



Report and Recommendation of the President to the Board of Directors

Project Number: 43281
January 2013

Proposed Loans and Administration of Technical
Assistance Grant
Nepal: Tanahu Hydropower Project

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 15 January 2013)

Currency unit	–	Nepalese rupee/s (NRe/NRs)
NRe1.00	=	\$0.11422
\$1.00	=	NRs87.55

ABBREVIATIONS

ADB	–	Asian Development Bank
ADFD	–	Abu Dhabi Fund for Development
EIB	–	European Investment Bank
ETFC	–	Electricity Tariff Fixation Commission
GWh	–	gigawatt-hour
JICA	–	Japan International Cooperation Agency
km	–	kilometer
kV	–	kilovolt
MW	–	megawatt
NEA	–	Nepal Electricity Authority
NGO	–	nongovernment organization
TA	–	technical assistance
THL	–	Tanahu Hydropower Limited
W/m ²	–	watt per square meter

NOTE

In this report, "\$" refers to US dollars.

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PROJECT AT A GLANCE

1. Project Name: Tanahu Hydropower Project		2. Project Number: 43281-013													
3. Country: Nepal		4. Department/Division: South Asia Department/Energy Division													
5. Sector Classification:															
		Sectors	Primary												
		Energy	√												
		Subsectors													
		Large hydropower													
		Electricity transmission and distribution													
6. Thematic Classification:															
		Themes	Primary												
		Economic growth	√												
		Environmental sustainability													
		Private sector development													
		Capacity development													
		Subthemes													
		Widening access to markets and economic opportunities													
		Global and regional transboundary environmental concerns													
		Public sector goods and services essential for private sector development													
		Institutional development													
6a. Climate Change Impact		6b. Gender Mainstreaming													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Adaptation</td> <td style="width: 50%;">Low</td> </tr> <tr> <td>Mitigation</td> <td>High</td> </tr> </table>		Adaptation	Low	Mitigation	High	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Gender equity theme (GEN)</td> <td style="width: 20%;"></td> </tr> <tr> <td>Effective gender mainstreaming (EGM)</td> <td style="text-align: center;">√</td> </tr> <tr> <td>Some gender elements (SGE)</td> <td></td> </tr> <tr> <td>No gender elements (NGE)</td> <td></td> </tr> </table>		Gender equity theme (GEN)		Effective gender mainstreaming (EGM)	√	Some gender elements (SGE)		No gender elements (NGE)	
Adaptation	Low														
Mitigation	High														
Gender equity theme (GEN)															
Effective gender mainstreaming (EGM)	√														
Some gender elements (SGE)															
No gender elements (NGE)															
7. Targeting Classification:		8. Location Impact:													
General Intervention	Targeted Intervention														
	Geographic dimensions of inclusive growth	Millennium development goals	Income poverty at household level												
√															
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">National</td> <td style="width: 50%;">High</td> </tr> <tr> <td>Regional</td> <td>Low</td> </tr> <tr> <td>Rural</td> <td>Low</td> </tr> <tr> <td>Urban</td> <td>Low</td> </tr> </table>		National	High	Regional	Low	Rural	Low	Urban	Low				
National	High														
Regional	Low														
Rural	Low														
Urban	Low														
9. Project Risk Categorization: Complex															
10. Safeguards Categorization:															
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Environment</td> <td style="width: 40%;">A</td> </tr> <tr> <td>Involuntary resettlement</td> <td>A</td> </tr> <tr> <td>Indigenous peoples</td> <td>A</td> </tr> </table>		Environment	A	Involuntary resettlement	A	Indigenous peoples	A						
Environment	A														
Involuntary resettlement	A														
Indigenous peoples	A														
11. ADB Financing:															
		Sovereign/Nonsovereign	Modality												
		Sovereign	Project loan												
		Total	Asian Development Fund												
			Amount (\$ Million)												
			150												
			150												
12. Cofinancing:															
		Financier	Category												
		Abu Dhabi Fund for Development	Official-Loan												
		European Investment Bank	Official-Loan												
		Japan International Cooperation Agency	Official-Loan												
		Total	30												
			Amount (\$ Million)												
			70												
			184												
			284												
		Japan Fund for Poverty Reduction	Official-Grant												
			1.5												
			Administration Type												
			Not ADB Administered												
			Not ADB Administered												
			Not ADB Administered												
			Full												
13. Counterpart Financing:															
		Source	Amount (\$ Million)												
		Government	71												
		Total	71												
14. Aid Effectiveness:															
		Parallel project implementation unit	No												
		Program-based approach	No												

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on proposed loans to Nepal for the Tanahu Hydropower Project. The report also describes proposed administration of technical assistance (TA) to be provided by the Japan Fund for Poverty Reduction for Support for Sustainable Energy Management and Reforms, and if the Board approves the proposed loans, I, acting under the authority delegated to me by the Board, approve the TA.

