



Report and Recommendation of the President to the Board of Directors

Project Number: 54107-002
August 2021

Proposed Loan for Additional Financing Nepal: Electricity Grid Modernization Project

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 2 August 2021)

Currency unit	=	Nepalese rupee/s (NRe/NRs)
NRe1.00	=	\$0.0084
\$1.00	=	NRs119.0074

ABBREVIATIONS

ADB	–	Asian Development Bank
NEA	–	Nepal Electricity Authority
PAM	–	project administration manual

NOTES

- (i) The fiscal year (FY) of the Government of Nepal and its agencies ends on 15 July. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2022 ends on 15 July 2022.
- (ii) In this report, "\$" refers to United States dollars.

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PROJECT AT A GLANCE

1. Basic Data		Project Number: 54107-002	
Project Name	Electricity Grid Modernization Project – Additional Financing	Department/Division	SARD/SAEN
Country Borrower	Nepal	Executing Agency	Nepal Electricity Authority (NEA)
Country Economic Indicators Portfolio at a Glance	https://www.adb.org/Documents/LinkedDocs/?id=54107-002-CEI https://www.adb.org/Documents/LinkedDocs/?id=54107-002-PortAtaGlance		
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Energy	Electricity transmission and distribution		60.00
		Total	60.00
3. Operational Priorities		Climate Change Information¹	
✓ Addressing remaining poverty and reducing inequalities		GHG reductions (tons per annum)	6,736.000
✓ Accelerating progress in gender equality		Climate Change impact on the Project	Medium
✓ Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability			
✓ Making cities more livable		ADB Financing	
✓ Strengthening governance and institutional capacity		Adaptation (\$ million)	0.50
✓ Fostering regional cooperation and integration		Mitigation (\$ million)	26.90
		Cofinancing	
		Adaptation (\$ million)	0.00
		Mitigation (\$ million)	0.00
Sustainable Development Goals		Gender Equity and Mainstreaming	
SDG 7.1		Effective gender mainstreaming (EGM)	✓
SDG 9.1			
SDG 13.a		Poverty Targeting	
		General Intervention on Poverty	✓
4. Risk Categorization:	Low		
5. Safeguard Categorization	Environment: B	Involuntary Resettlement: B	Indigenous Peoples: B
6. Financing			
Modality and Sources		Amount (\$ million)	
ADB		60.00	
Sovereign Project (Concessional Loan): Ordinary capital resources		60.00	
Cofinancing		0.00	
None		0.00	
Counterpart		15.00	
Government		15.00	
Total		75.00	
Currency of ADB Financing: US Dollar			

¹ The project reduces greenhouse gas emissions. However, it does not fall under the eligibility criteria for climate mitigation finance as defined by the joint multilateral development bank methodology on tracking climate finance, which notes that not all activities that reduce greenhouse gases in the short term are eligible to be counted towards climate mitigation finance. Accordingly, greenfield fossil fuel projects are excluded, and climate mitigation finance is considered zero.

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to Nepal for the additional financing of the Electricity Grid Modernization Project.

2. The original Electricity Grid Modernization Project is financing high priority electricity grid modernization investments in transmission and distribution systems in Nepal, and supporting sector reform and the financial sustainability of Nepal Electricity Authority (NEA).¹ The original project will complete the installation of smart meters in the Kathmandu Valley and the automation of existing grid substations, and will finance the modernization of distribution and transmission systems in various parts of the country. The \$156 million loan was approved on 26 November 2020, signed on 30 December 2020, and declared effective on 4 February 2021. The purpose of the proposed additional financing is to scale up critical investments in transmission and distribution that are now ready. The report and recommendation of the President for the ongoing project is accessible from the list of linked documents in Appendix 2.

II. THE PROJECT

A. Rationale

3. The additional financing project meets the eligibility criteria for additional financing. The original project is performing well as it meets all of the following criteria: (i) the original project is rated *on track* under the project performance system; (ii) each safeguard covenant item is being complied with or is expected to be complied with, and there are no major or long-standing safeguard issues relating to the original project that need to be immediately addressed prior to additional financing approval; (iii) delivery of expected outputs is *on track*; and (iv) management of risks is rated *on track*, as all the risks included in the risk assessment and risk management plan are being managed.

