PROJECT INFORMATION DOCUMENT (PID)
CONCEPT STAGE

Report No.: 99225

Project Name	Upper Trishuli 1 Hydropower Project
Region	South Asia
Sector	Energy and Mining
Project ID	P154109
Borrower(s)	Government of Nepal
Implementing Agency	Nepal Electricity Authority (NEA)
Environment Category	[X] A [ ] B [ ] C [ ] FI [ ] TBD (to be determined)
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1. Key development issues and rationale for Bank involvement

A. Country context

Nepal is a land-locked country facing major development challenges. With 27.8 million people, Nepal's 2013 per capita income was US$730 per annum. 25.2 percent of the country's population lives on less than US$1.25 per day and 82 percent lives in rural areas. In recent years, Nepal has made remarkable progress in poverty reduction and human development. Nepal was successful in attained the first Millennium Development Goal to halve extreme poverty, ahead of time. Poverty reduction accelerated sharply, increasing from 1.5 percentage points per year over 1996-2004 period, to 2.5 percentage points over 2004-2011. In the Human Development Index, Nepal ranked 145 out of 187 countries in 2014, moving up from a rank of 157 in 2011. In addition, Nepal has achieved gender parity in education, and sharp reductions in infant and maternal mortality. To maintain momentum, Nepal will need to exploit its demographic opportunity, transitioning to non-farm employment, especially in urban areas, while also helping its reasonably-educated youth to raise agriculture productivity and incomes in rural 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 agreement on a constitution. In March 2013, after almost a year of political stasis, the main political parties agreed to form an interim government charged with holding new elections to form a new CA. Elections were held in November 2013 for a second CA, and a Nepali Congress-led coalition was established in February 2014. The first priority of the CA is to draft and approve a new constitution.

Economic growth in the country is estimated at 5.5 percent for FY14[1] – an improvement over the 4.7 percent per annum, achieved on average over the 2008-12 period. The slowdown in the 2008-12 period resulted in reduced public spending, particularly on infrastructure, and lower

[1] World Bank Database as of November 20, 2014

levels of private investment. The latter was further exacerbated by power outages, labor issues, policy inconsistency, political uncertainty, as well as depressed agricultural growth. In the absence of new endogenous sources of growth, future economic activity is expected to remain dependent on consumption supported by remittances, weather conditions, and external developments.

Nepal views hydropower development as a key opportunity for economic growth and human development, given its vast hydro potential. This was brought out clearly in recent consultations with people at different economic and social levels across the country. Within the general population, benefits from small-scale hydropower development, both on and off grid, are seen as a means for expanding access to modern energy services, creating local jobs, generating revenues, spurring economic growth, and improving the overall quality of living. At the same time, the potential for large scale hydro power projects is yet to be realized, and there is less of an understanding about the macroeconomic impacts of large scale hydropower investments.

Recent changes in bilateral ties between Nepal and India have significant implications in this context. During the recent visit of Prime Minister of India, Narendra Modi to Nepal, the two countries signed a Power Trade Agreement (PTA). The Government of India lifted restrictions on electricity as a tradable commodity between the two countries. Shortly after this, Project Development Agreements (PDAs) were signed for the export-oriented 900 MW Upper Karnali and 900 MW Arun III projects. The recently signed PDAs, and the PTA, are expected to provide a much needed boost to the image of Nepal as an investment destination in the hydropower sector. Foreign Direct Investment or FDI inflows are expected to substantially increase as a result of these contacts, especially as they proceed to implementation. Currently, FDI is low (0.2 percent of GDP in FY14, and below FY13 FDI inflows), and therefore, there is significant room for improvement.

B. Sectorial and Institutional Context

Natural Resources Available in Nepal for Power Generation. Nepal's theoretical hydropower potential is estimated at 82 GW; of this 43 GW is estimated to be economically viable. There are potential sites for wind power generation, and a Bank-supported wind resource mapping exercise is currently underway. The potential for fossil fuel extraction is limited, and the country is dependent on imports to meet all of its domestic diesel and LPG needs for transportation and cooking. Thus, hydropower has by far, the largest potential for power generation, both to meet domestic needs, and to make Nepal an important power exporter to countries in the South Asia region.

Access to Electricity Services. Paucity of installed generation capacity is a major constraint in expanding access to quality electricity services through the grid. This significantly limits the government's ability to improve agricultural productivity, help its large rural population to transition from farming to non-farm employment, increase income levels, and overall living standards. According to the national census published in 2013, about 75 percent of the population is estimated to have access to electricity (about 50 percent are grid connected, and 25 percent have off-grid connections). While off-grid connections provide relatively reliable electricity supply in the rural areas, grid power is very unreliable due to continuing supply constraints. Lack of access to reliable grid-electricity is one of the key obstacles to lifting the remaining people below the poverty line, out of poverty. Additionally, there is a need to enhance

coordination when planning grid extension in rural areas, in order to avoid a large number of stranded off-grid assets.

