier: Thimphu Tech Park Limited)	Prior		Q4 2020	Bidding documents: Goods Advance contracting: Yes E-procurement: No
4	Supply of energy-based livelihood equipment.	30,000	Request for Quotation	Prior		Q3 2021	Bidding documents: Goods Advance contracting: Yes E-procurement: No

1S2E = single-stage-two-envelope, OCB = open competitive bidding, Q = quarter.

Consulting Services							
Package Number	General Description	Estimated Value (\$)	Selection Method	Review	Type of Proposal	Advertisement Date	Comments
5	(i) Study regulatory requirements and prepare tariff structure for photovoltaic systems (ii) Support of technical adequacy assessment (iii) Awareness campaign and baseline data collection (iv) Make record of project progress, challenges, and achievement (v) Assist PMU in project implementation	\$590,000	QCBS	Prior	STP	Q3 2020	Quality-Cost Ratio: 90:10 Advertising: International Advance contracting: Yes E-procurement: No

Q = quarter, QCBS = quality- and cost-based selection, STP = simplified technical proposal.

C. List of Indicative Packages (Contracts) Required under the Project

The following table lists goods, works, nonconsulting, and consulting services contracts for which the procurement activity is expected to commence beyond the procurement plan duration and over the life of the project (i.e. those expected beyond the current procurement plan's duration).

Goods, Works and Nonconsulting Services						
Package Number	General Description	Estimated Value (\$)	Procurement Method	Review	Bidding Procedure	Comments
[None]						

Consulting Services						
Package Number	General Description	Estimated Value (\$)	Selection Method	Review	Type of Proposal	Comments
[None]						

D. List of Awarded and Completed Contracts

The following table lists the awarded contracts and completed contracts for goods, works, nonconsulting, and consulting services.

Goods, Works and Nonconsulting Services					
Package Number	General Description	Contract Value	Date of ADB Approval of Contract Award	Date of Completion	Comments
[None]					

ADB = Asian Development Bank

Consulting Services					
Package Number	General Description	Contract Value	Date of ADB Approval of Contract Award	Date of Completion	Comments
[None]					

ADB = Asian Development Bank

E. Non-ADB Financing

The following table lists goods, works, nonconsulting, and consulting services contracts over the life of the project, financed by non-ADB sources.

Goods, Works and Nonconsulting Services				
General Description	Estimated Value (cumulative, \$)	Estimated Number of Contracts	Procurement Method	Comments
[None]				

Consulting Services				
General Description	Estimated Value (cumulative, \$)	Estimated Number of Contracts	Recruitment Method	Comments
[None]				

F. Consultant's Terms of Reference

67. A consulting firm will be recruited to support the PMU's project implementation. Terms of Reference (TOR) for the consulting firm has been developed.