4. The government has sought additional assistance from the Asian Development Bank (ADB) to enhance the capacity of its critical transmission and distribution network in line with NEA's Corporate Development Plan.² These investments, which could not be accommodated in the original project because of lack of readiness when the original project was processed, are needed to support efficient and reliable delivery of power to reach the country's electricity consumption target of 700 kilowatt hours per capita by 2026, reduce system losses to 13%, and achieve 100% recovery of NEA's operating costs by 2027. The additional activities (i) are strongly linked to the original project scope and outcome, (ii) can be implemented efficiently under the same implementation arrangements, and (iii) have high readiness. The overall project outcome is aligned with a 2018 government white paper, which articulated the vision for the energy sector.³ It is also aligned with ADB's country partnership strategy for Nepal, 2020–2024, and supports the government's development objective of accelerated and inclusive economic growth, energy sector reform, and financial sustainability.⁴ The overall project remains aligned with six

¹ Asian Development Bank (ADB). 2020. [Report and Recommendation of the President to the Board of Directors: Proposed Loan to Nepal for the Electricity Grid Modernization Project](#). Manila (project no. 54107-001, loan no. 4014-NEP).

² NEA. 2019. *Corporate Development Plan, 2019/20–2023/24*. Kathmandu.

³ Government of Nepal; Ministry of Energy, Water Resources and Irrigation. 2018. [Present Situation and Future Roadmap of Energy, Water Resources and Irrigation Sector \(White Paper\)](#). Kathmandu.

⁴ ADB. 2019. [Country Partnership Strategy: Nepal, 2020–2024—Promoting Connectivity, Developed Services, and Resilience](#). Manila.

operational priorities under ADB Strategy 2030.⁵ It will contribute to (i) operational priority 1 (addressing remaining poverty and reducing inequalities) by strengthening the electricity supply network; (ii) operational priority 2 (accelerating progress in gender equality) by targeting women, and excluded and vulnerable groups for awareness raising and capacity building; (iii) operational priority 3 (tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability) by upgrading transmission and distribution systems to evacuate hydropower to load centers, and reduce system losses; (iv) operational priority 4 (making cities more livable) by improving the urban environment in the Kathmandu Valley and towns in other areas; (v) operational priority 6 (strengthening governance and institutional capacity) by strengthening NEA's system including the capacity of its staff; and (vi) operational priority 7 (fostering regional cooperation and integration) by establishing a system to commence the operations of NEA's Nepal Power Trading Company Limited.

B. Project Description

5. The impact and outcome of the overall project will remain unchanged.⁶

6. **Outputs and project scope.** The overall project will increase the scope of outputs 1 and 2 of the original project, contributing to the expansion, strengthening, and modernization of both transmission capacity and the distribution network in project areas. Under output 1 of the project, (i) 16 kilometers of 132-kilovolt transmission lines will be constructed from Nepalgunj to Kohalpur, and from Chovar to Lagankhel; and (ii) an additional 477 megavolt-amperes of substation capacity will be introduced to the system through the construction of substations in Dumkibas, Lagankhel, Mulpani, and Nepalgunj. Under output 2, (i) an enterprise resource planning system and a revenue management system will be implemented, and (ii) a project supervision consultant firm will be appointed to oversee improvements to the integration of NEA's financial and customer information systems. This will help to modernize the distribution system, enhance supply and system security, and enhance NEA's overall institutional development.

C. Value Added by ADB

7. ADB is leveraging its own resources to help the government and NEA meet the substantial financial and skills resource requirements necessary to achieve critical energy sector reforms. ADB's continued involvement signals to investors and other development partners that the government is committed to reforms, and that NEA is on a path to sustainability. The overall project will build on the experience and lessons of previous ADB projects, particularly on advance procurement and procurement packaging, implementation schedules, and stronger monitoring and supervision. ADB is also drawing on its experience in promoting regional cooperation and integration, and adoption of new technologies (e.g., substation automation) and appropriate construction methods, bird-sensitive design (including bird diverters).