Electricity Demand-Supply Balance and Cost Recovery. Nepal has only recently emerged from a decade of insurgency. As a result, since 2002, almost no transmission line has been built, and only 92 MW of generation capacity were added during the same period, resulting in severe electricity supply and demand gap. The deficit was estimated at 410 MW in November 2013, when peak demand reached 1,201 MW, resulting in load shedding of up to 12 hours a day. The current available generation capacity of 791 MW consists of 458 MW of NEA owned and operated generation (436 MW hydro, and 22 MW thermal generation), 216 MW of hydro IPPs, and 116.2 MW of imports. The energy demand across Nepal in FY13-14 is estimated at 5,909 GWh, only 78 percent of which could be supplied and the remaining was shed. In the same year, 77 percent of the total electricity supplied came from domestic generation (65 percent from NEA, and 35 percent from IPP owned generators), and imports from India contributed the remaining 23 percent. Thus, while the power sector has a large unrealized potential, currently the sector relies on government subsidies since end user tariffs do not cover the costs of generation and supply. Per NEA's 2013-14 Annual Report, in that year, 4,631 GWh were supplied across Nepal, and revenues generated from these sales were 27,624 Million NRs. This translates to 5.96 NRs./kWh sold (~ 6 US cents/kWh).

Unreliable Electricity Supply as a Constraint to Growth. Agriculture is a key contributor to GDP, but raising productivity through irrigation is constrained by the lack of reliable power. For those who can afford it, reliance on captive and back-up generation with imported fossil fuels at unit costs ranging from 35-120 US cents/kWh, is the only alternative. This high cost of electricity severely limits adoption of modern irrigation practices, as well as industry's competitiveness and ability to expand. As a result, the lack of local job opportunities has forced more than 3 million Nepali citizens to seek work overseas.

Barriers to Power Sector Development: Local resources – both technical and financial – are not sufficient to develop this capital intensive sector; especially the complex and large hydro power projects. The recent momentum towards signing PDAs and the PTA by the government is positive, but FDI inflows commensurate with large hydro opportunities are very challenging while major political, institutional and regulatory uncertainties persist. Some of the identified barriers to the development of the sector are outlined below.

a. *Political Impasse and Lack of Consensus among Political Parties*. Political instability was identified[2] as the most significant barrier to increased investments in Nepal, particularly by international investors and financial institutions. More recently, consensus-building among political parties around hydropower development has made significant progress. In a rare gesture of solidarity on April 9, 2013, senior leaders of seven political parties signed a joint statement of their commitment to the country's hydropower development, recognizing the importance of this sector for the country's growth. Nonetheless, there continues to be politicization of hydropower projects by local, regional and national interest groups.

b. *Legal and Regulatory Framework Needs Updating.* While successive governments in Nepal have expressed a commitment to attract FDI to develop hydropower

[2]Survey report on "Nepal – Removing Barriers to Hydropower Development," 2009, the World Bank.

potential, progress in establishing the right enabling environment for private investment has been modest. An updated Electricity Act and Regulatory Commission Act are yet to be enacted by the Parliament. There is a need to establish an independent sector Regulator to oversee planning, pricing and system dispatch, so that IPPs have a level playing field.

c. *Limited Exposure to Large Complex Projects.* Local capacity to prepare and implement large energy projects is limited. Investment Board of Nepal, and NEA have limited exposure to internationally recognized contracting practices and standards. There is a multiplicity of institutional actors involved in hydropower with overlapping mandates and authority, thus preventing streamlined decision making.

d. *High Off-Taker Risk.* Capacity strengthening and reform of NEA as the sole power off-taker is a needed first step before large IPPs can be developed. NEA has a weak balance sheet, and is regularly supported by the government, since it has not been able to raise consumer tariffs appropriately in the last decade.

e. *Challenge of Asset Optimization through Power Export.* While Nepal has significant hydro potential, the seasonality of the hydro resource can lead to surpluses during the wet summer season. As a result there is a need to develop cross-border trading in order to optimize the use of the generation assets. While the signing of the PTA with India is a first step, significant work is still needed to develop a more integrated regional power market.

Government Strategy for the Short, Medium and Long Terms and Actions.

The Government of Nepal (GoN) has successfully promoted off-grid renewable energy options to expand energy access in rural areas. Currently, GoN is re-shaping and implementing a strategy for grid-based solutions, in order to deal with the energy crisis in urban areas and eventually, to achieve universal energy access. This strategy envisages: (a) in the short term, reducing load shedding through rehabilitation of existing generation and distribution assets, and adding new generation capacity where this can be done quickly (e.g. promoting grid-connected solar farms, issuing tax policy incentives to support roof-top solar in urban areas, and launching a power sector reforms to address key sector issues); (b) in the medium term, expanding access to grid electricity and reaching a better supply-demand balance by commissioning projects currently under construction (about 1,077 MW of hydro generation, and the first 400 kV cross-border transmission line for up to 1,000 MW of power import from India); and (c) in the longer term, developing its huge hydropower potential and integrating into the South Asia regional power market, to ensure universal access to sustainable, reliable and affordable electricity in Nepal and to generate revenues through power exports.