2. Nepal faces a mounting energy crisis. Supplies fall well short of demand, the main utility operating the system is highly inefficient, the policy environment is weak, and the role of the private sector is far too small. The supply gap is growing, especially during the dry season in winter (November–April). Kathmandu, the main consumption center, has blackouts of 14–18 hours a day during this season and load shedding almost every day year-round. Supplies in the rest of the country fare even worse, although an additional problem here is a very low electrification rate. In the meantime, demand for electricity has been growing at 10% annually. This supply gap forces consumers to use diesel generators. These are expensive and very polluting. Rising diesel imports affect the balance of payments, and the doubling of diesel prices over the past 3 years also hurts the income base of people and businesses.¹ The supply problem is becoming one of the biggest obstacles to economic growth. It curtails investment and trade, productivity, job creation, and the quality of life of most citizens. The proposed project is one of a series of similar investments to help overcome this supply problem. The project has three main components: (i) a medium-sized hydropower plant of 140 megawatts (MW) with significant water storage facilities and associated transmission lines to evacuate the generated power; (ii) rural electrification and community development in the project area, and (iii) a reform and restructuring plan for the national utility, the Nepal Electricity Authority (NEA). The project site is in the Seti River in the Tanahu district, about 150 kilometers (km) west of Kathmandu. The design and monitoring framework is in Appendix 1.

II. THE PROJECT

A. Rationale

3. **Supply, policy, and institutional gaps.** Nepal's total installed power generation capacity stands at only 706 MW, the majority of which is owned and operated by NEA while the private sector owns and runs 158 MW.² This current total national installed capacity represents less than 1.5% of the country's theoretical hydropower potential. Furthermore, this capacity shrinks to 250–300 MW during the dry season, which also happens to be the time when demand is at its highest (over 1,000 MW). About 85% of the current generation is based on run-of-river schemes, the vast majority of which are badly affected by water-flow fluctuations, especially in the dry season. Energy supply is low and very irregular.

4. Inadequate and unreliable supply is a function of low levels of investment in the past, but also of limited maintenance of assets. Strategic, operational, managerial, and financial flaws at NEA aggravate this problem, itself accentuated in large part by a poor business climate, including a bad tariff regime (tariffs were revised for the first time in 11 years in July 2012).³ A very low tariff has dented NEA's financial standing and its ability to cover basic operating costs.

¹ Diesel imports averaged 300 million liters a year in 2001–2007, but increased to 600 million liters by 2010. Diesel prices rose from NRs53/liter to NRs97/liter.

² 23 independent power producers contribute less than 10 MW each.

³ This followed the reconstitution of the Electricity Tariff Fixation Commission (ETFC) in September 2011. ETFC is allowed to regulate only retail tariffs besides generation and transmission pricing.

The company is certainly unable to fund new investments, or to maintain the existing network. Its operational and financial performance is rather weak. NEA is inefficient, provides low-quality services, and needs major restructuring.⁴ The private sector needs to be given more and better entry points to invest. Government alone will not be able to resolve the energy crisis. It does not have the financial means and the right people to do so. Further, the “investment problem” is not confined to low generation capacity. The transmission and distribution networks are also in urgent need of expansion and modernization, an expensive undertaking at the best of times. Only 34% of the country’s households are connected to the grid. This is much lower in rural areas. The project will help reduce poverty by mitigating the supply and access problems.

5. **Strategic framework.** The government has a reasonably good energy strategy. This calls for increased energy security at home, energy exports, greater energy efficiency, and more reliance on clean energy. It also calls for better institutional effectiveness, a more predictable policy environment, and much more private sector involvement. Energy security at home means stepping up supplies to both urban and rural areas. Supply to urban areas will be backed by large power generation projects like Tanahu. In rural areas, the task entails rural electrification and the development of renewable energy schemes, including those based on solar and wind power—or a combination of the two (hybrids)—and small run-of-the river projects. Energy exports are also a priority, although the sequencing of these investments has been a serious problem. Some policymakers want the domestic power supply problem to be sorted out first. Others see the need to invest in the two types of operations simultaneously. The Asian Development Bank (ADB) agrees with this second approach. Energy export projects are good for the country and the region. They generate much-needed export revenues and create jobs. Several export-oriented investments have been under review for some time, so far with limited success, largely on account of an unpredictable and unbalanced policy regime, and because of mixed messages from the government. ADB has suggested investing in at least one flagship project to pave the way, preferably under the auspices of the South Asia Subregional Economic Cooperation program. Naturally, such an investment must target the Indian market. It will imply major capital outlays, top quality sponsors, and substantial third-party finance. Attracting serious investors and financiers requires a robust policy regime. It also requires the right political messages from the government. These two aspects have been missing. In the meantime, ADB has been assisting Nepal with the formulation of this long-term energy strategy. It will also be advising on the definition of key structural reforms and institutional changes. The ADB country partnership strategy with Nepal attaches high priority to the sector.⁵ The government wants ADB to do the same under a new strategy now under preparation.

6. **Development partners.** ADB is the main player in the energy sector, and will remain so for some time.⁶ But others are also playing an active role, in particular the Japan International Cooperation Agency (JICA). The latter is the main partner in the proposed project alongside the European Investment Bank (EIB) and the Abu Dhabi Fund for Development (ADFD). The World Bank is considering doing more in the sector, most likely with projects in rural areas. Its affiliate, the International Finance Corporation, is much more active and is currently looking at both domestic and export-oriented projects, at least one of which could be funded in partnership with ADB’s Private Sector Operations Department. Most bilateral development agencies have a keen interest in the sector, even if they do not actually fund projects themselves. Most are concerned with access to energy, with issues related to public financial management, institutional

⁴ The government approved in principle an NEA financial restructuring plan in 2012, but this now requires implementation with concrete detail.

