



Project Administration Memorandum

Project Number: 37399
Grant 0119 (ADF)
February 2009

BHUTAN: GREEN POWER DEVELOPMENT (Rural Electrification (RE) 4 - On-Grid)

The project administration memorandum is an active document, progressively updated and revised as necessary, particularly following any changes in project or program costs, scope, or implementation arrangements. This document, however, may not reflect the latest project changes.

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 1 September 2008)

Currency Unit – ngultrum (Nu)

Nu1.00 = \$0.023

\$1.00 = Nu43.95

ABBREVIATIONS

ACEF	–	Asian Clean Energy Fund
ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
BEA	–	Bhutan Electricity Authority
BPC	–	Bhutan Power Corporation
CDTA	–	capacity development technical assistance
DGPC	–	Druk Green Power Corporation
DHI	–	Druk Holding and Investments
DHPC	–	Dagachhu Hydro Power Corporation
DOE	–	Department of Energy
EIA	–	environmental impact assessment
FYP	–	five-year plan
EIA	–	environmental impact assessment
EMP	–	environmental management plan
ICB	–	international competitive bidding
IDA	–	International Development Association
IEE	–	initial environmental examination
IMF	–	International Monetary Fund
NCB	–	national competitive bidding
NEC	–	National Environment Commission
NPPF	–	National Pension and Provident Fund
OCR	–	ordinary capital resources
OeKB	–	Oesterreichische Kontrollbank Aktiengesellschaft (Austrian export credit agency)
PPA	–	power purchase agreement
PPP	–	public–private partnership
RED	–	Renewable Energy Division
TA	–	technical assistance
THPA	–	Tala Hydroelectric Project Authority
TPC	–	Tata Power Company
TPTC	–	Tata Power Trading Company

WEIGHTS AND MEASURES

GWh	–	gigawatt-hour
kV	–	kilovolt, 1,000 volts
kWh	–	kilowatt-hour
MW	–	megawatt

NOTES

- (i) The fiscal year (FY) of the Government ends on 30 June. The fiscal year of its companies ends on 31 December. FY before a calendar year denotes the year in which the fiscal year ends.
- (ii) In this report, "\$" refers to US dollars.

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LOAN/GRANT PROCESSING HISTORY

	Date(s)
a. Approval of Project Preparatory Technical Assistance	29 January 2007
b. Fact-Finding	5-23 February 2008
c. Management Review Meeting (MRM)	1 July 2008
d. Appraisal Mission	10-23 July 2008
e. Staff Review Committee (SRC)	4 September 2008
f. Loan Negotiations	15-18 September 2008
g. Board Circulation	08 October 2008
h. President's Consideration and Approval	29 October 2008
i. Government of Japan approval of ACEF Grant	26 December 2008
j. Loan, Grants and Project Agreements Signing	13 February 2009
k. Grant Effectiveness, including Conditions	at latest 13 May 2009
(i) the execution and delivery of the Project Agreement on behalf of BPC shall have been duly authorized or ratified by all necessary corporate and governmental action;	
(ii) the BPC Subsidiary Financing Agreement, in form and substance satisfactory to ADB, shall have been duly executed and delivered on behalf of the Recipient and BPC and shall become fully effective and binding upon the Recipient and BPC in accordance with its terms, subject only to the effectiveness of this ADF Grant Agreement;	
(iii) the Project Agreement has been duly authorized by or ratified by, and executed and delivered on behalf of BPC and is legally binding upon BPC in accordance with its terms, subject only to the effectiveness of this ADF Grant Agreement;	
(iv) the BPC Subsidiary Financing Agreement has been authorized by or ratified by, and executed and delivered on behalf of, the Recipient and BPC and is legally binding upon the Recipient and BPC in accordance with its terms, subject only to the effectiveness of this ADF Grant Agreement;	
.	
l. Physical Completion Date	30 Jun 2013
m. Loan/Grant Closing Date	31 Dec 2013

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/ Reporting Mechanisms	Assumptions and Risks
<p>Impact Sustained inclusive economic growth through promoting cross-border power trade and electricity access.</p>	<p>Increase in the energy sector share of GDP from 25% to 40% (2017) with annual GDP growth increased at least 2%–3% from 2012 to 2017</p> <p>Increase in the energy sector share of the government revenue from 45% to 75% (2020), through clean energy export to India with an additional 10,000 MW electricity (2020)</p> <p>Increase in use of electric lighting (to replace kerosene lamps or firewood), from 40% to 100% (2013) of rural households¹</p>	<p>Government statistical and census reports</p> <p>UNDP human development report</p> <p>Economic reports of Government, ADB, IMF, and World Bank</p>	<p>Assumptions</p> <ul style="list-style-type: none"> • Political stability • Government's high policy priority to rural development and hydropower export • Stable economic growth in South Asia • Bilateral and multilateral assistance for rural electrification expansion <p>Risks</p> <ul style="list-style-type: none"> • Exogenous economic and political shocks
<p>Outcome Expanded coverage of clean power development</p>	<p>Increase in access to electricity by rural and urban households, achieving a cumulative national electrification ratio from 60% to 84% (2012)</p> <p>Increase in hydropower export revenue of the total national account from 40% to 45% (2013)</p> <p>Increase in investment size from the public and private sectors to hydropower development projects with minimum additional 1,314 MW (2014)</p> <p>Annual reduction of emission gas equivalent CO₂ by 250,000 tons by 2012 and by 500,000 tons in a cross-country</p>	<p>Quarterly project progress reports and completion report</p> <p>Audit financial accounts and reports</p> <p>National statistics</p> <p>Government's fiscal statements</p> <p>Economic reports of Government, ADB, IMF, and World Bank</p>	<p>Assumptions</p> <ul style="list-style-type: none"> • Government's commitment to promote development for hydropower and rural electrification • Continuation of the existing investment program and regulatory framework • Promotion of a new policy for private participation • Strong demand and supply shortage in the Indian power market • Government's sustainable public debt management • Bilateral assistance from the Government of India for hydropower developments • Bilateral assistance from JBIC for rural electrification

¹ The Government has revised the target year to achieve 100% electrification from 2020 to 2013.

Design Summary	Performance Targets/Indicators	Data Sources/ Reporting Mechanisms	Assumptions and Risks
	<p>basis after 2012 on onward</p> <p>Continued overall power system loss below 10% and power sector's financial health including sufficient debt service coverage (minimum 1.2) and net profit generation</p>		<p>Risks</p> <ul style="list-style-type: none"> • Off-taker's serious default • Prolonged significant hydrological shortage because of natural disaster and climate change
<p>Outputs</p> <p>1. Dagachhu Hydropower Development</p> <p>2. Rural Electrification</p> <p>3. Attached CDTA: Promotion of Clean Power Export Development</p> <ul style="list-style-type: none"> - Capacity Building for hydropower - Financial structuring study for medium-size hydropower projects - Preparation of documents for carbon finance 	<p>Construction of a 114 MW run-of-river Dagachhu hydropower plant by 2012</p> <p>Construction of a 19 km transmission line to evacuate to the grid system by 2012</p> <p>Clean and renewable energy export of additional 250 GWh to India by 2012 and 500 GWh after 2012</p> <p>Provision of reliable power supply and service to 8,767 rural households and 119 off-grid public institutions (schools, health clinics, and other community facilities) in seven subprojects by 2012</p> <p>Full operation of the Druk Green Power Corporation, through the corporate accounting policy (2009) and integrated management information system (2011)</p> <p>Implementation of the Hydropower Development Policy, through two sample projects with public and/or private investments</p>	<p>ADB review missions' aide memoires</p> <p>Quarterly project progress reports</p> <p>Project completion report</p> <p>Withdrawal applications, and disbursement and contract award records</p> <p>Audit of financial accounts and reports</p> <p>Government's fiscal statement</p> <p>CDM monitoring report</p>	<p>Assumptions</p> <ul style="list-style-type: none"> • Government's commitment to carry out the Green Power Development Project • Timely mobilization of counterpart funds, equities, and cofinancing • Firm commercial agreement (i.e., power purchase agreement, emission reduction underwriting contract) • High quality of construction contractors and equipment • Accessibility to the development sites <p>Risks</p> <ul style="list-style-type: none"> • Unexpected cost increases in commodities and raw materials beyond contingencies • Construction delays due to slow procurement, natural disaster, or design changes • Lack of sufficient and appropriate human resources and expertise

Design Summary	Performance Targets/Indicators	Data Sources/ Reporting Mechanisms	Assumptions and Risks
	Financial structuring proposals of Nikachhu (210 MW) and Khomachhu (326 MW) development before 2011		
Activities with Milestones 1. Dagachhu Hydropower Component 1.1 Endorsement and disclosure of the resettlement plan to affected people by June 2008 1.2 Advance procurement by July 2008 1.3 Endorsement and disclosure of the summary initial environmental examination by September 2008 1.4 Completion of physical land acquisition and compensation with revised rates by the fourth quarter 2008 1.5 Contract award by the first quarter 2009 1.6 Physical construction by 2012 1.7 Operation by the second quarter 2012 2. Rural Electrification Component 2.1 Advance procurement by the fourth quarter 2008 2.2 Contract award by the first quarter 2009 2.3 Physical construction by 2012 3. Promotion of Clean Power Export Development (CDTA) 3.1 Consultant selection process by the fourth quarter 2008 3.2 Contract award by the first quarter 2009 3.3 Consultant fielding by the first quarter 2009 3.4 Completion of CDTA by the fourth quarter of 2010			Inputs Dagachhu Hydropower Financing (\$ million) <ul style="list-style-type: none"> • ADB 80.0 • Bhutan Public Sector 45.0 • Cofinancing 55.5 • Private sector 21.0 Rural Electrification Financing (\$ million) <ul style="list-style-type: none"> • ADB 25.28 • Government 6.70 • ACEF 1.00 Attached CDTA (\$ '000) <ul style="list-style-type: none"> • ADB 1,488 • Government 24

ACEF = Asian Clean Energy Fund, ADB = Asian Development Bank, CDM = Clean Development Mechanism, CDTA = capacity development technical assistance, GDP = gross domestic product, GWh = gigawatt-hour, IMF = International Monetary Fund, JBIC = Japan Bank for International Cooperation, MW = megawatt, TA = technical assistance, UNDP = United Nations Development Programme.