2. Proposed objective(s)

The PDO is to increase sustainable hydroelectricity generation to supply to NEA grid using public private financing.

3. Preliminary description

1. ***Type.*** The Upper Trishuli 1 Hydropower Project ("the Project") is a 216MW run-of-river hydropower plant (3 units x 72MW). It will be one of Nepal's largest hydropower plants with annual gross and net (saleable) generation respectively of 1,557 GWh and 1,440 GWh, (equivalent to a 76% plant factor). About 342 GWh (24%) would be produced in the dry season (low water, winter, about 4 months) and 76% in the wet season (high water, summer, about 8 months).
2. ***Location*.** The Project is located in the Rasuwa District of Central Development Region of Nepal. The site is accessible by a 70km long black topped road named Pasang Lhamu Highway from Kathmandu to Trishuli Bazar. The road end of the project site is Mailun Dovan at a distance of 17km long gravel road via Shanti Bazar. The powerhouse and Surge Tank area would be located on the right bank of Trishuli River, which is accessed by foot trail from Mailun Dovan.
3. ***Project components***. The Project includes: i) underground tunneling works of about 10km (intake, headrace); ii) a 10km, 220kV transmission line; iii) an underground power house; iv) access roads totaling 18km; and (v) environmental and social management plan. A concrete weir with radial gates (as opposed to a regular dam) is proposed to create a head of 350 m of water. Construction period is about 5 years.

4. Safeguard policies that might apply

Given that the project proponent is a private sector entity that meets the criteria outlined in paragraph 4 of World Bank OP 4.03 on "Performance Standards for Private Sector Activities," this Project is subject to the IFC Performance Standards on Environmental and Social Sustainability (which become known as the "World Bank Performance Standards" for projects processed under OP 4.03) in lieu of the safeguard policies.

As per the Performance Standards, this Project is rated Category "A", given its potential to generate significant adverse environmental and social impacts that are diverse and irreversible. All eight of the Performance Standards (PSs) apply to the proposed Project, as listed below:

- PS 1: Assessment and Management of Environmental and Social Risks and Impacts
- PS 2: Labor and Working Conditions
- PS 3: Resource Efficiency and Pollution Prevention
- PS 4: Community Health, Safety, and Security
- PS 5: Land Acquisition and Involuntary Resettlement
- PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PS 7: Indigenous Peoples
- PS 8: Cultural Heritage

Additional information is provided in the Project's Integrated Safeguards Data Sheet (ISDS) about the Project's major expected impacts and risks as per these Performance Standards, and the proposed measures to mitigate and manage them. During project preparation, the World Bank Group will assess adequacy and compliance of preparatory studies including Environmental and Social Impact Assessment (ESIA) and supplemental volumes, adequacy of stakeholder

engagement (past, ongoing and planned), as well as the project sponsor's Environmental and Social Management Systems and capacity. If additional gaps exist where further impact and risk analysis and/or management measures are required, these will be identified and highlighted in the Environmental and Social Review Summary (ESRS) and accompanying Environmental and Social Action Plan (ESAP), to be prepared and agreed between the project sponsor and the World Bank Group during project preparation. Benefit sharing is a part of the planning process for the Project, and the same will be reviewed.

In addition, World Bank OP 7.50 on International Waterways also applies to the Project, as this policy lies outside the scope of safeguard policies that are substituted with World Bank Performance Standards for Private Sector Activities as per OP 4.03. In accordance with the policy and as agreed between the Bank and IFC, a joint riparian notification process is being followed consistent with both Bank and IFC procedures. A single notification was sent on February 27, 2015 on behalf of the project sponsor to the respective country governments of all upstream and downstream riparian (e.g., China, India, and Bangladesh) as per requirements under OP 7.50, as well as to the corresponding World Bank Group Executive Directors as per IFC notification requirements[3]. In accordance with World Bank and IFC policies, the country governments and/or Executive Directors have until March 31, 2015 to raise any comment regarding the Project to the World Bank Group.

5. Tentative financing

International investors consider NEA repayment risk and Nepal country risk as high. The IDA guarantees would therefore backstop certain payment obligations undertaken by NEA and the Government of Nepal in order to mobilize private investment and make the Project happen. The IDA guarantees would secure part of NEA's payments to the project company and part of the project senior debt.

Source: Equity from private sponsors and IFC. Various Multilaterals and Development Agencies, as well as commercial banks to provide debt, with IFC as Lead Arranger and provider of debt. IDA guarantee of US$100 million is to be utilized to help bring in commercial lenders.

Total ($m): 580

6. Contact point

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[3] Reminder: The Bank's Access to Information Policy requires that safeguard-related documents be disclosed before appraisal (i) at the InfoShop and (ii) in-country, at publicly accessible locations and in a form and language that are accessible to potentially affected persons.

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