⁵ ADB. 2009. *Country Partnership Strategy: Nepal, 2010–2012*. Manila.

⁶ Development Coordination (accessible from the list of linked documents in Appendix 2).

efficiency, effectiveness and accountability. Some of them do finance projects in the sector—at least they have done so in the recent past. Norway is a case in point.

7. **Special features.** The project meets basic readiness filters, including full engineering designs, safeguard plans, budget allocations, and advanced procurement.⁷ Another unique feature is the creation of a special-purpose company—Tanahu Hydropower Limited (THL)—to develop and run the operation once it enters its full commercial phase. This effectively “ring-fences” the entire project from NEA,⁸ whose capacity is in any case overstretched. NEA will instead provide an offtake to THL. Another strong feature of the transaction is the outsourcing of all project supervision and coordination functions to a reputable and experienced international company. Actual project execution work will be mostly done through fixed-period contracts (whenever feasible with fixed prices and with performance bonuses and penalties benchmarked against budget, timelines, and quality standards). Another special feature is ADB’s facilitation role throughout the procurement process, including bid evaluations, contract negotiations, and contractor payments. At the request of the government and THL, ADB will recruit the project supervision advisors and other specialist consultants, including those responsible for safeguards, the community development program, sector reforms, and NEA restructuring. This ADB facilitation role will underpin time efficiencies, strong competition, contractor quality standards, and full transparency. The government and THL personnel will be fully involved and trained during this process. Two other major features are (i) the provision of capacity development TA to bring about much-needed reforms in the sector and the restructuring of NEA; and (ii) assistance in a possible sale of either a minority or a majority stake in THL to reputable international investors.

B. Impact and Outcome

8. The impact will be expanded access to clean and sustainable energy in Nepal. The outcome will be increased efficiency and supply of reliable hydropower energy.

C. Outputs

9. The outputs will be (i) a 140 MW hydropower plant and related transmission system—37 km, 220 kilovolts (kV)—made operational; (ii) rural electrification increased (covering 17,636 households); (iii) community development program in the project area implemented; (iv) NEA restructured; (v) other sector reforms undertaken; and (vi) an equity sale scheme for hydropower development initiated. The prospective sale of an equity stake in THL will be subject to market conditions and the execution of transactions. These outputs will be supported by the project coupled with the TA.⁹

D. Investment and Financing Plans

10. The project cost is estimated at around \$505 million (Table 1).

⁷ ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Grant and Administration of a Technical Assistance Grant to Nepal for a Detailed Engineering Study for the Upper Seti Hydropower Project*. Manila. Project preparation is underpinned by detailed due diligence work from engineering to financial, economic, and safeguard aspects.

⁸ THL was incorporated as a subsidiary outside NEA in March 2012.

⁹ The last three outputs will mainly be supported by the TA.

Table 1: Project Investment Plan

Item	Amount (\$ million)
A. Base cost^a	
1. Hydropower plant—civil works, plant, and equipment	288
2. Transmission system	15
3. Rural electrification	8
4. Land acquisition and resettlement	30
5. Environmental management plan	21
6. Other ^b	46
7. Project management and community development program	25
Subtotal (A)	433
B. Contingencies	58
C. Financing charges during implementation	14
Total (A+B+C)	505

^a 2012 prices.

^b Project preparation and general overhead costs, including taxes and duties (\$18 million), to be financed by the government.

Source: Asian Development Bank, Nepal Electricity Authority, and Tanahu Hydropower Limited.

11. The government has requested two loans in various currencies equivalent to (i) \$120 million from ADB's Special Funds resources (regular-term loan), and (ii) \$30 million from ADB's Special Funds resources (hard-term loan). Both loans will have a 32-year term, including a grace period of 8 years, an interest rate of 1.0% per annum during the grace period and 1.5% per annum thereafter, and such other terms and conditions set forth in the draft loan and project agreements.¹⁰ ADB's total finance is limited to \$150 million.

12. The government has also requested cofinancing from ADFD, EIB, and JICA.¹¹ JICA will fund all the powerhouse facilities, and do so through parallel cofinancing. ADB, ADFD, and EIB will jointly finance the civil works. ADB will fund on its own, or in conjunction with the government, the transmission lines, the community development and rural electrification programs, and a portion of land acquisition and resettlement costs.¹² NEA, THL and/or the government will make available all counterpart funds on a timely basis. These will be extended either through budgetary allocations and/or other arrangements acceptable to ADB.

Table 2: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank	150	30
Asian Development Fund (regular-term loan)	120	24
Asian Development Fund (hard-term loan)	30	6
Abu Dhabi Fund for Development	30	6
European Investment Bank	70	14
Japan International Cooperation Agency	184	36
Government and/or Nepal Electricity Authority	71	14
Total	505	100

Source: Asian Development Bank estimates.

¹⁰ The terms and conditions of hard-term and those of regular-term loans in 2013. Both loans will require onlending and relending arrangements with the government, NEA, and THL.

¹¹ For effective coordination among the cofinanciers, collaborative cofinancing documents will be signed with each of the cofinanciers. ADB, ADFD, and EIB have already negotiated the principles that will govern their collaboration and coordination in respect of the jointly financed procurement package.