I. PROJECT DESCRIPTION

A. Project Area and Location

1. Under the Green Power Development Project ("the Project"), the rural electrification system will be extended to provide clean and reliable power supply to rural areas mainly in seven districts of Bhutan namely Pemagatshel, Punakha, Samdrup Jongkhar, Sarpang, Trashigang, and Wangduephodrang. Due to the recent changes of district boundary, part of Dagana and Mongar will also be included.

B. Impact and Outcome

2. The impact of the Project is to sustain the country's inclusive economic growth in promoting cross-border power trade and electricity access. As an outcome, the coverage of power distribution will be improved, and the export of power expanded through clean power development in a sustainable manner.

C. Project Components

3. The Project will provide separate financing for each of two major physical investments:

A. Loan Nos. 2463-BHU (\$51.0 million) and 2464-BHU(SF) (SDR18.832 million equivalent to \$29.0 million) (Dagachhu Hydropower)

(i) The Dagachhu hydropower development will be a 114 MW run-of-river, with minimal adverse environmental and social impacts. Generated power will be sold to India through the existing grid connected to India. As the first undertaking of a commercial nature in Bhutan, the Dagachhu plant will be developed through PPP to leverage private capital and maximize the impacts of the government investment. *(This component will be discussed in detail in a separate PAM).*

B. Grant 0119 - \$25.28 million - Rural Electrification (RE4) (On Grid Component) and Grant 0141 - \$1.0 million – Rural Electrification (Off Grid Component)

(ii) The rural electrification – on grid component will provide access to electricity sourced from hydropower to 8,767 households and facilities with grid extensions. *(A separate PAM is prepared for off-grid component).*

II. COST ESTIMATES AND FINANCING PLAN

A. Detailed Cost Estimates and Financing Plan

4. The ADB grant (Grant 0119) of \$25.28 million equivalent from the ADF will support the on-grid component for rural electrification. The Government will finance the balance of \$6.64 million equivalent.

5. Cost estimates are summarized in Table 1, while financing plan is in Table 2. The detailed cost estimates and financing plan are attached as **Appendix 1**.

Table 1: Project Investment Plan
(\$ million)

Item	Amount
A. Base Costs^a	
1. Regional Clean Power Trade (Dagachhu Hydropower)	161.92
a. Civil works	80.49
b. Electrical and mechanical equipment	59.22
c. Infrastructure development: road and power lines	13.95
d. Administration, supervision, and preoperative costs	8.26
2. Renewable Energy Access for the Poor (Rural Electrification)	28.45
a. On-grid component	27.46
i. Materials	20.18
ii. Civil works (delivery, erection, and installation)	5.25
iii. Tools, equipment, administrative, and overhead expenses	2.03
b. Off-grid component	0.99
i. Materials	0.71
ii. Administrative and overhead expenses	0.06
iii. Consulting services	0.22
Subtotal of Base Cost (A)	190.37
B. Contingencies^b	24.85
C. Financing Charges^c	19.23
Total Project Cost (A+B+C)	234.45

^a Include local taxes and duties of \$3.31 million which will be financed by the Government and the implementing agencies.

^b Include physical and price contingencies (12.6% of the base costs for the Dagachhu hydropower component and 15.9% for the rural electrification component).

^c Include interest, commitment fees, and guarantee fees; and interest during construction, which is computed at the London interbank offered rate (LIBOR) plus an Asian Development Bank spread and a currency swap market rate.

Source: Asian Development Bank, Bhutan Power Corporation, and Dagachhu Hydro Power Corporation estimates.

Table 2: Financing Plan
(\$ million)

Source	Dagachhu Hydropower	Rural Electrification	Total	%
Asian Development Bank				
OCR loan	51.00		51.00	
Hard-term ADF Loan	29.00		29.00	
ADF grant		25.28	25.28	
ACEF under CEFPF ^a		1.00	1.00	
Subtotal	80.00	26.28	106.28	45
Austrian Export Credit Agency	55.46		55.46	24
Government and its company and fund^b	45.01	6.70	51.71	22
Tata Power Company, India	21.00		21.00	9
Total	201.47	32.98	234.45	100

ACEF = Asian Clean Energy Fund, ADF = Asian Development Fund, CEFPF = Clean Energy Financing Partnership Facility, OCR = ordinary capital resources.

^a ACEF was established by the Government of Japan, and is administered by ADB.

^b Includes the Government of Bhutan, Druk Green Power Corporation, and National Pension and Provident Fund.

Source: Asian Development Bank, Bhutan Power Corporation, and Dagachhu Hydro Power Corporation estimates.

B. Allocation of Grant Proceeds

6. The grant proceeds were allocated in categories as shown in Table 3 below.

Grant 0119 (ADF)
Table 3: Allocation and Withdrawal of Grant Proceeds

CATEGORY			ADB FINANCING
Number	Item	Amount Allocated For ADB Financing \$	Percentage and Basis for Withdrawal from the Grant Account
1	Works	1,310,000	25 percent of total cost*
2	Equipment	330,000	100 percent of total cost*
3	Materials	20,180,000	100 percent of total cost*
2	Unallocated	3,460,000	100 percent of total cost*
	Total	25,280,000	

*Exclusive of taxes and duties imposed within the territory of the Borrower.

7. **Relending Terms:** The Government will relend the ADF grant proceeds to BPC with no interest, pursuant to a subsidiary loan agreement with terms and conditions acceptable to ADB.

III. IMPLEMENTATION ARRANGEMENTS

A. Executing Agency and Implementing Agency

8. Department of Energy (DOE) of the Ministry of Economic Affairs is the Executing Agency for the rural electrification component and is responsible for overall execution and coordination of the rural electrification component. The implementing agencies—Bhutan Power Corporation (BPC) (for the on-grid component) and DOE's Renewable Energy Division (RED) (for the off-grid component)—will undertake project implementation and administration for their respective areas.

B. Project Management Unit

9. **On-Grid component:** BPC has established its project management unit (PMU) in Thimphu. The PMU is managed by a full-time Project Director and supported by competent full time personnel. The organization structure of the PMU is in **Appendix 2**.

C. Implementation Schedule

10. Construction for the rural electrification component will be completed in a phased manner for each of seven subprojects. The implementation and project readiness schedules are in **Appendix 3**.

IV. CONSULTING SERVICES

11. Consulting services for **on-grid component** are not required considering that BPC has the capacity to implement the rural electrification component.

V. PROCUREMENT

12. For the rural electrification component, the ADB grant will mainly be used for the hard costs of material procurement using international competitive bidding (ICB). All construction works and material transportation are to be outsourced through national competitive bidding (NCB) procedures acceptable to ADB.² The procurement plan is in **Appendix 4**. ADB procurement procedure for ICB is shown in **Appendix 5**.

13. The table below shows the equipment and vehicle to be procured under on-grid component.

SI. No.	Description	Procurement Method	Estimated Cost (\$ m)	Expected Start Date of Procurement	Expected Date of Completion	PCSS No.
	ON-GRID					
1	Poles	ICB	6.9	Sep. 08	May 2010	
2	Pole fitting and accessories	ICB	2.2	Sep. 08	Jan. 2010	
3	Conductors	ICB	2.0	Sep. 08	May 2010	
4	Insulators	ICB	0.9	Sep. 08	May 2010	
5	Cables	ICB	3.6	Sep. 08	May 2010	
6	Earthing equipment	ICB	0.3	Sep. 08	May 2010	
7	Transformers	ICB	2.3	Sep. 08	Sep. 2010	
8	Conductor fittings and accessories	ICB	1.0	Sep. 08	May 2010	
9	Switching equipment and accessories	ICB	0.6	Sep. 08	May 2010	
10	Energy meters	ICB	0.1	Sep. 08	Mar. 2010	
11	Tools and equipment	ICB	0.3	May. 09	Dec. 2009	
12	1-3 phase converter	ICB	0.1	Sep. 11	Dec. 2012	
13	Vehicle (4 Pickups)	NCB	0.1	Mar. 09	Dec. 2009	
14	Transportation and erection work	NCB	1.4	Mar. 09	Jun. 2013	
	Total					

VI. DISBURSEMENT PROCEDURES

14. The Grant proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2007, as amended from time to time). The rural electrification component will use ADB's commitment letter, reimbursement, direct payment and imprest account procedures

15. Table below shows brief narrative description of each disbursement procedure to be used under the Project.

² The national competitive bidding procedure is applied as (i) the contract values are small, (ii) works are scattered across the country, and (iii) works are labor intensive.