D. Summary Cost Estimates and Financing Plans

8. The overall project is estimated to cost \$270 million (Table 1).

⁵ ADB. 2018. [Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific](#). Manila.

⁶ The design and monitoring framework is in Appendix 1.

9. Detailed cost estimates by expenditure category and by financier are included in the project administration manual (PAM).⁷

Table 1: Summary Cost Estimates
(\$ million)

Item	Current Amount ^a	Additional Financing ^b	Total
A. Base Cost^c			
1. Transmission reinforcement	106.0	48.7	154.7
2. Distribution modernization	65.6	16.3	81.8
3. Project implementation consultant	1.5	1.0	2.5
Subtotal (A)	173.1	66.0	239.0
B. Contingencies^d	18.6	7.9	26.5
C. Financing Charges During Implementation^e	3.3	1.1	4.4
Total (A+B+C)	195.0	75.0	270.0

Note: Numbers may not sum precisely because of rounding.

^a Refers to the original amount.

^b In first quarter 2021 prices.

^c Includes taxes and duties of \$9.12 million, which will be financed by the government.

^d Physical and price contingencies, and a provision for exchange rate fluctuation are included.

^e Includes interest, commitment, and other charges on all sources of financing.

Sources: Asian Development Bank estimates and Nepal Electricity Authority.

10. The government has requested a concessional loan of \$60 million from ADB's ordinary capital resources to help finance the project. The loan will have a 32-year term, including a grace period of 8 years; an interest rate of 1.0% per year during the grace period and 1.5% per year thereafter; and such other terms and conditions set forth in the draft loan and project agreements. The Ministry of Finance will relend the loan to NEA on the same terms as the ADB loan to Nepal.

11. The summary financing plan is in Table 2. ADB will finance the expenditures in relation to key turnkey contracts under outputs 1 and 2 and project supervision consultants. The government will utilize its counterpart funds to meet the remaining costs of the project, including land acquisition and other social and environmental mitigation, contingencies, and taxes and duties.

Table 2: Summary Financing Plan

Source	Current ^a		Additional Financing		Total	
	Amount (\$ million)	Share of Total (%)	Amount (\$ million)	Share of Total (%)	Amount (\$ million)	Share of Total (%)
Asian Development Bank						
Ordinary capital resources (concessional loan)	156.0	80.0	60.0	80.0	216.0	80.0
Government of Nepal	39.0	20.0	15.0	20.0	54.0	20.0
Total	195.0	100.0	75.0	100.0	270.0	100.0

^a Refers to the original amount.

Source: Asian Development Bank estimates.

12. For the proposed additional financing, climate mitigation is estimated to cost \$26.9 million and climate adaptation is estimated to cost \$0.5 million. ADB will finance 100% of mitigation costs and 100% of adaptation costs. Details are in the climate change assessment.⁸

⁷ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

⁸ Climate Change Assessment (accessible from the list of linked documents in Appendix 2).

E. Implementation Arrangements

13. Implementation arrangements for the additional financing project will remain the same as those of the original project. NEA will serve as the executing agency and will implement all activities through its project management directorate. Project supervision consultants recruited under the original project will support NEA in implementing the overall project. An additional project implementation support consultant will be engaged to assist in the implementation of the enterprise resource planning and revenue management system. All procurement, including consulting services, will follow the ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time) and its associated staff instructions. The Ministry of Energy, Water Resources and Irrigation will provide support and guidance to NEA and facilitate coordination among different agencies. There will be advance contracting for goods, works, and consulting services; and retroactive financing for works up to a maximum of 20% of the loan amount. The indicative implementation period of the additional financing will be from October 2021 to March 2026, and the loan closing date of 30 September 2026 for the additional financing project will be the same as the closing date of the original project. The implementation arrangements are described in detail in the PAM (footnote 7).

III. DUE DILIGENCE

A. Summary Due Diligence Results

14. A summary of the due diligence assessments for the proposed additional financing is presented in Table 3. The full due diligence assessments are accessible from the list of linked documents in Appendix 2.

