

**PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE**

Report No.: PIDA14934

Project Name	Nepal: Grid Solar and Energy Efficiency (P146344)
Region	SOUTH ASIA
Country	Nepal
Sector(s)	Other Renewable Energy (70%), Energy efficiency in Heat and Power (15%), Transmission and Distribution of Electricity (15%)
Theme(s)	Infrastructure services for private sector development (100%)
Lending Instrument	Investment Project Financing
Project ID	P146344
Borrower(s)	Government of Nepal
Implementing Agency	Nepal Electricity Authority
Environmental Category	B-Partial Assessment
Date PID Prepared/Updated	09-Oct-2014
Date PID Approved/Disclosed	24-Jun-2014, 09-Oct-2014
Estimated Date of Appraisal Completion	19-Sep-2014
Estimated Date of Board Approval	09-Dec-2014
Decision	

I. Project Context

Country Context

Nepal has a population of 27.5 million and a per capita income of US\$ 717. About 24.8 percent of the Nepali population lives on less than US\$ 1.25 per day, and 82 percent live in rural areas. Poverty is much more severe in rural areas (27 percent) compared to urban areas (15 percent) and particularly severe in mountainous areas (42 percent). In 2012, Nepal ranked 157 in the world in the Human Development Index. Despite a decade-long armed insurgency and protracted political transition, Nepal has made exemplary progress in poverty reduction and human development. Nepal has halved extreme poverty, and thus attained the first Millennium Development Goal ahead of time. In addition, Nepal has achieved gender parity in education and sharp reductions in infant and maternal mortality. To maintain the momentum, Nepal will need to exploit its demographic opportunity, helping its reasonably-educated youth to raise agriculture productivity and incomes and transition to non-farm employment in the urban areas.

In the process of transition from conflict to peace, a Constituent Assembly (CA) was established to formulate a new constitution by May 2012, but reached the end of its mandate without coming to an agreement on a constitution. In March 2013, after almost a year of political turbulence, marked by policy instability and significant delays in public spending, the four largest political parties agreed

to a technocratic interim administration mandated to undertake elections for a new CA. Elections were held on November 19, 2013 and after protracted negotiations by the two largest parties in the new CA, effectively the de facto Parliament, a Nepali Congress led government has been established in February 2014. The topmost priority of the CA is to draft and approve a new constitution.

Economic growth was at 3.7 percent in FY13, significantly below the 4.7 percent achieved on average during 2008-12. This moderation in growth can be attributed to reduce public spending, particularly for infrastructure; low levels of private investment, due to power outages, labor issues, policy inconsistency, and political uncertainty; strong linkages to and slow growth in the Indian economy; as well as an unfavorable monsoon season and depressed agricultural growth. Developments in India affect the Nepalese economy via (a) exports (India accounts for 60 percent of Nepal's exports); (b) tourism (50 percent of foreign direct investment originates in India); (c) remittances (transfers from India amount to 5 percent of gross domestic product); and (d) monetary policy (the Nepali rupee is pegged to the Indian rupee).

Sectoral and institutional Context

While 75 percent of the population of Nepal is estimated to have access to electricity (grid and off-grid) according to the 2013 Census, service is not necessarily available due to shortage of supply, with load shedding of up to 18 hours per day in grid-covered areas in the dry season. A significant disparity in access to electricity exists between urban (90 percent) and rural areas (30 percent). Average annual consumption remains very low at about 70 kWh per capita, compared to 733 kWh for India and 2,600 kWh for China.

While the country is endowed with a huge theoretical hydropower potential of about 84,000 MW and economically viable potential of 43,000 MW, the installed hydropower generation capacity as of July 2014 was merely 771 MW, of which 729 MW was grid-connected.

The peak load in the year 2013 reached 1,201 MW in the winter months. Due to seasonality of hydroelectricity generation and lack of storage facilities, hydropower generation capacity during the winter months reduces to about one-third of installed capacity. Therefore, even with import of electricity from India (about 200 MW), the gap between demand and supply has reached about 500 MW in the winter months of 2013, resulting in load shedding of up to 15 hours a day. It is also a binding constraint to economic and human development in Nepal.

In Nepal, the average solar radiation varies from 3.6 to 6.2 kWh/m² per day and the sun shines for about 300 days per year. According to "Solar and Wind Energy Resource Assessment in Nepal (SWERA)" of July 2008, supported by United Nations Environment Program (UNEP) and Global Environment Facility (GEF), the commercial potential of solar power for grid connection is about 2,100 MW (based on the modeled solar resources from satellite data). Solar electricity generation systems are easy and quick to install in locations close to load centers, and thus could be a very attractive option for Nepal to cut the load shedding in short terms. In Nepal, solar radiation is strongest in winters (or dry seasons) when the electricity demand is at the highest and hydropower-based generation at the lowest levels due to low availability of water. Therefore, solar power is one of the ideal power generation sources to complement the hydropower dominated electricity generation in Nepal. Grid-connected solar power generation is technically proven, but at a cost more than double of the current retail tariff in Nepal.