Basic Requirements for Direct Payment, Reimbursement, Commitment and Imprest Account Disbursement Procedures

Responsible Person/Unit	Activity
<p>A. Direct Payment – The Kingdom of Bhutan (the Borrower) may request ADB to pay the supplier/contractor directly. Expenditure being claimed for ADB financing should be charged to Procurement Contract Summary Sheet (PCSS). Accordingly, before submitting the withdrawal application, please ensure that PCSS Number is obtained from ADB.</p>	
Borrower	<ul style="list-style-type: none"> • Completes the withdrawal application, summary sheet and supporting documents and forwards them to ADB for processing.
ADB	<ul style="list-style-type: none"> • Receives the completed forms, review and if in order, proceed with payment.
<p>B. Reimbursement – ADB pays the Borrower for eligible expenditures which have been incurred and paid for by the Project out of its budget allocation or its own resources. Expenditure being claimed for ADB financing should be charged to Procurement Contract Summary Sheet (PCSS). Accordingly, before submitting the withdrawal application, please ensure that PCSS Number is obtained from ADB.</p>	
Borrower	<ul style="list-style-type: none"> • Completes the withdrawal application, summary sheet and supporting documents and then forwards completed documents to ADB for processing.
ADB	<ul style="list-style-type: none"> • Receives the completed forms, review and if in order proceed with payment.
<p>C. Commitment – ADB, at the request of Borrower, provides an irrevocable undertaking to reimburse a commercial bank for payments to supplier against a letter of credit. Expenditure being claimed for ADB financing should be charged to Procurement Contract Summary Sheet (PCSS). Accordingly, before sending the application for issuance of commitment letter, please ensure that PCSS Number is obtained from ADB.</p>	
Borrower	<ul style="list-style-type: none"> • Completes application for issuance of commitment letter, summary sheet for issuance of commitment letter and supporting documents • <i>Supporting documents:</i> Together with application for commitment letter, the following should be submitted – two signed copies of the authenticated letter of credit and contract or confirmed purchase order (PO) • All these documents are to be submitted to ADB for processing.
ADB	<ul style="list-style-type: none"> • Receives the completed forms, review and if in order proceed with the issuance of commitment letter.
<p>D. Imprest Account – (a) ADB's Initial Advance to the Imprest Account</p>	
Borrower	<ul style="list-style-type: none"> • Completes the withdrawal application for imprest fund and estimate of expenditure sheet using form ADB-IFP-EES.
ADB	<ul style="list-style-type: none"> • Receives the completed forms and disburse the initial 6-month advance for deposit to the Borrower's imprest account.
<p>(b) Liquidation or Replenishment of the Imprest Account</p>	
Borrower	<ul style="list-style-type: none"> • Completes the withdrawal application for imprest fund and the applicable Summary Sheet using form ADB-IFP-SS or SOE to replenish the account as frequently as possible provided the amount of the application reaches the minimum ceiling of US\$100,000; and • Prepares the necessary imprest account reconciliation statement and attaches the bank statement(s).
ADB	<ul style="list-style-type: none"> • Receives the completed forms and disburses the value of eligible expenditures

Borrower	<ul style="list-style-type: none"> • for replenishment of the account balance; and • Disallows any unjustified or ineligible payment. • Refunds the disallowed amount to the imprest account.
(c) Final Liquidation or Recovery of Advances	
Borrower	<ul style="list-style-type: none"> • Completes the liquidation of advance form and the applicable Summary Sheet or SOE; and • Prepares the imprest account reconciliation statements and attaches the bank statement(s).
ADB	<ul style="list-style-type: none"> • Receives the completed forms and deducts the amount of expenditures incurred from the outstanding balances of advances until the imprest account reaches a zero balance; and • Requests the Borrower to refund the unliquidated balance if the account still has unliquidated advance after the grant closing date.
Borrower	<ul style="list-style-type: none"> • Refunds promptly to the grant account any amount that remains outstanding in the imprest account after the grant closing date, as specified in the Grant Agreement.

16. The Project is expected to be completed by 30 Jun 2013. No disbursement from the grant account will be requested or made later than 31 Dec 2013, or such other date as may from time to time be agreed between the Borrower and ADB.

VII. PROJECT PERFORMANCE MANAGEMENT SYSTEM

17. The Government will ensure that BPC develops a Project Performance Monitoring Evaluation System (PPMES) including baseline performance monitoring and systematic Project performance monitoring including benefits monitoring and evaluation in a form acceptable to ADB and other donors. BPC shall carry out surveys (a) at the start of project implementation to establish baseline data, (b) at project mid-term, and (c) at the time of project completion and not later than six months after completion to evaluate the project benefits. Key indicators will be proposed by BPC and acceptable to ADB.

A. Inception Mission

18. A grant inception mission was fielded on 16-19 February 2009 to discuss this PAM and to ensure that all administrative matters pertaining to the Project are properly in place and working relationships are established among ADB, DOE and BPC staff. Details relating to report requirements, accounting system, compliance with grant covenants, disbursement procedures and withdrawal applications were clarified during the mission.

B. Semiannual Review Missions

19. Semiannual review missions will be conducted to monitor overall progress of the Project, review expenditures, operation and maintenance and most importantly discuss problems and issues causing delays in project implementation. The first review mission will be conducted in the first half of 2009 and succeeding review missions will be fielded by ADB as and when required.

20. A mid-term review of the Project will be undertaken by ADB and BPC during the third year of implementation.

21. A project completion report will be submitted by BPC, within 3 months following completion of RE4.

VIII. ACCOUNTING, AUDITING AND REPORTING

22. **Accounting, Auditing and Reporting.** Quarterly progress reports will be prepared for review by ADB. The reports will include a description of physical progress, problems and a summary of financial accounts that will consist of grant expenditures during the period, year to date, and total to date. Progress on environmental and social compliance, overall progress and compliance with covenants under the grant agreements will also be reported in the progress reports. The progress reports will also include evaluation of issues or problems faced by BPC and recommended remedial actions. Suggested Format of Progress Report is attached as **Appendix 6**. Calculation Method of Project Progress was discussed and agreed during the grant inception mission in January 2009 and presented in **Appendix 7**. Within 6 months of the close of the financial year, BPC will submit audited project accounts and financial statements. An independent auditor acceptable to ADB will be hired by BPC to conduct the audit. A copy of the sample Audit Letter is attached as **Appendix 8**.

IX. SAFEGUARDS

A. Land Availability and Resettlement

23. No indigenous peoples will be affected. No resettlement of houses is required for either of the two project components. No negative social impacts are anticipated during implementation of the rural electrification component. No land acquisition will be required and no damage to crops and private trees is expected as distribution lines and poles can be designed and aligned to avoid any disruptions. No resettlement plan is therefore included, although an in-depth survey was carried out under the PPTA to assess poverty impacts.

24. Rural electrification schemes have proved beneficial for poverty reduction and income generation. As rural areas usually fall behind in access to both social services and income opportunities, the grid expansion along with development of other infrastructure such as roads and public utilities will boost the local economy and provide additional health-related benefits.

B. Environmental

25. ADB classifies the Project as environment category B. In accordance with ADB's *Environment Policy* (2002) and *Environmental Assessment Guidelines* (2003), a summary IEE (SIEE) was prepared, and reviewed by ADB, to provide a sound basis for project processing and implementation.

26. The National Environment Commission and Department of Forests provided national environmental and forestry clearances for the rural electrification component, and initial environmental examinations (IEEs) were issued for each district of the project area. While construction of the distribution infrastructure is not expected to have major adverse impacts,³ some negative environmental impacts will occur as most of the villages targeted for

³ This is because (i) distribution line routes were chosen to minimize the need for forest clearance; (ii) 30% of distribution lines will be in unforested areas where a right-of-way will not be necessary; (iii) lines will be located on road curbs, which are not subject to environmental protection status; (iv) all other construction work is small in scale and will be conducted by manual labor without the use of heavy vehicles and machinery; (iv) most affected areas outside the villages are uninhabited, and work in villages can be conducted without causing major disruption to residents; and (v) construction work is relatively straightforward and can be completed in a fairly short time.

electrification are located in forested areas. These impacts will be mitigated through the EMP, which requires a set of measures including the reduction of clearance areas for the rights-of-way, installation of covered conductors in areas close to protected areas and sensitive habitats, and alignment of distribution lines along public roads (on curbs) that are excluded from the protected status according to the Road Act of Bhutan 2004. In addition, all civil works will be performed by manual labor, and cutting of trees will be monitored by staff from Department of Forests local offices. After implementation, the schemes will operate without major negative environmental impacts.⁴

X. MAJOR GRANT COVENANTS

27. In addition to the standard assurances, the Government, DOE, BPC and ADB agreed to the additional assurances and the summary on status of compliance is shown in **Appendix 9**.

XI. KEY PERSONS INVOLVED IN THE PROJECT

A. Executing Agency

The Government of Bhutan:

Ministry of Finance:

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Tel. No.: (+975) 2-328-279
Fax No.: (+975) 2-328-279

Project Implementation Agency: (Bhutan Power Corporation Ltd.)