Table 3: Summary of Due Diligence Assessments

Area of Assessment	Summary of Assessment
Technical	Due diligence was undertaken, and the proposed works follow international good practice and are considered technically acceptable. The project design also incorporates climate change-related aspects and will contribute to the reduction of 6,736 tons of carbon dioxide per year by displacing alternative fuels with clean electricity from the grid. The project is categorized <i>medium</i> risk in the climate change assessment (footnote 8).
Economic and financial viability	The project was analyzed for economic viability in accordance with ADB's guidelines for economic analysis ^a and a with-project and without-project framework was adopted. The EIRR for the additional financing components is 14.5% (13.8% excluding environmental benefits), well above the hurdle rate of 9%. The aggregate EIRR of the overall project, including the additional financing components, is 14.6% (14.1% excluding environmental benefits), a slight decrease from the EIRR of 14.8% estimated during appraisal of the original project. Sensitivity analysis demonstrates that the project's expected economic performance is robust under a range of downside scenarios. Financial analysis of the project was carried out in accordance with ADB's guidelines on financial management and analysis of projects. ^b The aggregate financial internal rate of return was estimated at 2.9% (compared to 2.8% of the original project without the additional financing component), which is above the weighted average cost of capital of 2.3% (in post-tax real terms). ^c
Sustainability	Strong commitment to improve performance and a government-backed financial restructuring plan allowed NEA to post a net profit of NRs1.5 billion in FY2017 (its first profit since FY2007), with profit increasing to NRs9.8 billion in FY2019 (provisional unaudited results for FY2020 show profit of NRs11 billion). With the commissioning of several power plants and the establishment of the ERC in 2017, the short- to medium-term financial outlook for NEA is increasingly favorable. The ERC issued its first 1-year tariff order for NEA in June 2020, which (i) allows NEA to recover its economically efficient costs and to earn a reasonable return on equity; and (ii) provides much-needed certainty with respect to tariff trajectory and to NEA's ability to fund its operations, investments, and debt servicing.

Area of Assessment	Summary of Assessment
Governance	<p>Financial management. NEA has been assessed against ADB's financial management requirements. The financial management risk remains <i>substantial</i>. NEA's progress against the action plan of the original project was analyzed and risks were reassessed. An updated financial management action plan was agreed with NEA. NEA has executed similar projects before and is capable of managing funds flow, disbursement procedures, accounting, and financial reporting under the overall project. Counterpart funds from the government to NEA and the terms and conditions attached to their availability have been approved. However, the auditors of NEA have consistently issued qualified audit opinions. NEA has undertaken various initiatives, including World Bank-funded projects, for fixed assets verification, valuation and fixed asset register preparation, and conversion of its financial statements to the national financial reporting system. A detailed time-bound financial management action plan has been prepared to address audit qualifications and incorporate other reforms at NEA. The implementation of an enterprise resource planning solution and revenue management system for NEA is included in the financial management action plan which will be funded under the additional financing.</p> <p>Procurement. A procurement capacity assessment of NEA was conducted as part of due diligence. NEA has sufficient capacity and experience in local and foreign procurement, including ADB's standard bidding procedures. Through strategic procurement planning, NEA will be able to achieve value for money by (i) strategic contract packaging, where some small packages are consolidated into one bigger package to attract more competition; and (ii) application of lowest-evaluated cost as one of the selection criteria.</p> <p>Anticorruption. Integrity due diligence was conducted on NEA, the members of its board of directors, and its senior management.^d No significant or potentially significant integrity risks were identified. ADB has obtained reasonable assurance that the borrower was not established and is not being used for money laundering or terrorism financing in the project jurisdiction. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and NEA. The specific policy requirements and supplementary measures are described in the project administration manual.^e</p>
Poverty, social, and gender	<p>The government, in pursuit of Sustainable Development Goal 1 (end poverty in all its forms everywhere), aims to further reduce poverty significantly by the end of 2030. However, limited access to modern energy has hindered development. The COVID-19 pandemic has had disproportionate impacts on the poor, informal sector workers, migrant workers, households that depend on remittances, and women. With the economic disruption caused by the pandemic, vulnerable individuals, including those who are just above the poverty line, are likely to be pushed below the poverty line. ADB estimates that Nepal's extreme poverty headcount ratio at \$1.90/day could increase from 3.9% in 2020 to 5.0% in 2021, while the poverty headcount ratio could increase from 27.7% to 31.2% in the same period.^f The project aims to improve the quality of electricity supply and will create employment opportunities for skilled and unskilled labor. Moreover, availability of clean energy through improved transmission and distribution network will improve urban and rural air quality, people's health, living conditions, and overall quality of life. The overall project remains to be categorized <i>effective gender mainstreaming</i>. The project will continue supporting (i) institutionalizing NEA's GESI strategy and operational guideline approved in March 2020; (ii) training women staff of NEA on technical subjects as well as leadership and management skills; and (iii) increasing knowledge of at least 2,000 electricity consumers, including women and excluded vulnerable groups on safe and efficient use of electricity. NEA's women staff will receive trainings on grid substation automation, corporate development, and improved billing and collection. NEA will implement, monitor, and report the progress in an updated GESI action plan.</p>
Safeguards	<p>In compliance with ADB's Safeguard Policy Statement (2009), the project's safeguard categories are as follows.^g</p> <p>Environment (category B). The project includes a 10.46 kilometer overhead transmission line through agricultural land, a 6-kilometer underground transmission line along urban roads, and four substations. National environment clearances are to be obtained before contract award. The most significant project impacts will be disruption during underground cabling and substation works in adjacent residential properties; impacts can be mitigated through implementation of the EMP included in the IEE prepared per ADB's Safeguard Policy Statement (2009) and national environment, health, and safety provisions. Since the project involves an existing substation, an environmental audit was conducted; the EMP includes corrective action. One other substation is an existing facility under construction funded by another ADB project. Dumkibas substation is located on agricultural land in Chure Conservation Area. The transmission line construction to which it connects is nearing completion. It is not an associated facility per ADB's Safeguard Policy Statement (2009), but due diligence has been undertaken as a precaution. These works are in accordance with Chure</p>