¹² Land acquisition and resettlement costs will first be funded by the government and then be reimbursed by ADB when ADB is fully satisfied with the entire processes, including the compensation settlement. These activities will be monitored by selected nongovernment organizations (NGOs). Due diligence on financing of land acquisition and resettlement costs has been conducted by experienced experts and is summarized in the project administration manual (accessible from the list of linked documents in Appendix 2).

E. Implementation Arrangements

13. THL will be the executing agency for the hydropower plant and all associated works. NEA will be the executing agency for the transmission lines and the rural electrification program. The implementation arrangements are described in detail in the project administration manual.¹³

Table 3: Implementation Arrangements

Aspects	Arrangements		
Implementation period	June 2013–June 2020		
Estimated completion date	31 December 2020		
Management			
(i) Oversight body	Steering committee Secretary, Ministry of Energy (chair) Joint secretary, Ministry of Finance; managing directors, THL and NEA; general managers (engineering services, grid development, distribution and consumer services), NEA (members)		
(ii) Executing agencies	THL and NEA		
(iii) Key implementing agencies	THL and NEA		
(iv) Implementation unit	THL and NEA project implementation units		
Procurement	International competitive bidding	2 contracts	\$156.2 million
	National competitive bidding	1 contract	\$0.9 million
Consulting services	QCBS	2,770 person-months	\$23.1 million
	Individual	555 person-months	\$3.9 million
Advance contracting	Only for eligible contract packages and eligible expenditures agreed between ADB and the government.		
Disbursement	The ADB loan proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2012, as amended from time to time) and under other arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, NEA = Nepal Electricity Authority, THL = Tanahu Hydropower Limited, QCBS = quality- and cost-based selection.

Source: Asian Development Bank.

14. **Procurement.** Procurement packages will be split into four parts: part A will cover main headworks; part B will procure equipment and other powerhouse facilities; part C will secure transmission and rural electrification lines; and part D will include project supervision and other technical expertise. Part B components will be procured by JICA. Parts A and C will follow international competitive bidding in line with ADB Procurement Guidelines (2010, as amended from time to time).¹⁴ Because of joint cofinancing, procurement under Part A will require a waiver. This is because it involves funding from ADFD and EIB and thus potentially procurement from non-ADB member countries.¹⁵ At the request of the government and THL, consultants under Part D will be recruited directly by ADB under the Guidelines on the Use of Consultants (2010, as amended from time to time).¹⁶ The project's construction period is projected at

¹³ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

¹⁴ While the bidding documents, including any prequalification ones, will follow ADB's standard bidding and prequalification criteria for part A, EIB will be ready to assist THL with the publication of any procurement notice in the Official Journal of the European Union. This may require the executing agency to insert the covenant on integrity attached as an additional document to be submitted by bidders.

¹⁵ As a condition for ADFD and EIB cofinancing, both institutions require that ADB waives its member country procurement eligibility restrictions, such that countries that are eligible sources of procurement under their financed projects are also eligible sources for procurement in respect of this contract package. In view of this, it is proposed that the ADB Board of Directors approve such a waiver.

¹⁶ ADB will select consultants for the relevant consulting services on the government's behalf, but the executing agency will negotiate and enter into the agreements pursuant to which the consulting services will be rendered.

7 years, which includes about 1.5 years for project site development (building access roads and a bridge to reach the main construction site)¹⁷ and the execution of safeguard plans.

15. **Supervision.** The supervision of the project's construction phase (7 years), and at least the first 5 years of its commercial operations, needs help from external experts. Good supervision is an absolute necessity to ensure that the project is executed on time, on budget, and with the right quality standards. There is also a need to ensure that all safeguard plans are executed properly and on time. ADB will engage the services of specialists to perform this work. The supervision firm will be selected using quality- and cost-based selection procedures set out under ADB guidelines. The selection criteria include proven experience with similar projects, a 90:10 blend between quality and cost, and the use of in-house staff to manage key tasks. The advisors will have a dual reporting function to ADB and the government. The mandate will combine supervision with technical support to THL, particularly on reservoir sedimentation risk management. Other project tasks include helping with land acquisition and resettlement, setting up the community development program, and supporting the overall safeguard work. The government and the executing agencies requested ADB to take advance actions on contracting all these services under ADB guidelines.

16. **Other arrangements.** THL will enter into a power purchase agreement with NEA. A draft term sheet for the agreement has been prepared and agreed between the parties. This follows a cost-reflective tariff principle, a take-or-pay arrangement, appropriate penalty clauses, and an offtake payment security mechanism. ADB will be given a right to review and monitor this agreement, including after project completion.

17. **Equity sale.** One special feature of the project is the prospective sale of an equity stake in THL. The government has requested ADB to test the market and provide assistance for an equity sales scheme. A sale of this nature (either a majority or minority stake) could generate significant capital to kick-start other investments. Proceeds could also be used to restructure and recapitalize NEA. If a minority stake is involved, the divestment program will need to combine the co-ownership with a management contract.

