Project Name: Kabeli – A Hydroelectric Project

Region: SOUTH ASIA

Sector: Other Renewable Energy (100%)

Project ID: P122406

Borrower(s): Kabeli Energy Limited

Implementing Agency:
- Component 1: Kabeli Energy Limited
- Component 2: Ministry of Energy

Environment Category: [X] A   [ ] B   [ ] C   [ ] FI   [ ] TBD (to be determined)

Date PID Prepared: November 9, 2011

Date of Appraisal Authorization: September 27, 2011

Date of Board Approval: February 2012 (estimated)

Country and Sector Background

1. Nepal is undergoing an historic transition. In 2006, the opposing sides in the decade-long internal conflict signed a Comprehensive Peace Agreement which established a framework for the peace and reconciliation process and for defining Nepal’s future constitutional, political and administrative structure. In 2008, a Constituent Assembly was elected to draft a new Constitution. The Constituent Assembly has transformed Nepal from a monarchy to a republic. Segments of society that traditionally were excluded are finding voice in the public discourse in a way hitherto unknown in Nepal. At the same time, the forces of change that have opened opportunities for Nepal also at times work against efforts to forge a shared vision of Nepal’s future. Political stability remains elusive, as parties compete to shape the new Constitution and the country’s future political and administrative form. The mandate of the Constituent Assembly has thrice been extended in order to allow it to complete its work on the new Constitution. The long period of instability has taken a toll on the people and the economy, leading many Nepalis to seek employment opportunities in other countries; the remittances these workers send home play a crucial role in the Nepal economy. The political instability, delayed conclusion of the peace process, poor law and order conditions and protracted electricity supply crisis (more than 16 hours a day of non-supply of electricity in the dry season) impose a high cost on Nepalis, and pose significant barriers to economic development.

Objectives
2. Electricity is a core component of modern economic infrastructure; in the experience of countries worldwide, economic growth has correlated highly with growth in electricity consumption. Inadequate electricity supply is a major constraint on economic and human development. By augmenting Nepal’s power sector infrastructure, the project contributes to economic development in Nepal; it will also contribute to the development of the project area.

3. The specific objectives of the proposed project are: (i) to contribute 37.6 MW of generation capacity and an estimated annual energy generation of 190 GWh to the Integrated Nepal Power System, and (ii) to demonstrate a model of public-private partnership in hydropower generation.

Rationale for Bank Involvement

4. The supply-side crisis of the Nepal power sector and the poor economic conditions of the country are mutually reinforcing problems. While power sector development is urgently needed, it is constrained by NEA’s insolvency, a shortage of funds for public and private projects, and a poor investment climate overall. While the Government has welcomed private sector participation in hydropower and has issued hundreds of licenses to private entities and individuals, progress in the implementation of these projects is limited due to the absence of funds for transmission lines to evacuate the power and constraints in the availability of affordable financing. The capital markets in the country are thin and banks are wary of increasing their exposure to a sector that is considered highly risky; only 3% of the portfolio of the entire banking sector has been lent for hydropower development. In the case of the Kabeli Corridor, which has been identified by GON as a priority corridor for hydropower development, evacuation capacity will be provided by the ongoing IDA-financed Kabeli Transmission Project. But hydropower developers’ access to project finance remains a fundamental constraint.

Description

5. The proposed project is a small peaking run-of-river hydropower project that will be built in Panchthar District in the Eastern Development Region of Nepal (the Kabeli River is the border of Panchthar and Taplejung districts), a relatively sparsely populated area of the country. KAHEP is expected to reduce CO$_2$ emissions by approximately 136,000 tons per year over the plant operation period by displacing diesel generators that are currently in wide use in Nepal due to the shortage of grid-supplied power.

6. The project will cause no displacement of people and extensive consultations have consistently indicated strong support for the project in the project area.