Mr. Bharat Tamang
Managing Director
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Tel. No.: (+975) 2-336-082
Fax. No.: (+975) 2-331-988

Mr. Gyeltshen Wangdi, General
Manager, Rural Electrification Dept.
E-mail: gyeltshenwangdi@bpc.bt
Tel. No.: (+975) 2-333-820

Mr. Drukchu Dorji; ADB Project
Manager, Rural Electrification Dept.

⁴ Rural electrification schemes normally operate with routine maintenance and only occasional repair; any repairs should be small in scale and infrequent.

E-mail: drukchudorji@bpc.bt
 Tel No.: (975) 2-333-819 & 333-820
 Fax. No.: (+975) 2-335-531 & 321-443

Mr. Karma Wangchuk Tamang,
 Offtg. General Manager
 Procurement Services Dep.,
 e-mail: karmawangchuk@bpc.bt
 Tel No.: (+975) 2- 325-095 ext. 353
 Fax No.: (+975) 2- 333-583

B. ADB Staff

Energy Division (SAEN)
 South Asia Regional Department
 (SARD)

Mr. Thevakumar Kandiah
 Director, SAEN
 Tel. No.: (63-2) 632-6301
 E-mail: tkandiah@adb.org

Mr. Kaoru Ogino
 Finance Specialist (Energy)
 Tel. No.: (63-2) 632-5479
 E-mail: kogino@adb.org

Mr. Hiroki Kobayashi
 Senior Energy Specialist
 Tel, No.: (63-2) 632-5021
 E-mail: hkobayashi@adb.org

Ms. Marietta L. Marasigan
 Project Officer
 Tel. No.: (63-2) 632-6800
 E-mail: mmarasigan@adb.org

Controller's Department
 Loan Administration Division
 (CTLA1)

Mr. Francis Mathews
 Financial Control Specialist
 Tel. No.: (63-2) 632-4444
 E-mail: fmathews@adb.org

Address & Fax No. (SAEN):

Asian Development Bank
 6 ADB Ave., Mandaluyong City, 1550
 Metro Manila, Philippines
 Fax No. (632) 636-2338 (SAEN)

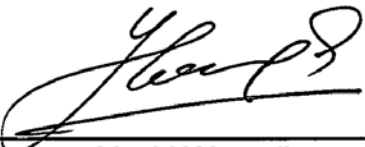
XII. GOVERNANCE AND ANTICORRUPTION

28. The Recipient shall comply with, and shall cause DOE and BPC to carry out the Project in accordance with ADB's Anti-Corruption Policy (1998, as amended to date) and all applicable laws, including the Companies Act of the Kingdom of Bhutan. The Recipient acknowledges ADB's right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive or coercive practices relating to the Project and shall ensure that DOE and BPC

cooperate fully with any such investigation and extend all necessary assistance as may be necessary for successful completion of the investigation.

XIII. CONCURRENCE

29. We have reviewed the Project Administration Memorandum and concur to implement the Investment Program according to the agreed requirements.



Yeshi Wangdi
Director General
DOE, Ministry of Economic Affairs



Kaoru Ogino
Energy Specialist/Mission Leader
Project Officer for Grants 0119-BHU
Asian Development Bank



Bharat Tamang
Managing Director
Bhutan Power Corporation Ltd. (BPC)

Date: 19 February 2009

Table A5.3: Detailed Cost Estimate for Rural Electrification
(By Expenditure Category)

Item	Local Currency (Nu million) ^a			Foreign Currency (\$ million)			% of Total Base Cost
	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost	
A. Investment Costs^b							
On-Grid Component:							
1 Materials	807.01	10.46	817.47	19.93	0.26	20.18	71
2 Civil works (delivery, erection and installation)	0	212.45	212.45	0	5.25	5.25	18
3 Tools, Equipment, and Vehicles	13.29	0	13.29	0.33	0	0.33	1
4 Right of way vegetation clearing	0	5.90	5.90	0	0.15	0.15	1
5 Administrative and overhead expenses	0	62.95	62.95	0	1.55	1.55	5
Subtotal (A)	820.31	291.76	1,112.06	20.25	7.20	27.46	97
Off-Grid Component:							
1 Materials	26.73	0	26.73	0.66	0	0.66	2
2 Transportation, installation, and administration	2.19	2.43	4.62	0.05	0.06	0.11	0
3 Consulting Services	8.91	0	8.91	0.22	0	0.22	1
Subtotal (B)	37.83	2.43	40.26	0.93	0.06	0.99	3
Total Base Cost (A+B)	858.13	294.19	1,152.32	21.19	7.26	28.45	100
C. Contingencies^c							
1 Physical	55.18	16.78	71.95	1.43	0.41	1.84	6
2 Price	85.06	23.86	108.92	2.10	0.59	2.69	9
Subtotal (C)	140.24	40.64	180.87	3.53	1.00	4.53	16
D. Financing Charges During Implementation	0	0	0	0	0	0	0
Total Project Cost (A+B+C+D)	998.37	334.83	1,333.20	24.72	8.27	32.98	

^a The exchange rate used is locked at Nu40.5 against the dollar.

^b Include local taxes and duties of \$0.24 millions which will be financed by the Government and the Implementing Agency.

^c Computed based on the ADB forecasted inflation rates of 5%.

Sources: Bhutan Power Corporation and ADB.

Table A5.4: Detailed Cost Estimate for Rural Electrification

(By Financier)
(\$ million)

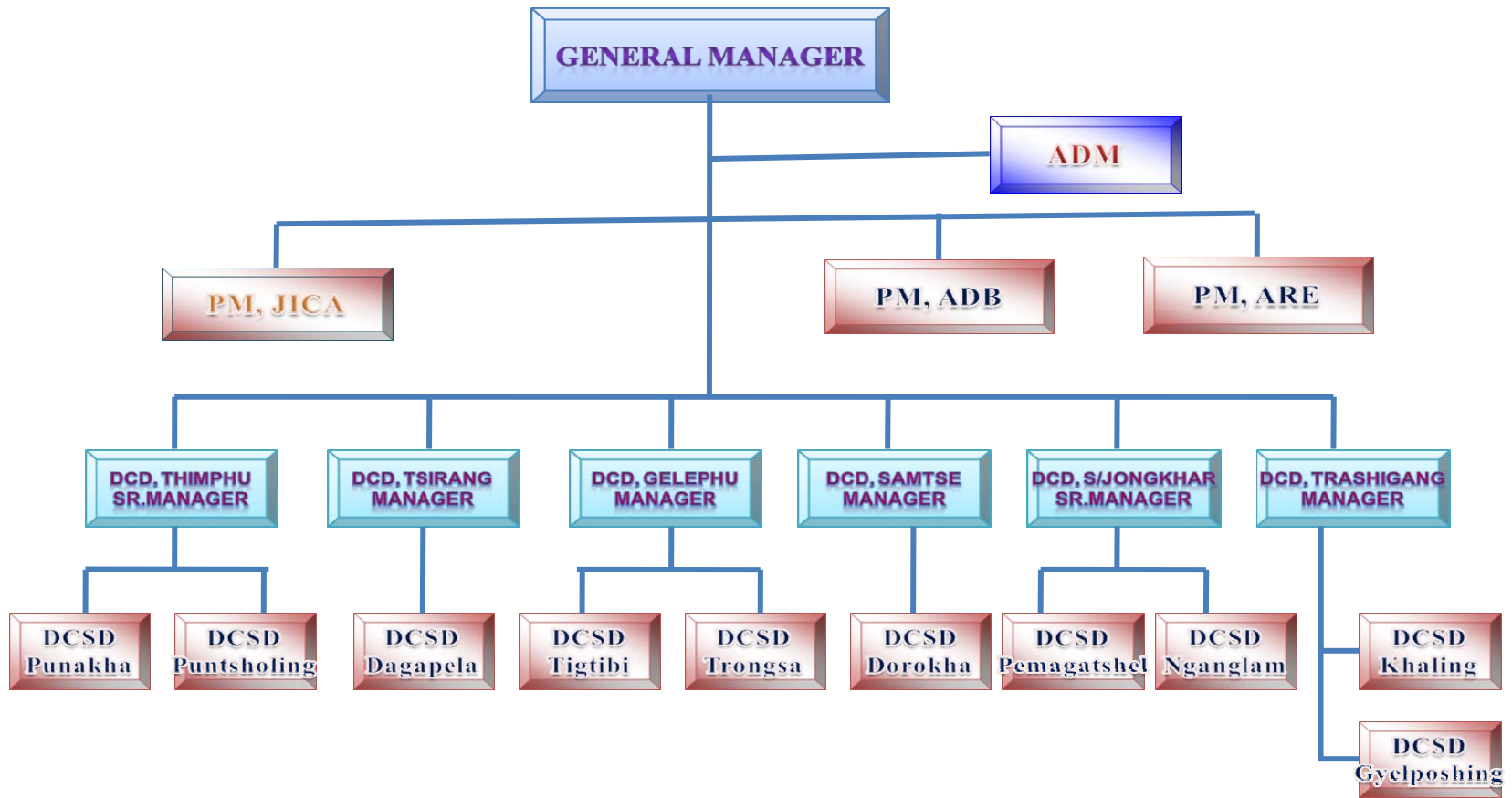
Item	Cost	ADB		ADB (ACEF) ^a		Government/BPC	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category
A. Investment Costs^b							
On-Grid Component:							
1	Materials	20.18	20.18	100	0	0	0
2	Civil works (delivery, erection and installation)	5.25	1.31	25	0	0	3.94
3	Tools, Equipment, and Vehicles	0.33	0.33	100	0	0	0.00
4	Right of way vegetation clearing	0.15	0	0	0	0	0.15
5	Administrative and overhead expenses	1.55	0	0	0	0	1.55
	Subtotal (A)	27.46	21.82	79	0	0	5.64
B. Off-Grid Component:							
1	Materials	0.66	0	0	0.66	100	0
2	Transportation, installation, and administration	0.11	0	0	0.05	47	0.06
3	Consulting Services	0.22	0	0	0.22	100	0
	Subtotal (B)	0.99	0	0	0.93	94	0.06
	Total Base Cost (A+B)	28.45	21.82	77	0.93	3	5.70
C.	Contingencies^c	4.53	3.46	76	0.07	1	1.00
D.	Financing Charges During Implementation	0	0	0	0	0	0
	Total Project Costs	32.98	25.28	77	1.00	3	6.70
	% Total Project Costs	100%		77		3	20