III. TECHNICAL ASSISTANCE

18. Consultants will assist the definition and execution of a reform program and the restructuring of NEA. The TA will fund these advisors. Outputs will include (i) a restructuring plan for NEA, (ii) the development of a tariff rationalization mechanism under the Electricity Tariff Fixation Commission (ETFC), and (iii) the definition of a private sector participation program. The advisors will also work on THL corporate governance.¹⁸ The TA is estimated to cost \$1.5 million, which will be financed on a grant basis by the Japan Fund for Poverty Reduction, and administered by ADB.¹⁹ Further funding could be considered at a later stage if needed.

¹⁷ These contracts will be procured in accordance with the national competitive bidding procedures.

¹⁸ The TA will help THL establish commercially oriented corporate policies and practices including safeguards and gender aspects.

¹⁹ Description of Technical Assistance (accessible from the list of linked documents in Appendix 2).

IV. DUE DILIGENCE

A. Technical

19. Experienced international advisors carried out the technical due diligence work. The project will be the country's first reservoir hydropower plant with large water storage.²⁰ To ensure a sound least-cost design, full geological investigations and material tests were conducted over relatively long periods of time. The greatest technical challenge before and after construction will be sedimentation. To mitigate it, the proposed solution is a modern and tested sediment flushing system. Project design engineers and ADB-funded consultants conducted a hydraulic model test with computer simulations to establish the best technical specifications to deliver maximum generation capacity and minimum impacts on the sediment, water flows, and the environment. Annual electricity generation projections are 588 gigawatt-hours (GWh). This represents a 25% increase from the original project studies.²¹ Because of the natural topographic conditions at the project site, a narrow river and a deep V-shaped valley, the reservoir area will be limited to 7.26 square kilometers. This meets all technical eligibility requirements under the Clean Development Mechanism, creating a potential income upside later during the commercial phase.²² Finally, the project needs a 220 kV transmission line (37 km) and 220 kV substation facilities to evacuate the generated power.²³ Site accessibility is good,²⁴ as the plant is close to a major highway near Pokhara, the second-largest city in Nepal.

B. Economic and Financial

20. The financial internal rate of return for the plant and its associated transmission facilities is 11.39%, higher than the weighted average cost of capital. The economic internal rate of return is 18.40% for the overall project.²⁵

C. Governance

21. The project will not be part of the NEA structure. THL has already been incorporated with its own management structure. Project implementation will involve an independent panel of experts to oversee and report on dam safety and safeguards. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government, THL, and NEA. The specific policy requirements and supplementary measures are described in the project administration manual and the loan documents.

D. Poverty and Social

22. Based on social and poverty surveys and assessments carried out in the project area, ADB devised a community development strategy and program designed to increase the

²⁰ The project involves a 140 m high concrete gravity dam with a total storage capacity of 295 million cubic meters.

²¹ The annual generation was analyzed by a hydraulic model, which simulated optimal operations of the sediment flushing system. After 10 years, annual power generation is expected to fall to 490 GWh. This is because it will take longer to flush cumulative sediments. During the operations of the sediment flushing, the plant needs to be stalled.

²² The Clean Development Mechanism executive board accepts hydropower plants with power densities greater than 4 watts per square meter (W/m^2), and the restriction of project emissions from the reservoir type can be $10 W/m^2$. The project has sufficient power density at $19.2 W/m^2$, making it potentially eligible.

²³ The 220 kV substation will be located within the Bharatpur substation, where the World Bank is financing a transmission link to a new Hetauda substation, leading to trunk transmission lines that can support cross-border interconnection.

²⁴ Access roads will be around 7.3 km. The length of headrace and tailrace tunnels is around 1.4 km.

²⁵ Financial Analysis; Economic Analysis (accessible from the list of linked documents in Appendix 2).

involvement of local communities in the entire operation, with focus on women, children, and socially excluded groups. This strategy and program will deliver livelihoods and improve the quality of life of communities residing in the project area and affected in a direct and adverse manner, by promoting awareness, accessibility, empowerment, employability, and vocational skills and microenterprise development. THL will implement the strategy and program with the help of an experienced nongovernment organization (NGO) or consulting firm with field-based partner NGOs.²⁶ Alongside the strategy, a gender equality and social inclusion action plan has been developed and will be implemented to empower women and increase their participation as well as their role and status within their families and communities. It is on this account that the project is classified as effective gender mainstreaming.²⁷ Besides the strategy and the gender equality and social inclusion action plan, the rural electrification component will benefit households in the project area and its neighboring districts.

E. Safeguards

23. One of the biggest risks associated with projects of this nature is the treatment of safeguards. Besides extensive work to define risks and solutions, the project preparation process involved a series of consultations with affected communities. Independent advisors carried out this due diligence. The project is classified as complex and sensitive and rated as category A for involuntary resettlement, indigenous peoples, and environment. The preparation process (assessments, consultations, and information) followed ADB's policies and procedures. Resettlement and indigenous peoples planning frameworks have been formulated.²⁸ Reservoir works, access roads, project site construction, and other operations such as the erection of power generation facilities will require permanent and temporary acquisition of private and public land, public infrastructure and resources such as trails, suspension bridges, and community forests. Based on project surveys, 758 households will be affected, including 86 that are likely to be physically displaced.²⁹ At least 453 households (60% of total affected households) are Janajati—an indigenous group forming the dominant population in the project area. These people do not claim ancestral rights over the land where they live or earn livelihoods from it. As a result, project impacts on them are similar to those in other affected communities. The involuntary resettlement and indigenous peoples impacts of the project have been taken into account in a draft resettlement and indigenous peoples plan, which combines involuntary resettlement with indigenous peoples planning issues and appropriate mitigation actions.³⁰

24. The government approved an environmental impact assessment and initial environmental examination for the hydropower and transmission components. To provide supplementary information required by ADB, an environmental addendum and a separate initial environmental examination for the rural electrification component were also prepared based on

²⁶ After implementation of the strategy, the community development initiatives will be sustained in the project area through royalty allocations from the project revenues to village development committees, through a scheme to be regulated under the Local Self-Governance Act 1999.