7. The project will utilize a more than 15 km long loop formed by the Kabeli River and the Tamor River, of which the Kabeli River is a tributary. The headworks will be located in the Dhuseni area of Amarpur VDC of Panchthar District on the left bank and Thechambu VDC of Taplejung on the right bank, about 2.5 km upstream of Kabeli Bazaar, a small market village. Two intakes on the left bank will feed two underground settling basins. Water will then be passed through a 4326 m long headrace tunnel to Tamor River at the Pinase area of Amarpur VDC. A semi-underground powerhouse will be constructed on the left bank of Tamor River.
The gross head and design discharge of the project are estimated to be 116.80 m and 37.73 m$^3$/s, respectively.

8. Figure 1 shows the location of the project on the national map of Nepal.

Figure 1. Location of the proposed Kabeli-A HEP on the national map of Nepal.

9. The power from the proposed project will be evacuated by the Kabeli Corridor 132 kV Transmission Line, which is under implementation by the Nepal Electricity Authority with financing from IDA and which will also provide evacuation capacity for the power generated by small projects in the Kabeli corridor that are being developed by independent power producers (IPPs). The generation and transmission projects represent an opening up of eastern Nepal to the national power grid. In addition to introducing more generation capacity to the system, this will result in a reduction of transmission losses; while the most significant center of industrial demand for electricity is in the east of the country, few generation projects are located in this part of Nepal. Consequently, the power that serves the eastern industrial area is transmitted over great distances from the middle and western regions of the country where it is generated, resulting in relatively high transmission losses.

10. Over 1996-97 the Government of Nepal carried out a comprehensive screening and ranking of 138 candidate projects that identified seven projects, including Kabeli-A Hydroelectric Project (HEP), as the most attractive from a techno-economic perspective and from the perspective of minimizing negative environmental and social impacts. Kabeli-A HEP was expected to be one of the first projects that the Government would offer to the private sector on a competitive basis. The initial feasibility study and the environmental impact assessment for Kabeli-A HEP were completed in 1998. Due to the conflict in the country, the competition was delayed but eventually successfully carried out; the competition for the project was won by the Kabeli Energy Limited (KEL), a subsidiary of the Butwal Power Company.

11. On January 31, 2010, GON and KEL signed the Project Development Agreement, clearing the way for the developer to formally commence the updating of the feasibility study
and the Environmental Impact Assessment and the Social Impact Assessment, which were completed in August 2011 along with the associated management plans (Environmental Management Plan and Social Action Plan).

12. The proposed project has two components: (i) the Kabeli-A Hydroelectric Project Component, to be lent by IDA to the Ministry of Finance and on-lent to KEL, and (ii) the Ministry of Energy Component.

13. The Kabeli-A Hydroelectric Project (KAHEP) Component will provide debt financing for the construction of the proposed project in the amount of USD 40 million, representing slightly less than half of the total estimated project completion cost of around USD 86 million. This component will be implemented by the project company, Kabeli Energy Limited. IDA funds will be used to finance the civil works contracts to be implemented under the project. IDA funds will not be used for land acquisition or to finance the Social Action Plan or Environmental Management Plan.

14. The Ministry of Energy Component (USD 2 million) will provide technical assistance funds to the Ministry of Energy to allow it to perform its technical due diligence on behalf of Government of Nepal. With these technical assistance funds, MOE will engage supervising engineers and other experts, as required, to carry out supervision of the implementation of KAHEP. The funds of this component may also be used for technical assistance related to Kabeli River basin studies (strategic basin-level planning studies, cumulative impact assessments, etc.) and similar studies in other basins in areas consistent with DOED’s responsibilities.

Financing
Source: ($m.)
KEL - equity 16.80
International Development Association (IDA) 42.00\(^a\)
Financing gap (debt; sources to be identified) 27.00
Total 85.80

\(^a\) USD 40 mln for the Kabeli-A HEP Component and USD 2 mln for the Ministry of Energy Component.

Implementation

15. As the owner of the proposed project, KEL is responsible for all aspects of implementation of the Kabeli-A HEP Component. The Department of Electricity Development, Ministry of Energy, will be responsible for executing the Ministry of Energy Component which will provide technical assistance funds to allow DOED to discharge its responsibility for due diligence on behalf of the Government of Nepal.