ACEF = Asian Clean Energy Fund, ADB = Asian Development Bank, BPC = Bhutan Power Corporation

^a Established by the Government of Japan, and administered by ADB.^b Include local taxes and duties of \$0.24 millions, which will be financed by the Government and the Implementing Agency.^c Computed based on the ADB forecasted inflation rates of 5%.

Sources: Bhutan Power Corporation and ADB

**ORGANIZATION STRUCTURE FOR PROJECT IMPLEMENTATION UNIT (On-Grid)
(Bhutan Power Corporation Ltd. (BPC, Rural Electrification Division))**



PROJECT IMPLEMENTATION AND READINESS SCHEDULES

Implementation Schedule

	2007		2008				2009				2010				2011				2012			
	Q-3	Q-4	Q-1	Q-2	Q-3	Q-4	Q-1	Q-2	Q-3	Q-4	Q-1	Q-2	Q-3	Q-4	Q-1	Q-2	Q-3	Q-4	Q-1	Q-2	Q-3	Q-4
Part A: Dagachhu Hydropower Project																						
[Civil Works, ADB Finance]																						
Design and Cost Estimates	█																					
Preparation of Bidding Documents			█																			
Bidding (ADB ICB)+ Contract Signing (8M)					█																	
Construction including Mobilization (34 months)							█															
[Electro-Mechanical, Austrian Export Credit]																						
Design and Cost Estimates	█																					
Preparation of Bidding Documents			█																			
Bidding (Austrian + Contract Signing (6M)					█																	
Manufacturing and Installation of Equipment (38M)							█															
Testing and Commissioning															█							
Part B: Dagachhu Transmission Line [BPC Own Resources]																						
[Dagachhu - Dhajay T/L and Substation Augmentation]																						
Design, Cost Estimates and Bidding Documents			█																			
Preparation of Bidding Documents					█																	
Bidding (BPC Own) + Contract Signing (9M)							█															
Manufacturing and Installation of Equipment (30M)									█													
Part C: Rural Electrification																						
[Materials, ADB Finance]																						
Design and Cost Estimates	█																					
Preparation of Bidding Documents			█																			
Bidding (ADB ICB)+ Contract Signing (8M)					█																	
Manufacturing and Delivery (41M)							█															
[Transportation & Erection, Gov't & ADB Finance]																						
Design and Cost Estimates	█																					
Preparation of Bidding Documents			█																			
Bidding (BPC NCB) + Contract Signing (8M)					█																	
Trans. & Installation of Equipment (3 Dry Seasons)									█		█		█		█		█		█		█	
Commissioning, Inspection and Charging											█		█		█		█		█		█	
Part D: Off-grid Rural Electrification																						
[Off-grid, ACEF for Additional Grant]																						
Survey and Design							█															
Preparation of BoQ, Procurement and Manufacture									█													
Transportation and Installation											█											
Monitoring and Reporting													█									

ADB = Asian Development Bank, ACEF = Asian Clean Energy Fund established by the Government of Japan and administered by the Clean Energy Financing Partnership Facility, BoQ = bill of quantities, BPC = Bhutan Power Corporation, ICB = international competitive bidding, NCB = national competitive bidding.
 Sources: Bhutan Power Corporation, Dagachhu Hydro Power Corporation and ADB staff estimate

Project Readiness

Readiness Criteria	Target Date	Status	Responsibility
A. Core:			
1. Government Project Approval		Done	Government
2. Project Management			
• Project management units established		Done	BPC, DHPC
• PMU core staffing		Done	BPC, DHPC
• PMU full staffing		Done	BPC, DHPC
3. Allocation of Counterpart Funding			
• Rural electrification		Done	Government
• Dagachhu hydropower		Done	Government, DGPC
4. Recruitment Plan of Consultants			
i. Rural Electrification (off-grid component)	Apr 2009	Expected	DOE
• Dagachhu hydropower		Done	DHPC
(Austrian government committed TA for implementation support)			
5. Procurement			
• Procurement plan prepared		Done	DHPC, BPC
• Issuance of bidding documents		Done	DHPC, BPC
• Award of contract(s)	Mar 2009	Expected	DHPC, BPC
6. Financial Management and Auditing			
• BPC (Rural electrification)		Done	BPC
• DHPC (Dagachhu hydropower)	Dec 2009	Expected	DHPC
(Attached capacity development TA project will support financial management policy and systems.)			
7. Project Performance Management System and Project Administration Memorandum	May 2009	Expected	BPC, DHPC, ADB
B. Project-Specific:			
1. Land Acquisition		Done	DHPC
2. Resettlement Plan(s)		Done	DHPC
3. Environmental Clearances			
• Rural electrification		Done	BPC
• Dagachhu hydropower		Done	DHPC
4. Cofinancing			
• Austrian ECA (Dagachhu hydropower)	May 2009	In process	DGPC
(The governments of Bhutan and Austria including its ECA have had three negotiations, and will finalize a financing agreement once the bidder is selected.)			
▪ Asian Clean Energy Fund (Rural Electrification)		Done	ADB
(The funding is subject to approval from the Government of Japan.)			

ADB = Asian Development Bank, BPC = Bhutan Power Corporation, DGPC = Druk Green Power Corporation, DHPC = Dagachhu Hydro Power Corporation, ECA = Export Credit Agency, TA = technical assistance
Source: Asian Development Bank assessment.

PROCUREMENT PLAN

Project Information

Country	Government of Bhutan
Name of Borrower	Government of Bhutan
Project Name	Green Power Development Project
Loan or TA Reference	Loans 2463 & 2464-BHU (Dagachhu) Grants 0119 & 0141-BHU (RE)
Date of Effectiveness	Target: March 2009
Amount US\$ (total from all financiers)	\$201,470,000 (Dagachhu) and \$32,980,000 (RE)
Of which Committed by ADB, \$	\$80,000,000 (Dagachhu) and \$26,280,000 (RE)
Executing Agency	DGPC (Dagachhu), DOE (RE)
Approval Date of Original Procurement Plan	1 July 2008
Approval of Most Recent Procurement Plan	18 February 2009
Publication for Local Advertisement ^a	15 July 2008
Period Covered by this Plan	2008–2013

^a General procurement notice, invitations to prequalify and to bid, calls for expressions of interest.
DGPC= Druk Green Power Corporation, DOE = Department of Energy, RE = Rural Electrification

Procurement Thresholds, Goods and Related Services, Works, and Supply and Install

Procurement Methods	To be used above/below (\$)
International competitive bidding (ICB) works	At least \$1,000,000
ICB goods	At least \$500,000
National competitive bidding (NCB) ^a works	Less than \$1,000,000
NCB ² goods royalty	Less than \$500,000
Shopping works	Less than \$100,000
Shopping goods	Less than \$100,000

^a The summary requirements are given as the NCB Annex in Supplementary Appendix K.