Area of Assessment	Summary of Assessment
	<p>Conservation Area management plan, its management has been consulted, and measures promoting its conservation aims are to be supported. The IEE was disclosed on ADB's website on 8 June 2021 and will be locally disclosed by NEA.</p> <p>Involuntary resettlement (category B) and indigenous peoples (category B). The project will affect an estimated 168 households comprising an estimated population of 1,158 persons. The project will acquire 6.62 hectares of land for tower footing and substation construction, which will affect an estimated 81 households comprising 558 persons. Of this total, 9 households comprising 50 persons are estimated to experience major impacts because of physical displacement from housing and/or loss of 10% or more of their productive assets (income-generating assets). The other 72 of 81 households will experience limited impacts because of loss of land measuring less than 10% of their total land holdings. A total of 25 structures (9 residential houses, 15 nonresidential private structures, and 1 community structure) are anticipated to be permanently affected. An additional 18.03 hectares are needed for transmission line right-of-way. Two landless households need to be relocated from residences they established in the right-of-way area. Of the affected households, 57 are vulnerable, including 40 indigenous households (286 persons) comprising 5 groups (Gurung, Magar, Newar, Tamang, and Tharu). Impacts to indigenous peoples do not extend beyond those addressed under the land acquisition and resettlement process. The project's social impacts were adequately assessed, and compensation will be paid commensurate with replacement costs. The project will extend benefit sharing among the local communities, including affected indigenous peoples and other vulnerable households, through a combination of livelihood enhancement skill training programs and other community development programs. A combined resettlement and indigenous peoples plan was disclosed on the ADB website on 7 June 2021.</p> <p>Environmental and social safeguards implementation. Meaningful consultations on safeguards were held and will continue during project implementation. NEA established a grievance redress mechanism under the original project that will be utilized for the additional financing. NEA will supervise and monitor project implementation with the support of project supervision consultants, submit semiannual monitoring reports. NEA's safeguards capacity has been strengthened with its safeguards and gender department.</p>

ADB = Asian Development Bank, COVID-19 = coronavirus disease, EMP = environmental management plan, ERC = Electricity Regulatory Commission, FY = fiscal year, GESI = gender equality and social inclusion, IEE = initial environmental examination, NEA = Nepal Electricity Authority.