²⁷ The action plan has been prepared to optimize benefits for women and socially excluded groups through a range of activities, such as participatory and socially inclusive consultation processes; promotion of women's equitable access to skilled and unskilled work; rural electrification initiatives that specifically target vulnerable households headed by women; support for women's microenterprise development initiatives; establishment and training of women's self-help groups; community development and livelihood enhancement for project-affected areas; gender training; and a monitoring and evaluation system for the action plan.

²⁸ Resettlement Framework; Indigenous Peoples Planning Framework (accessible from the list of linked documents in Appendix 2).

²⁹ Of the 86 physically displaced households, 37 will be displaced from the project's reservoir area and 49 will be displaced from the site development area due to the building of access roads.

³⁰ Resettlement and Indigenous Peoples Plan (accessible from the list of linked documents in Appendix 2).

additional environmental surveys and research.³¹ The project area does not fall within a critical habitat. The environmental management and monitoring plan includes a wide range of activities to appropriately mitigate or offset physical impacts,³² impacts on aquatic and terrestrial fauna and flora, and hydrological impacts in upstream and downstream areas.³³ Information disclosure and consultations have been and will continue to be a priority, and follow ADB and government requirements, including the establishment of a grievance redress mechanism.³⁴ The execution of the safeguard plans represents the first priority under the project. It will be supported by consultants and NGOs to be recruited by ADB on behalf of the government and THL.³⁵ These specialists will work closely with the supervision consultants and an independent panel of experts focused on dam safety, and social and environmental safeguard issues. The consultants will provide the skills transfer programs and the TA will also support institutional capacity building.

F. Risks and Mitigating Measures

25. Major risks and mitigating measures are given in Table 4 and described in more detail in the risk assessment and risk management plan.³⁶

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Completion and cost risks	Cost overrun risks are high but these will be contained through the deployment of quality contractors and contracts with the right performance incentives. Changes in geological conditions can lead to substantial cost variations in the civil works. Proper coordination among the construction contractors is crucial. Experienced consultants will supervise these contracts.
Operational risk	A sediment flushing system operation is new in Nepal. It can be contained by an early-warning system, the use of sound technical expertise, and quick preventive actions.
Safeguard risk	This is one of the most serious risks but the mitigation plan is strong, backed by clear actions and the use of quality expertise, extensive consultations, and an independent panel of experts on dam safety, and social and environmental safeguards.
Funding risk	The budget process in Nepal is under stress but the authorities have assured the financiers that the government will make the appropriate allocation of funding to the project, and do so on time.
Fiduciary risks	Transparency, quality, efficiency, and competition will be reinforced through a strong facilitation role by ADB.

Source: Asian Development Bank.

³¹ Environmental Impact Assessment; Initial Environmental Examinations; Environmental Addendum (accessible from the list of linked documents in Appendix 2). These documents were disclosed on 30 July 2012.

³² For example, riverbanks will be protected based on erosion hazard map. To deal with impacts of the hydrological fluctuations, an early-warning system will be installed coupled with public education programs.

³³ ADB, cofinanciers, and the government will support (i) an aquatic fauna awareness and conservation program, (ii) a wildlife awareness and conservation program, (iii) a tree planting and watershed management program, and (iv) a river water safety program. These plans will be implemented in consultation with international NGOs and/or local civil society organizations. Particularly, the project will ensure safeguard compliance with habitat management through fish hatchery and relevant programs.

³⁴ THL's social and environmental mitigation activities will be managed by its social and environmental management unit and two project information centers with support from expert consultants. NEA's environmental and social study department will be in charge of transmission and rural electrification components.

³⁵ Being a recently constituted project company, THL does not have an established operational track record. THL's safeguard capacity will be strengthened by external experts funded under the project.

³⁶ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

V. ASSURANCES AND CONDITIONS

26. The government, NEA, and THL have assured ADB that implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in the project administration manual and loan documents. The government, NEA, and THL have agreed with ADB on certain covenants for the project, which are set forth in the loan and project agreements. The effectiveness of these agreements will be subject to (i) execution and delivery of the financing agreements between the government and the project's other financiers (ADFD, EIB, and JICA), (ii) satisfactory onlending and relending arrangements in respect of those resources as well as ADB's own resources for the project, and (iii) a letter of intent or other suitable instrument to document the collaboration arrangements between the cofinanciers in respect of the project. The disbursement of ADB funds for eligible expenditures of hydropower's headworks, transmission, and rural electrification will be conditional upon (i) execution and effectiveness of the power purchase agreement and power transmission and interconnection agreement between NEA and THL, and (ii) certification that NEA and THL have obtained all licenses and permits required for the project.