Large scale grid-connected solar power generation is technically proven across the world. International experience indicates that there is an incremental cost for solar power generation when compared with conventional hydro and thermal power generation; and unless the incremental cost is paid, either through capital subsidy or sufficient feed-in tariff, it will be difficult to attract investments.

II. Proposed Development Objectives

The project development objectives (PDOs) are to: (i) increase electricity supply to the NEA grid through grid-connected solar farms; and (ii) reduce NEA's distribution losses in pilot distribution centers.

III. Project Description

Component Name

Grid-connected Solar Farms Development (US\$ 54.0 million)

Comments (optional)

This component will support (a) design, supply, construction, commissioning, operation and maintenance (O&M) of grid connected solar farms, in a total capacity of 25 MWp, to supply electricity directly to NEA's distribution network, through an engineering, procurement, and construction (EPC) contract; (b) hiring of an Owner's Engineer (OE) to support NEA to procure the EPC contract and supervise its execution; and (c) incremental operating cost and capacity building.

Component Name

Distribution System Planning and Loss Reduction (US\$ 84.0 million)

Comments (optional)

This component will support: (a) preparing the Distribution Master Plan (DMP); (b) preparing the Distribution Loss Reduction Master Plan (DLRMP); (c) preparation and implementation of pilot loss reduction projects in selected distribution centers of NEA following recommendations of the DLRMP; and (d) capacity building for distribution system planning at both NEA's distribution center and corporate levels.

IV. Financing (in USD Million)

Total Project Cost:	138.00	Total Bank Financing:	130.00
Financing Gap:	0.00		
For Loans/Credits/Others			Amount
BORROWER/RECIPIENT			8.00
International Development Association (IDA)			130.00
Total			138.00

V. Implementation

NEA will be the implementation agency for this project. NEA is a government-owned power utility, which has worked extensively on Bank-supported projects. NEA is managed by a Managing Director appointed by a Board of Directors chaired by the Energy Minister. A Project Coordination Committee (PCC), headed by the Deputy Managing Director / General Manager for Distribution and consumer services and staffed with technical experts, will be formulated to ensure oversight and coordination at the top level of NEA.

A Project Management Unit (PMU), headed by a Project Manager (director level), has been established under the General Manager for Distribution, and is responsible for project preparation and implementation, procurement, and liaison with the Bank. It consists of staff from 6 units including: (i) Project Administration and Financial Management Unit, (ii) Engineering Unit, (iii) Project Contract Management and Reporting Unit, (iv) Safeguards Monitoring Unit, (v) Communications and Public Relations Unit, and (vi) Monitoring and Evaluation (M&E) Units.

An OE consisting of experienced international consultant(s) will be hired to support the PMU in project implementation. The OE will help in selection (bid evaluation) of the EPC Contractor, construction supervision, contract management, environmental and social safeguard management, and review of O&M manual for the solar farms.

An independent Procurement Evaluation Panel (PEP) will be formulated for independent bid evaluation, in parallel to the evaluation by the PMU/NEA, for major contracts as agreed in the Procurement Plan, such as the EPC Contract and contracts for material supply for pilot loss reduction projects. The PEP will directly report to the PCC and the Bank. Whenever the evaluation results are different between the NEA (submitted from the PMU to the PCC) and the PEP, the PCC will coordinate the bid evaluations to ensure consensus in a transparent way.

VI. Safeguard Policies (including public consultation)

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	x	
Natural Habitats OP/BP 4.04		x
Forests OP/BP 4.36	x	
Pest Management OP 4.09		x
Physical Cultural Resources OP/BP 4.11	x	
Indigenous Peoples OP/BP 4.10	x	
Involuntary Resettlement OP/BP 4.12	x	
Safety of Dams OP/BP 4.37		x
Projects on International Waterways OP/BP 7.50		x
Projects in Disputed Areas OP/BP 7.60		x

Comments (optional)

VII. Contact point

World Bank

Contact: Rabin Shrestha
 Title: Senior Energy Specialist
 Tel: 5770+6117
 Email: rshrestha2@worldbank.org

Borrower/Client/Recipient

Name: Government of Nepal
 Contact: Madhu Marasini
 Title: Joint Secretary

Tel: 977-1-425-9820
Email: mmarasini@mof.gov.np

Implementing Agencies

Name: Nepal Electricity Authority
Contact: Ram Chandra Pandey
Title: Managing Director
Tel: 977-1-4153007
Email: neamd@nea.org.np

VIII. For more information contact:

The InfoShop
The World Bank
1818 H Street, NW
Washington, D.C. 20433
Telephone: (202) 458-4500
Fax: (202) 522-1500
Web: <http://www.worldbank.org/infoshop>