^a ADB. 2017. [Guidelines for the Economic Analysis of Projects](#). Manila; and ADB. 2013. [Cost-Benefit Analysis for Development: A Practical Guide](#). Manila.

^b ADB. 2005. [Financial Management and Analysis of Projects](#). Manila; and ADB. 2019. [Financial Analysis and Evaluation: Technical Guidance Note](#). Manila.

^c Economic Analysis and Financial Analysis (accessible from the list of linked documents in Appendix 2).

^d ADB. 2003. [Enhancing the Asian Development Bank's Role in Combating Money Laundering and the Financing of Terrorism](#). Manila.

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

^f ADB. 2021 *Technical notes. COVID-19 and Poverty: some scenarios based on grouped distribution data on household consumption*. Manila.

^g ADB. [Safeguard Categories](#).

Source: ADB.

B. Summary of Risks and Mitigating Measures

15. Significant risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.⁹

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigation Measures
Financial sustainability of NEA	NEA will be supported by ADB and other development partners to ensure the preparation and submission of comprehensive and timely tariff petitions to the ERC. Despite the economic slowdown because of COVID-19, NEA's financial position improved with the June 2020 tariff order, which allowed recovery of reasonable costs of supply and return on equity. As per provisional unaudited results, NEA posted profit of NRs11 billion for FY2020 as compared to NRs9.8 billion in

⁹ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

Risks	Mitigation Measures
	FY2019. NEA, with support from an international firm, is likely to address some of the issues raised by the ERC in the June 2020 tariff order.
Weak overall financial management, financial reporting, and internal audit arrangements	NEA is implementing important reforms, including (i) physical verification of assets and inventories; (ii) full compliance with Nepal Financial Reporting Standards for preparation of financial statements of NEA; (iii) implementation of a risk-based internal audit approach by internal audit department of NEA; (iv) implementation of a risk management policy; and (v) segment reporting for generation, transmission, and distribution operations, among others. Implementation of an enterprise resource planning-based financial management information system and revenue management system under the additional financing project will substantially improve financial management and reporting of NEA.

ADB = Asian Development Bank, COVID-19 = coronavirus disease, ERC = Electricity Regulatory Commission, FY = fiscal year, NEA = Nepal Electricity Authority, Q = quarter.

Source: ADB.

IV. ASSURANCES

16. The government and NEA have assured ADB that project implementation shall conform to all applicable ADB requirements, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, financial management, and disbursement, as described in detail in the PAM (footnote 7) and loan documents.

17. The government and NEA have agreed with ADB on certain covenants for the project, which are set forth in the draft loan agreement and project agreement.

V. RECOMMENDATION

18. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of \$60,000,000 to Nepal for the additional financing of the Electricity Grid Modernization Project, from ADB's ordinary capital resources, in concessional terms, with an interest charge at the rate of 1.0% per year during the grace period and 1.5% per year 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.

Masatsugu Asakawa
President

27 August 2021

REVISED DESIGN AND MONITORING FRAMEWORK

The revised design and monitoring framework strikes out content for deletion and underlines content to be added.