Procurement Thresholds, Consultant Services

Procurement Methods	To be used above/below (\$)
Quality- and cost-based selection (QCBS)	At least \$200,000
Consultants qualifications selection (CQS)	Less than \$200,000
Least-cost selection (LCS)	Less than \$100,000

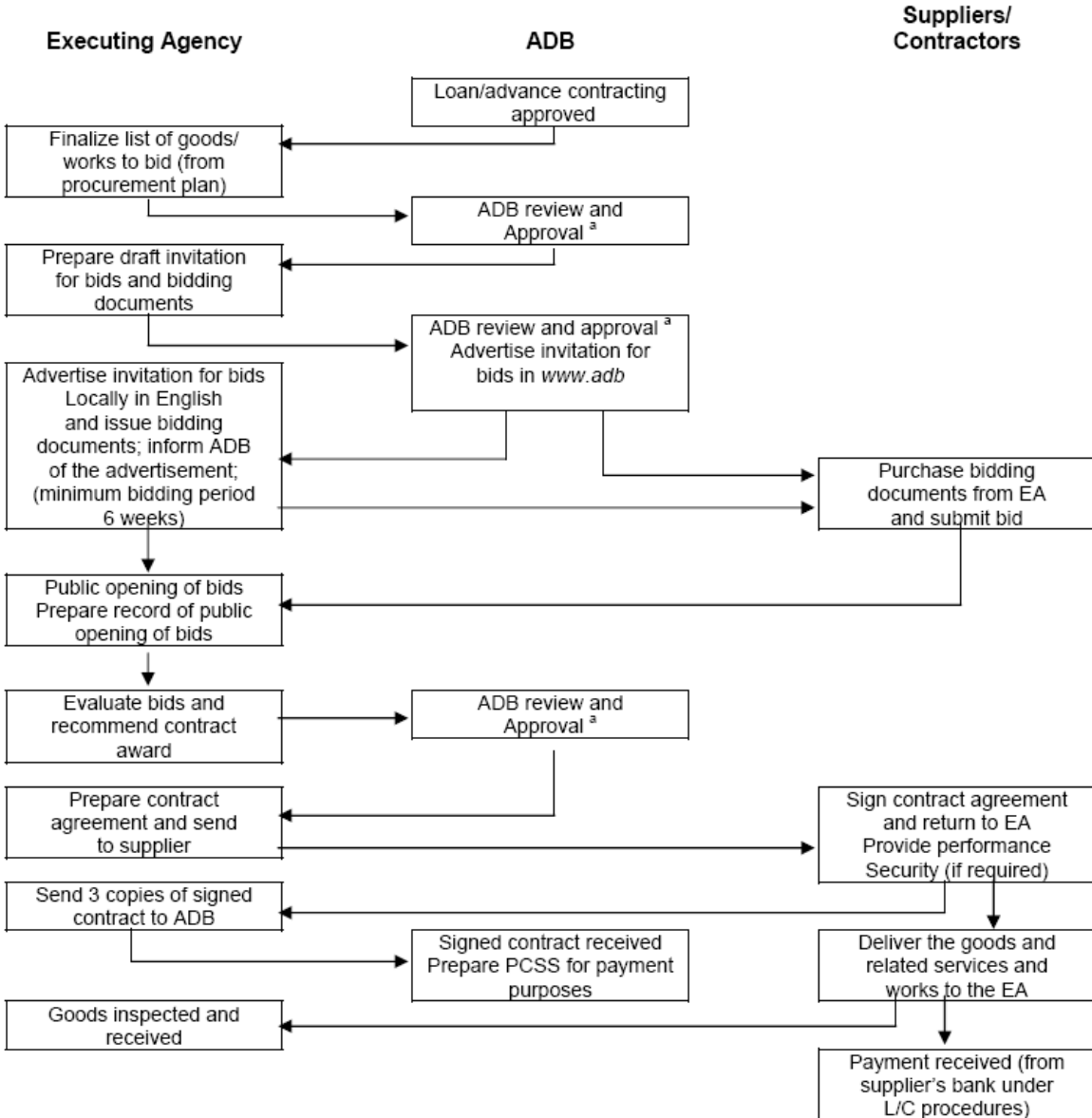
List of Contract Packages in Excess of \$100,000, Goods, Works, and Consulting Services

Ref No. and Contract Description	Estimated Cost (\$ million)	Procurement Method	Expected Date of Advertisement	Prior Review	Financing Sources
A. Dagachhu Hydropower (loans)					
1. Civil works	80.5	ICB (EPC)	3rd quarter '08	Yes	ADB
2. Electric and mechanical works	59.2	OeKB Own	3rd quarter '08	No	OeKB
3. Transmission line	4.8	BPC Own	4th quarter '08	No	BPC
4. Augmentation of related substation	6.0	BPC Own	4th quarter '08	No	BPC

Ref No. and Contract Description	Estimated Cost (\$ million)	Procurement Method	Expected Date of Advertisement	Prior Review	Financing Sources
B. On-Grid Rural Electrification (grant)					
1. Poles	6.9	ICB (Goods)	3rd quarter '08	Yes	ADB
2. Pole fitting and accessories	2.2	ICB (Goods)	3rd quarter '08	Yes	ADB
3. Conductors	2.0	ICB (Goods)	3rd quarter '08	Yes	ADB
4. Insulators	0.9	ICB (Goods)	3rd quarter '08	Yes	ADB
5. Cables	3.6	ICB (Goods)	3rd quarter '08	Yes	ADB
6. Earthing equipment	0.3	ICB (Goods)	3rd quarter '08	Yes	ADB
7. Transformers	2.3	ICB (Goods)	3rd quarter '08	Yes	ADB
8. Conductor fittings and accessories	1.0	ICB (Goods)	3rd quarter '08	Yes	ADB
9. Switching equipment and accessories	0.6	ICB (Goods)	3rd quarter '08	Yes	ADB
10. Energy meters	0.1	ICB (Goods)	3rd quarter '08	Yes	ADB
11. Tools and equipment	0.3	ICB (Goods)	2nd quarter '09	Yes	ADB
12. 1–3 phase converter	0.1	ICB (Goods)	3rd quarter '11	Yes	ADB
13. Vehicle (4 Pick-ups)	0.1	NCB (Goods)	1st quarter '09	Yes	ADB
14. Transportation and erection works	5.7	NCB (Works)	1st quarter '09	Yes	Government and ADB
C. Off-Grid Rural Electrification (grant)					
1 Capacitor, controller and LED	0.6	ICB (Goods)	2nd Quarter '10	Yes	ACEF
2 Photovoltaic module and accessories	0.1	NCB (Goods)	2nd Quarter '10	Yes	ACEF
3 Transportation and installation	0.1	NCB (Works)	2nd Quarter '10	Yes	ACEF
4 Consulting services	0.2	Individual (Bio-data)	1st Quarter '09	Yes	ACEF

ACEF = Asian Clean Energy Fund established by the Government of Japan, BPC = Bhutan Power Corporation, EPC = engineering-procurement-construction, OeKB = Oesterreichische Kontrollbank Aktiengesellschaft (Austrian Export Credit Agency).

Procurement under International Competitive Bidding
 (with no prequalification)



SUGGESTED FORMAT OF PROGRESS REPORT

Pro Forma of the Executing Agency's Project Progress Report

A. Introduction and Basic Data

Provide the following:

- ADB loan number, project title, borrower, executing agency(ies), implementing agency(ies);
- total estimated project cost and financing plan;
- status of project financing including availability of counterpart funds and cofinancing;
- dates of approval, signing, and effectiveness of ADB loan;
- original and revised (if applicable) ADB loan closing date and elapsed loan period based on original and revised (if applicable) loan closing dates; and
- date of last ADB review mission.

B. Utilization of Funds (ADB Loan, Cofinancing, and Counterpart Funds)

Provide the following:

- cumulative contract awards financed by the ADB loan, cofinancing, and counterpart funds (commitment of funds to date), and comparison with time-bound projections (targets);
- cumulative disbursements from the ADB loan, cofinancing, and counterpart funds (expenditure to date), and comparison with time-bound projections (targets); and
- reestimated costs to completion, need for reallocation within ADB loan categories, and whether an overall project cost overrun is likely.

C. Project Purpose

Provide the following:

- status of project scope/implementation arrangements compared with those in the report and recommendation of the President (RRP), and whether major changes have occurred or will need to be made;
- an assessment of the likelihood that the immediate development objectives (project purpose) will be met in part or in full, and whether remedial measures are required based on the current project scope and implementation arrangements;
- an assessment of changes to the key assumptions and risks that affect attainment of the development objectives; and
- other project developments, including monitoring and reporting on environmental and social requirements that might adversely affect the project's viability or accomplishment of immediate objectives.

D. Implementation Progress

Provide the following:

- assessment of project implementation arrangements such as establishment, staffing, and funding of the PMO ;

- information relating to other aspects of the EA's internal operations that may impact on the implementation arrangements or project progress;
- progress or achievements in implementation since the last progress report;
- assessment of the progress of each project component, such as,
 - recruitment of consultants and their performance;
 - procurement of goods and works (from preparation of detailed designs and bidding documents to contract awards); and
 - the performance of suppliers, manufacturers, and contractors for goods and works contracts;
- assessment of progress in implementing the overall project to date in comparison with the original implementation schedule—quantifiable and monitorable target, (include simple charts such as bar or milestone to illustrate progress, a chart showing actual versus planned expenditure, S-curve graph showing the relationship between physical and financial performance, and actual progress in comparison with the original schedules and budgets, the reference framework or guidelines in calculating the project progress including examples are shown in Appendix 13); and
- an assessment of the validity of key assumptions and risks in achieving the quantifiable implementation targets.

E. Compliance with Covenants

Provide the following:

- the borrower's compliance with policy loan covenants such as sector reform initiatives and EA reforms, and the reasons for any noncompliance or delay in compliance;
- the borrower's and EA's compliance with financial loan covenants including the EA's financial management, and the provision of audited project accounts or audited agency financial statements; and
- the borrower's and EA's compliance with project-specific loan covenants associated with implementation, environment, and social dimensions.

F. Major Project Issues and Problems

Summarize the major problems and issues affecting or likely to affect implementation progress, compliance with covenants, and achievement of immediate development objectives. Recommend actions to overcome these problems and issues (e.g., changes in scope, changes in implementation arrangements, and reallocation of loan proceeds).