VI. RECOMMENDATION

27. I am satisfied that the proposed loans would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve

- (i) the loan in various currencies equivalent to SDR78,072,000 to Nepal for the Tanahu Hydropower Project, from ADB's Special Funds resources (regular term), with an interest charge at the rate of 1.0% per annum during the grace period and 1.5% per annum thereafter; for a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board;
- (ii) the loan in various currencies equivalent to SDR19,518,000 to Nepal for the Tanahu Hydropower Project, from ADB's Special Funds resources (hard term) with an interest charge at the rate of 1.0% per annum during the grace period and 1.5% per annum thereafter; for a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board; and
- (iii) the proposal in para. 14 of this report to permit procurement (i) in countries that are not (a) developing member countries of ADB or (b) developed member countries of ADB that have contributed to ADB's relevant Special Funds resources; and (ii) of goods, works, and services produced in such countries.

Haruhiko Kuroda
President

30 January 2013

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>Impact</p> <p>Expanded access to clean and sustainable energy in Nepal</p>	<p>Hydropower generation capacity increased to 2,000 MW by 2023 (2012 baseline: 706 MW)</p> <p>On-grid access to electricity increased to 70% of households by 2023 (2011 baseline: 34%)</p> <p>Fossil fuel imports reduced by 50% by cutting dependence on diesel generators by 2023 (2011 baseline: 531 MW equivalent)</p> <p>National carbon dioxide (CO₂) emissions reduced by an additional 99,766 tons (t) per year by 2023^a</p>	<p>NEA's annual report</p> <p>NEA's annual report</p> <p>Nepal Oil Corporation's assessment report</p> <p>NEA's annual report</p>	<p>Assumptions</p> <p>An enabling regulatory environment is given to ensure a viable power industry, including a tariff-setting policy.</p> <p>Users of diesel-based generators shift to clean energy sources.</p> <p>Risks</p> <p>An undue security situation occurs.</p>
<p>Outcome</p> <p>Increased efficiency and supply of reliable hydropower energy</p>	<p>Increase in hydropower capacity available year-round to 246 MW in 2020 (2012 baseline: 92 MW)</p> <p>Increase in additional electricity generation of 588 GWh/year from the Tanahu hydropower plant in 2020</p> <p>Winter's power shortage alleviated by 2020 (from the load shedding of 14–18 hours a day in 2011 to less than 10 hours in 2020)</p>	<p>NEA's annual report</p> <p>NEA's annual report</p> <p>NEA's annual report</p>	<p>Assumptions</p> <p>Adequate overall transmission system capacity is available to supply power from the Tanahu hydropower plant</p> <p>The government's policy on and commitment to rapid hydropower development continues.</p>
<p>Outputs</p> <p>1. Hydropower plant and transmission system made operational</p>	<p>140 MW hydropower plant constructed by 2020</p> <p>37 km transmission line and a 220 kV substation constructed to evacuate the plant's power by 2020</p>	<p>THL's quarterly progress reports</p> <p>THL's quarterly progress reports</p>	<p>Assumptions</p> <p>Timely availability of cofinancing from ADFD, EIB, and JICA</p> <p>Government mobilizes counterpart funds on time.</p> <p>Autonomous regulator's position is assured for ETFC.</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>2. Rural electrification increased</p> <p>3. Community development program in the project area implemented</p> <p>4. NEA restructured</p> <p>5. Other sector reforms undertaken</p> <p>6. Equity sales scheme for hydropower development initiated</p>	<p>Skilled and unskilled work opportunities with 1,000 new jobs created (30% women)</p> <p>At least 17,636 households connected to power supply by 2020 (including 50,000 women)</p> <p>3,732 households benefited from community development strategy programs by 2020 (including 12,000 women)</p> <p>NEA's financial restructuring plan implemented by 2014</p> <p>Possible spin-off and/or restructuring of selected NEA assets by 2015</p> <p>NEA's management program developed by 2015</p> <p>Revised tariff regulations and cost recovery mechanism for distribution, transmission, and generation issued by 2015</p> <p>THL's corporate policies informed by gender equality and social inclusion action plan considerations, established by 2014</p> <p>A divestment program for THL, including the sale of equity in THL, prepared by 2016</p>	<p>THL's quarterly progress reports</p> <p>NEA's quarterly progress reports</p> <p>THL's quarterly progress reports</p> <p>TA quarterly progress report for NEA</p> <p>TA quarterly progress report for NEA</p> <p>TA quarterly progress report for NEA</p> <p>TA quarterly progress report for ETFC or regulator</p> <p>TA quarterly progress report for THL</p> <p>TA quarterly progress report for THL</p>	<p>Risks</p> <p>Prices of construction materials increase more than provisioned.</p> <p>Natural disaster and geological conditions during implementation cause unexpected construction delays.</p>