Impacts the Project is Aligned with			
(i) Reliable and efficient electricity for all achieved (<u>White Paper on Energy, Water Resources and Irrigation Sector's Current Status and Roadmap for Future</u>) ^a			
(ii) NEA developed as modern and sustainable corporate entity that provides reliable services to its customers (<u>NEA's Corporate Development Plan</u>) ^b			
Results Chain	Performance Indicators	Data Sources and Reporting Mechanisms	Risks and Critical Assumptions
Outcome Reliability, efficiency, and financial sustainability of electricity supply in Nepal improved	By 2027: a. System losses of Nepal reduced to 13% (2018 baseline: 15.3%) b. Annual per capita electricity consumption in Nepal increased to 700 kWh by December 2026 (2018 baseline: 198 kWh) ^c c. NEA's operating costs recovery increased to 100% (2018 baseline: 90%) (<u>OP 4.2 6.2</u>)	a–b. NEA annual reports c. NEA financial reports	R: Delay in the completion of planned energy-generation projects may underutilize the transmission and distribution networks.
Outputs 1. Electricity transmission capacity in project areas strengthened and modernized	By March 2026: 1a. 34 existing grid substations throughout the country automated (2019 baseline: 0) (OP 4.1.2) 1b. 25 km of 220 kV and <u>104 km</u> 88 km of 132 kV new transmission lines constructed (Dandakhet–Rahughat 132 kV transmission line: 25 km, Madichaur–Gorahi 132 kV transmission line: 40 km, Borang–Lapang 132 kV transmission line: 23 km, <u>Nepalgunj-Kohalpur transmission line 132 kV: 10 km, Chovar-Lagankhel transmission line 132 kV: 6 km, Lapang–Ratomate 220 kV transmission line: 25 km</u>) (2020 baseline: 0) (OP 4.1.2) 1c. New automated 220 kV grid substations totaling 400 MVA in Lapang and Rahughat; and 132 kV grid substations totaling <u>838.5 MVA</u> 361.5 MVA installed in Borang, Dandakhet, Keraun, Lapang, Madichaur, Pantang, Rahughat, <u>Lagankhel, Nepalgunj, Dumkibas, Mulpani</u> (2019 baseline: 0) (OP 4.1.2) 1d. Existing 144 km transmission lines (132 kV and 66 kV) upgraded with more efficient high-temperature low-sag conductors in Province 1, Province 2, and Bagmati Province (2020 baseline: 0) (OP 4.1.2)	1a–d. NEA progress reports	R: Prolonged impact of COVID-19 on global supply chains delay procurement of goods and services, resulting in delayed project completion.
2. Electricity distribution system in	By March 2026:		

Results Chain	Performance Indicators	Data Sources and Reporting Mechanisms	Risks and Critical Assumptions
project areas strengthened and modernized	<p>2a. Distribution command and control center in Kathmandu commissioned with at least 30% female staff. (2019 baseline: 0) (OP4.3.1)</p> <p>2b. New smart meters for 350,000 customers in Kathmandu Valley installed (2019 baseline: 100,000) (OP 4.2.2)</p> <p>2c. Distribution system consisting of 30 km of 33 kV distribution lines in Morang district and four automated substations of 32 MVA 33/11 kV in various parts the country commissioned, benefiting 134,000 households with improved supply (Borang, Keraun, Madichaur, and Pantang) (2020 baseline: 0) (OP 1.3.1)</p> <p>2d. At least 2,000 electricity consumers in project areas (including at least 30% women and 30% members of <u>excluded and vulnerable disadvantaged</u> groups) reported increased knowledge on safe and efficient energy use. (2019 baseline: 0)</p> <p>2e. <u>Enterprise resource planning and revenue management system implemented</u> (2020 baseline: 0) (OP 4.2.2, OP 6.1.4)</p>	<p>2a–c. NEA progress reports</p> <p>2d–e. NEA project progress reports</p>	
3. Capacity of NEA to implement its corporate development plan strengthened ^d	<p>By March 2026:</p> <p>3a. At least 30 eligible NEA staff (including 30% women) reported increased knowledge on NEA’s corporate development plan (2019/2020–2023/2024) (2019 baseline: 0) (OP <u>2.2 2.3.4</u>)</p> <p>3b. At least 30 eligible NEA staff (including 30% eligible women) reported increased knowledge on operating automated grid substations (2019 baseline: 0) (OP <u>2.2 2.3.4</u>)</p> <p>3c. At least two key actions from NEA’s GESI strategy and operational guidelines implemented in NEA’s regional offices (2019 baseline: 0)</p> <p>3d. Accounting manual to ensure full compliance with NFRS updated and approved by NEA management by December 2023. (FY2019 baseline: NEA accounting manual is in place, but is not based on NFRS) (OP 4.2.2, OP 6.1, OP 6.1.4)</p> <p>3e. Operations manual to commence operation of NEA’s NPTCL (as a separate</p>	<p>3a–b. Pre- and post-training assessments</p> <p>3c. NEA progress reports</p> <p>3d. Copy of approved accounting manual</p>	

Results Chain	Performance Indicators	Data Sources and Reporting Mechanisms	Risks and Critical Assumptions
	entity) completed by December 2022 (2019 baseline: company established but trading not started) (OP 6.1)	3e. Copy of operations manual	

Key Activities with Milestones

1. Electricity transmission capacity in project areas strengthened and modernized

- 1.1. Prepare detailed design and update safeguards documents as required (Q4 2021).
- 1.2. Complete bidding process (Q4 2022).
- 1.3. Complete installation of transmission lines and substations (Q1 2026).