FRAMEWORK AND GUIDELINES IN CALCULATING PROJECT PROGRESS

A. Introduction

1. To ensure that all implementation activities are reflected in measuring implementation progress against the project implementation schedule, the term "physical completion" in the PPR has been changed to "project progress."
2. Physical and pre-commencement activities are considered in calculating project implementation progress. These activities, which may include recruitment of consultants, capacity building, detailed design, preparation of bid and prequalification documents, etc., could constitute a significant proportion of overall implementation and therefore should be counted.
3. Each activity in the implementation schedule will be weighted according to its overall contribution (using time as a reference) to progress of project implementation. These weights will then be used to calculate the percentage of project progress along the entire time span of the project. This is to provide a holistic view of the pace of implementation.

B. Framework for Compiling Activity List and Assigning Weights

4. As implementation activities (with corresponding weights) will vary in terms of project, sector, and country, SAEN will be responsible for incorporating them in the project administration memorandum. The actual project implementation progress of these activities should be reported regularly through the EA's quarterly project progress report. To ensure ADB-wide consistency, the following framework has been established. The application of this framework will be monitored through the PPR.

1. Compilation of Activity List

5. SAEN should identify and include major implementation activities in the implementation schedule. The implementation schedule should follow the critical path of the project's major activities in project implementation taking account of various country, sector, and project constraints.

2. Assignment of Weights

6. Corresponding weights for each activity should be assigned to ensure that "project progress" measures the percentage of achievement (non financial except when the project has credit components) for all events during the entire duration of the implementation schedule. To avoid disproportionate assignment of weights, to the extent possible these should be evenly distributed along the implementation schedule. When activities are concurrent, avoid "double counting."

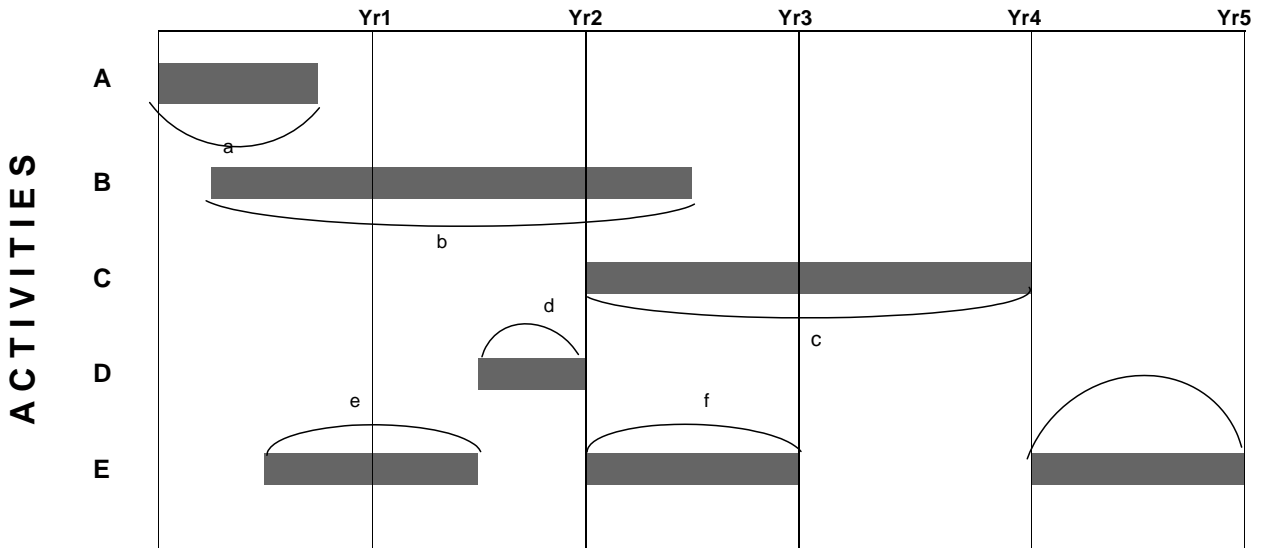
3. Computation of Project Progress

7. Once all activities are identified and corresponding weights assigned, project progress should be calculated using the following steps:
 - (i) Determine the actual percentage progress (non-financial) of each activity.
 - (ii) Multiply these percentages by the assigned weight of each activity to arrive at the

- weighted progress.
- (iii) Add up the resulting weighted progress of all activities to determine the project progress.

Below is an illustration of this calculation using a generic sample implementation schedule, and the Appendix 14 shows a specific schedule for this Project.

Implementation Schedule with Activities and Weights



1. Sum of all weights should equal 100 percent (a+b+c+d+e+f+g = 100%)
2. When calculating the percentage of "project progress," all completed activities should be counted as accomplished, regardless of when they were scheduled to be completed. For example, when calculating the percentage of "project progress" after year 3, if activity D is completed in year 3 rather than in year 2, it should still be included in the computation.
3. Total weight of each activity is as follows: Activity A–a; Activity B–b; Activity C–c; Activity D–d; and Activity E–e + f + g
4. Project progress of a project is the summation of the actual percentage of progress for each activity multiplied by the total weight of each activity.

G0119-BHU: Green Power (BPC): Percentage of Project Implementation Progress

[As of 13 February 2009]

No.	Description	Weight (a)		Progress (b) %		Weighted Progress (a)x(b)/100
		\$M	Weight	30	70	
I.	Initial Activities [6]					
	a- Establish and Staffing of PMO	3.0		70		2.10
	b- Loan Negotiations /Signing /Effectiveness	3.0		50		1.50
II	Projects (Total \$ 150M) [94]					
1-A	10m Steel Tubular Poles	3.24	13.5	30	50.00	2.02
				70	0.00	
1-B	9m Steel Tubular Poles	1.13	4.7	30	50.00	0.70
				70	0.00	
1-C	7.5m Steel Tubular Poles	2.54	10.6	30	50.00	1.58
				70	0.00	
2	Pole Fitting and Accessories	1.53	6.4	30	50.00	0.96
				70	0.00	
3	MV Overhead ACSR Conductor	1.95	8.1	30	50.00	1.22
				70	0.00	
4	Porcelain Insulators	0.83	3.5	30	50.00	0.52
				70	0.00	
5	Covered AAAC Conductor, LV ABC & PVC Cables	4.01	16.7	30	50.00	2.50
				70	0.00	
6	Earthing Equipment	1.34	5.6	30	50.00	0.83
				70	0.00	
7	Distribution Transformers	2.37	9.8	30	50.00	1.48
				70	0.00	
8-A	MV Conductor Fitting & Accessories	0.27	1.1	30	50.00	0.17
				70	0.00	
8-B	LV Cable Fittings & Accessories	0.73	3.0	30	50.00	0.46
				70	0.00	
9	Switching Equipment & Accessories	0.62	2.6	30	50.00	0.38
				70	0.00	
10	Energy Meters	0.12	0.5	30	50.00	0.08
				70	0.00	
11	Tools & Equipment	0.30	1.2	30	0.00	0.00
				70	0.00	
12	1-3 Phase Converter	0.10	0.4	30	0.00	0.00
				70	0.00	
13	Vehicle	0.10	0.4	30	0.00	0.00
				70	0.00	
14	Transportation and election works	1.43	5.9	30	20.00	0.36
				70	0.00	
	Total Weight and Progress	22.60	94.0			16.85

A. Establishing and Staffing of PMO [I-a]:

20%: Initial Set-up,, 100%: Full Staff

B: Loan Negotiation/ Signing/Effectiveness [I-b]:

20%: Approval; 50%: Signing; 100%: Effectiveness

C: Procurement of Material and Civil Works [II]

30%: Bidding Process

(Draft Bid Doc. Sub.: 20%; Bid Doc. Issu. :40%; Bid Close: 50%; BER Sub.: 70%; Signed Contract Sub.: 100%)

70%: Contract Implementation (%: (Disbursement) / (ADB Finance Amount))

Asian Development Bank

22 February 2009

DRAFT

Mr. Nim Dorji
 Director
 Department of Public Accounts
 Ministry of Finance
 Thimphu, Bhutan

Dear Mr. Dorji:

**Subject: Loan 2463/2464-BHU: Green Power Development Project
 Grant 0119-BHU: Green Power Development Project (ADF)
 Grant 0141-BHU: Green Power Development Project (ACEF)
 - FINANCIAL REPORTING AND AUDITING REQUIREMENTS**

This letter is to ensure your timely compliance with the loan/grant covenants and the quality of financial information as required by ADB. ADB's *Handbook on the Financial Management and Analysis of Projects* (the Booklet) is enclosed to guide you.

ADB, by its Charter, is required to ensure that the proceeds of any loan/grant made, guaranteed, or participated in by ADB are used for the purposes for which the loan/grant was approved. ADB requires accurate and timely financial information from its borrowers to be assured that expenditure was for the purposes stated in the loan/grant agreements.

For these particular loan/grant, the requirements are stipulated Section 2.09, (a) and (b) of the Project Agreement dated 13 February 2009 between ADB and DGPC, DHPC, DOE and BPC. Limited copies of the Loan/Grant and Project Agreements are enclosed for onward transmission by your office to your EA and the auditor(s), together with a copy of this letter.