Activities with Milestones	Inputs																			
<p>1. Hydropower plant and transmission system made operational</p> <p>1.1. Procure 140 MW hydropower plant: bid floated by 2013 and contract awards made by 2014</p> <p>1.2. Acquire land and prepare the site, including access roads, by 2014</p> <p>1.3. Procure 220 kV transmission line: bid floated by 2014 and contract awarded by 2015</p> <p>1.4. Commission 140 MW hydropower plant by 2020</p> <p>1.5. Commission 37 km of 220 kV transmission line by 2020</p> <p>2. Rural electrification increased</p> <p>2.1. Procure rural electrification investment packages by 2015</p> <p>2.2. Complete rural electrification system investments by 2020</p> <p>3. Community development program in the project area implemented</p> <p>3.1. Recruit consultant to help with community program by 2013</p> <p>3.2. Implement training and/or consultations for livelihood program in place by 2014</p> <p>4. Nepal Electricity Authority restructured</p> <p>4.1. Recruit consultant by 2013</p> <p>4.2. Obtain the government's approval to implement NEA financial restructuring plan by July 2014</p> <p>4.3. Finalize the spin-off and/or restructuring plan of selected NEA assets by July 2015</p> <p>4.4. Finalize institutional restructuring plan of NEA by July 2015</p> <p>5. Other sector reforms undertaken</p> <p>5.1. Obtain the government's approval of a revised tariff regime by July 2015</p> <p>5.2. Finalize ETFC's and NEA's training for tariff setting by July 2015</p> <p>5.3. Define a THL commercial and operational plan by July 2014</p> <p>5.4. Finalize THL's human resources plan by July 2014</p> <p>5.5. Finalize NEA's and THL's corporate policies and guidelines for gender and socially inclusive community development, benefit sharing, and safeguards by July 2014</p> <p>5.6. Implement THL and NEA staff training on contract management, monitoring and reporting, and communications with stakeholders by July 2014</p> <p>6. Equity sale scheme for hydropower development initiated</p> <p>6.1. Prepare draft equity sale scheme for THL by 2015</p> <p>6.2. Test the market for prospective THL equity sale by 2016</p>	<p>Loans</p> <p>ADB: \$150 million</p> <p>ADFD: \$30 million</p> <p>EIB: \$70 million</p> <p>JICA: \$184 million</p>																			
	<table border="1"> <thead> <tr> <th data-bbox="976 405 1300 468">Item</th> <th data-bbox="1300 405 1437 468">Amount (\$ million)</th> </tr> </thead> <tbody> <tr> <td data-bbox="976 468 1300 499">Hydropower plant</td> <td data-bbox="1300 468 1437 499">288</td> </tr> <tr> <td data-bbox="976 499 1300 531">Transmission system</td> <td data-bbox="1300 499 1437 531">15</td> </tr> <tr> <td data-bbox="976 531 1300 562">Rural electrification</td> <td data-bbox="1300 531 1437 562">8</td> </tr> <tr> <td data-bbox="976 562 1300 625">Land acquisition and resettlement</td> <td data-bbox="1300 562 1437 625">27</td> </tr> <tr> <td data-bbox="976 625 1300 709">Project management and community development</td> <td data-bbox="1300 625 1437 709">25</td> </tr> <tr> <td data-bbox="976 709 1300 772">Others (preparatory works)</td> <td data-bbox="1300 709 1437 772">3</td> </tr> <tr> <td data-bbox="976 772 1300 804">Contingencies</td> <td data-bbox="1300 772 1437 804">56</td> </tr> <tr> <td data-bbox="976 804 1300 898">Financing charges during implementation</td> <td data-bbox="1300 804 1437 898">12</td> </tr> </tbody> </table>	Item	Amount (\$ million)	Hydropower plant	288	Transmission system	15	Rural electrification	8	Land acquisition and resettlement	27	Project management and community development	25	Others (preparatory works)	3	Contingencies	56	Financing charges during implementation	12	
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Technical Assistance																				
<p>Japan Fund for Poverty Reduction: \$1.5 million</p> <p>The government will provide counterpart support in the form of in-kind contributions.</p>																				

ADB = Asian Development Bank, ADFD = Abu Dhabi Fund for Development, EIB = European Development Bank, ETFC = Electricity Tariff Fixation Commission, GWh = gigawatt-hour, JICA = Japan International Cooperation Agency, km = kilometer, kV = kilovolt, MW = megawatt, NEA = Nepal Electricity Authority, THL = Tanahu Hydropower Limited.

^a Taking into account the energy mixture of Nepal's grid, the grid emission factor of 169.67 tCO₂/GWh is assumed as a baseline.

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=43281-013-3>

1. Loan Agreement: Regular-Term Loan
2. Loan Agreement: Hard-Term Loan
3. Project Agreement
4. Sector Assessment (Summary): Power
5. Project Administration Manual
6. Contribution to the ADB Results Framework
7. Development Coordination
8. Financial Analysis
9. Economic Analysis
10. Country Economic Indicators
11. Summary Poverty Reduction and Social Strategy
12. Gender Action Plan: Gender Equality and Social Inclusion Action Plan
13. Environmental Impact Assessment
14. Initial Environmental Examination: Rural Electrification
15. Initial Environmental Examination: Transmission
16. Resettlement and Indigenous Peoples Plan
17. Resettlement Framework
18. Indigenous Peoples Planning Framework
19. Risk Assessment and Risk Management Plan

Supplementary Documents

20. Description of Technical Assistance
21. Community Development Strategy
22. Environmental Addendum
23. Clean Development Mechanism Assessment Report