16. KEL will carry out the implementation in three ways: (i) directly, through its own project management and staff; (ii) with the assistance of consultants engaged to bolster KEL’s capacity for construction management (such as the Owner’s Engineer) and for specialized assistance (such as the third-party environmental monitor); and (iii) through the contractors that will be engaged to construct the project and who, in addition to their primary responsibility for
construction, will have contractual obligations to implement aspects of safety and safeguards management. KEL will draw on the resources of BPC, its parent company, and HydroConsult Private Ltd, its sister company, as required, to facilitate implementation of the project.

Sustainability

17. The sustainability of the investment to be financed under the proposed project is expected to be high, given the likelihood of continuing high demand for reliable power supply in Nepal. The project preparation has been comprehensive and responsible, taking into account all relevant technical aspects and incorporating a strong focus on mitigation of the negative social and environmental impacts of the project in addition to benefits-sharing mechanisms. The IDA-funded Kabeli Transmission Line will provide the evacuation capacity required to bring the project’s output to the national grid.

18. The power generated by KAHEP will be fully dispatched under a Power Purchase Agreement (PPA) that KEL will sign with NEA; the basic terms of the PPA have already been agreed with NEA and are reflected in the Project Development Agreement signed by KEL and DOED in January 2010.

Lessons Learned from Past Operations in the Sector and Reflected in the Project Design

19. The project design reflects the experiences and lessons learned from hydropower projects worldwide, including in hydropower projects funded by the Bank elsewhere in the Himalayas where conditions are similar to those encountered in Nepal. These lessons have in common the objectives of avoiding costly delays in project preparation and implementation, improving social and environmental practice in hydropower development and enhancing the long-term sustainability of the projects.

20. Contract structuring and management. Good management of properly designed contract documents (including appropriate commercial, technical and safeguards conditions) is critical to managing project implementation and avoiding time-consuming and costly delays. KEL has engaged a well-known international engineering consulting firm to review its draft bid documents, and has drawn heavily on advice from the project’s international panel of experts. In addition, KEL will engage an Owner’s Engineer to assist in the supervision of the contractors.

21. Sediment handling. High sediment load is one of the most intractable operational problems of hydropower plants on Himalayan rivers. The sediment erodes the turbine runners and other mechanical parts, greatly reducing generation efficiency. Although KAHEP is a small project, KEL has put a considerable effort into designing appropriate sediment handling arrangements for the project with the advice of an internationally renowned sediment management expert who is a member of the project panel of experts. A physical hydraulic model of the Kabeli River was prepared for conceptual verification of the headworks arrangements and to determine the optimal hydraulic design of the headworks structures. Among other things, the physical model allowed for more precise investigations that will determine the operational guidelines for handling the reservoir sediment.
Importance of effective, ongoing communications and equitable benefits-sharing with stakeholders: One of the most important lessons from hydropower projects worldwide concerns the importance of early and continuous communications between the implementing agencies and other stakeholders, particularly people living in the project area. This lesson is particularly relevant to Nepal today, where expectations from development projects run high, sometimes exceeding what projects can realistically provide, particularly in rural areas that are lacking in various services usually provided by public authorities. KEL commenced community-level consultations early in the project preparation period and has strengthened its communications infrastructure as the project preparation has advanced. KEL has established a Project Information Center in the project area which includes project information in Nepali and has posted a dedicated Public Relations team and a Corporate Social Responsibility (CSR) officer at site. In addition, KEL has communicated with national civil society and other interested parties through national workshops and disclosure of project documents on its Web site in Nepali and English. KEL has a benefits-sharing policy and the project has a budget for various activities in the area of CSR, including development of local infrastructure, educational and social empowerment initiatives, agricultural enhancement and other areas. This inclusive, equitable approach has allowed KEL to win broad-based support for the project.

Safeguard Policies (including public consultation)

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<td>Projects in Disputed Areas (OP/BP 7.60)*</td>
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List of Factual Technical Documents

Kabeli-A HEP: Updated Feasibility Study (October 2010)
Kabeli-A HEP: Dam Safety Plan (August 2011)
Environmental Impact Assessment Study of Kabeli-A HEP; Final Report (August 2011)
Social Assessment of Kabeli-A HEP (August 2011)
Social Action Plan of Kabeli-A HEP (August 2011)

Contact point

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* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas
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