The following are the main requirements:

- ADB requires the EA to maintain separate project accounts and records exclusively for the Project to ensure that the loan/grant funds were used only for the objectives set out in the Loan/Grant or Project Agreements.
- The first set of project accounts to be submitted to ADB by covers the fiscal year ending *31 December 2009* for Druk Green Power Corporation, Limited (DGPC), Dagachhu Hydropower Corporation, Limited (DHPC) and Bhutan Power Corporation (BPC) and *30 June 2009* for Department of Energy (DOE). As stipulated in the Project/Grant Agreements, they are to be submitted up to six (6) months after the end of the fiscal year. For this loan/grant, the deadline is by *30 June 2010 for DGPC, DHPC and BPC and 31 Dec 2010 for DOE*. A sample report, format with explanatory note, is attached as Annex A.
- The accounts and records for the project are to be consistently maintained by using sound accounting principles. Please stipulate that your external auditor is to express an opinion on whether the financial report has been prepared using international or local generally accepted accounting standards and whether they have been applied consistently.

- ADB prefers project accounts to use international accounting standards prescribed by the International Accounting Standards Committee. Please advise your external auditor to comment on the impact of any deviations, by the DGPC, DHPC, DOE and BPC, from international accounting standards.
- Please ensure that your external auditor specifies in the Auditor's Report the appropriate auditing standards they used, and direct them to expand the scope of the paragraph in the Auditor's Report by disclosing the key audit procedures followed. Your external auditor is also to state whether the same audit procedures were followed for all supplementary financial statements submitted.
- ADB wishes that auditors conform to the international auditing standards issued by the International Federation of Accountants. In cases where other auditing standards are used, request that your external auditor to indicate in the Auditor's Report the extent of any differences and their impact on the audit.
- The external auditor's opinion is also required on whether:
 - the proceeds of the ADB's loan/grants have been utilized only for the project as stated in the Loan/Grant and Project Agreements,
 - the financial information contains data specifically agreed upon between DGPC, DHPC, DOE and BPC and ADB to be included in the financial statements;
 - the financial information complies with relevant regulations and statutory requirements; and
 - compliance has been met with all the financial covenants contained in the Loan/Grant or Project Agreements.
- The Auditor's Report is to clearly state the reasons for any opinions that are qualified, adverse, or disclaimers.
- Actions on deficiencies disclosed by the external auditor in its report are to be resolved by DGPC, DHPC, DOE and BPC within a reasonable time. The external auditor is to comment in the subsequent Auditor's Report on the adequacy of the corrective measures taken by DGPC, DHPC, DOE and BPC.

Compliance with these ADB requirements will be monitored by review missions and during normal project supervision, and followed up regularly with all concerned, including the external auditor.

Yours sincerely,

Thevakumar Kandiah
Director, Energy Division
South Asia Department

Attachments
Loan/Grant and Project Agreements
Handbook on Financial Management and Analysis of Projects
Sample Report Format (Project Account)

Grant 0119-BHU: Green Power Development Project

Major Loan Covenants

Covenants	Reference	Responsible Agencies	Compliance Status
Project Implementation Unit: The Recipient shall ensure that (a) PIU established in 2004 by DOE for 3 ADB rural electrification projects shall function as the PIU for the Project and such PIU shall oversee day-to-day operations of the Project. It shall be managed and operated by a full-time Project Director and supported by full-time personnel acceptable to ADB.	GA, Sch 4, para 4	DOE	Complied
Counterpart Funding: The Borrower and DOE shall ensure that (a) all local and foreign counterpart financing necessary for the Project shall be provided in time, (b) additional counterpart funding will be provided, if necessary and (c) counterpart financing for compensation and entitlements under the resettlement plan are fully provided to affected people prior to their displacement from housing and land.	GA, Sch 4, para 6	Government/ DOE	Being complied. Counterpart funds will be provided as and when necessary.
BPC Subsidiary Financing Agreement: The Recipient shall execute a BPC Financing Agreement with BPC upon terms and conditions satisfactory to ADB. The Recipient shall have obtained all necessary approvals to enter such Subsidiary Financing Agreement.	GA, Sch 4, para 7	Government/ DOE/BPC	Being complied. Draft subsidiary agreement has been prepared.
Financial Indicators: The Recipient shall cause BPC to, ensure that BPC shall (a) maintain the following annual financial ratios: (i) debt service coverage ratio of 1.5; (ii) a debt to equity ratio of 70:30; and (b) incorporate measures to achieve these financial ratios in the corporate capital expenditure plan.	GA, Sch 4, para 8	Government/ BPC	Being complied
Commercial; Accounts Receivable Collection: The Recipient shall and shall cause BPC to maintain accounts receivable that have overdue accounts of less than two months.	GA, Sch 4, para 9	Government/ BPC	Not yet due
The Recipient, DOE and BPC shall each ensure that the Project is undertaken and all facilities and associated equipment are assessed, operated and maintained in accordance with applicable laws of the Govt., ADB and internal environmental policies and safeguard operational rules of BPC and the National Environment Commission.	(GA, Sch 4, para 10	DOE/BPC	Being complied
The Recipient, DOE and BPC shall each ensure that the outcomes of each of the IEEs conducted will be implemented and the mitigation measures identified in the EMP approved by ADB and relevant government agencies are complied with during design, construction and operation of the Project. The Recipient shall ensure that DOE/BPC monitor and audit the implementation of EMP and provide reports to ADB twice a year on the implementation of EMP.	GA, Sch 4, para 11	DOE/BPC	Being complied
The Recipient, DOE and BPC shall each ensure that the subprojects (a) does not take place within national parks, wild and planted forests and wildlife sanctuaries without prior environmental clearances obtained from all relevant government agencies and (b) avoids monuments of cultural or historical importance.	GA, Sch 4, para 12	DOE/BPC	Complied

Land Availability and resettlement: The Recipient, DOE and BPC shall ensure that any damage to crops or trees, or any other asset occurs during the implementation of the Project will be compensated at market rates to the eligible affected person or community.	GA, Sch 4, para 13	Government/ DOE/BPC	Being complied
DOE and BPC shall ensure that construction contracts contain bidding requirements for construction contractors to (a) fully reinstate pathways, other local infrastructures, and agricultural land to at least their pre-project condition upon the completion of construction; and (b) adequately record the condition of roads, agricultural land and other infrastructure prior to transport of material and construction commencement.	GA, Sch 4, para 14	DOE/BPC	Complied
DOE and BPC shall ensure that (i) all land and rights of way required by the Project are available in a timely manner shall not require significant involuntary resettlement and any involuntary resettlement will be avoided or minimized. If land acquisition and involuntary resettlement are required for any subproject, a Resettlement Plan shall be prepared and submitted to ADB for review and approval and no later than the award of civil works and should be disclosed to affected persons.	GA, Sch 4, para 15	DOE/BPC	Complied
Labor and Health: BPC shall ensure that all contractors engaged under the Project will (a) incorporate minimum workplace occupational safety norms; (b) provide timely payment of wages to all workers (male and female workers); (c) provide women employment, where appropriate and pay equal wages for equivalent work; (d) not employ child labor and (e) monitor the implementation of these provisions as well as disseminating information on the risks of socially and sexually transmitted diseases including HIV/AIDs and malaria.	GA, Sch 4, paras 16 and 17	BPC	Complied
Governance and Anti-Corruption: The Recipient shall comply with and shall cause DOE and BPC to carry out the Project in accordance with ADB's Anti-Corruption Policy (1998, as amended to date) and all applicable law.	GA, Sch 4, para 18	DOE/BPC	Being complied
Disbursement and Performance Audits: BPC shall review invoices from firms engaged in implementing the Project, and makes payments within 30 days of receipt or inform the contractors of any shortfalls in its ability to make payments of the invoices. The Recipient shall allow and facilitate ADB's representatives to conduct spot and random checks on (i) flow of funds and their use for the Project (ii) work-in-progress and (iii) Project implementation.	GA, Sch 4, paras 19 and 20	BPC	Not yet due
Project Performance Monitoring and Evaluation System: The Recipient shall cause BPC through the PIU, to develop a PMMES including baseline monitoring and systematic Project performance monitoring, including benefits monitoring and evaluation acceptable to ADB and the other donors at the start of project implementation and not later than 6 months after Project completion. Key indicators will be proposed by DOE and acceptable to ADB.	GA, Sch 4, para 21	DOE/BPC/ADB	Being complied
Annual Budget Plan: By 31 Dec of each year of Project implementation, BPC shall provide ADB with an annual budget plan for the following fiscal year.	GA, Sch 4, para 22	BPC	Not yet due

Semiannual Reviews: The Recipient and ADB shall carry out semiannual reviews of the Project during Project implementation.	GA, Sch 4, para 23	BPC/ADB	Not yet due
Midterm Review: The Recipient and ADB shall jointly carry out a midterm review of the project during the third year of project implementation or at any other time as may be agreed upon by the Recipient and ADB.	GA, Sch 4, para 24	BPC/ADB	Not yet due
(a) BPC shall (i) maintain separate annual accounts for the Project and its overall operations, (ii) have such accounts and related financial statements audited by independent auditors acceptable to ADB and (iii) furnish ADB no later than 6 months after the close of fiscal year to which they relate and (b) BPC shall furnish to ADB within 3 months after the end of each fiscal year, unaudited annual financial statements on its operations and within 3 months after the end of each fiscal year, a budget plan (including sources and expenditures) for the ensuing years.	GA, Section 2.09	BPC	Not yet due