2. Electricity distribution system in project areas strengthened and modernized

- 2.1. Prepare detailed design for smart meters and distribution systems, and update safeguards documents as required (Q4 2021).
- 2.2. Conduct procurement (Q2 2022).
- 2.3. Conduct awareness-raising activities (Q4 2025).
- 2.4. Carry out installation of smart meters (Q1 2026).
- 2.5. Carry out installation of distribution systems (Q1 2026).
- 2.6. Carry out installation of enterprise resource planning and revenue management system (Q1 2026).

3. Capacity of NEA to implement its corporate development plan strengthened

- 3.1. Prepare detailed plan and implement capacity development of NEA (Q4 2025).
- 3.2. Design and carry out training and capacity building of NEA's staff on operating substation automation (Q4 2025).
- 3.3. Prepare and implement detailed action plan for implementing GESI strategy in NEA's regional offices (Q4 2025).
- 3.4. Prepare operations manual for commencement of NPTCL operation (Q4 2025).
- 3.5. Update and implement accounting manual to comply with remaining provisions of NFRS (Q2 2025).

Project management activities

Set up project implementation unit and project performance monitoring system.

Conduct review missions.

Prepare progress reports and project completion report.

Prepare and submit audited project financial statements, and submit audited entity financial statements to ADB on an annual basis.

Inputs

ADB: \$156216 million concessional ordinary capital resources loan (\$60 million additional)

Government of Nepal: \$3954 million (\$15 million additional)

ADB = Asian Development Bank, COVID-19 = coronavirus disease, FY = fiscal year, GESI = gender equality and social inclusion, km = kilometer, kV = kilovolt, kWh = kilowatt-hour, MVA = megavolt-ampere, NEA = Nepal Electricity Authority, NFRS = Nepal Financial Reporting Standards, NPTCL = Nepal Power Trading Company Limited, OP = operational priority, Q = quarter, R = risk.

^a Government of Nepal; Ministry of Energy, Water Resources and Irrigation. 2018. [Present Situation and Future Roadmap of Energy, Water Resources and Irrigation Sector \(White Paper\)](#). Kathmandu.

^b NEA. 2019. *Corporate Development Plan. 2019/2020–2023/2024*. Kathmandu.

^c Similar to the Power Transmission and Distribution System Strengthening Project, infrastructure assets to be constructed under this project are dispersed all over the country, and hence both projects use a national target. ADB. 2020. [Report and Recommendation of the President to the Board of Directors: Proposed Loan, Administration of Grant, and Administration of Technical Assistance Grant to Nepal for the South Asia Subregional Economic Cooperation Power Transmission and Distribution System Strengthening Project](#). Manila.

^d To be supported by project implementation consultants.

Contribution to Strategy 2030 Operational Priorities:

The expected values and methodological details for all OP indicators to which this operation will contribute results are detailed in Contribution to Strategy 2030 Operational Priorities (accessible from the list of linked documents in Appendix 2). In addition to the OP indicators tagged in the DMF, this operation will contribute results for OP 7.1.2: Measures to improve the efficiency and/or productivity of cross-border connectivity supported in implementation.

Source: ADB.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=54107-002-3>

1. Loan Agreement
2. Project Agreement
3. Approved Report and Recommendation of the President for the original project
4. Sector Assessment (Summary): Energy
5. Project Administration Manual
6. Financial Analysis
7. Economic Analysis
8. Summary Poverty Reduction and Social Strategy
9. Risk Assessment and Risk Management Plan
10. Climate Change Assessment
11. Gender Action Plan
12. Initial Environmental Examination
13. Resettlement and Indigenous Peoples Plan
14. Contribution to Strategy 2030 Operational Priorities

Supplementary Document

15. Financial Management Assessment