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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROGRAM DOCUMENT FOR A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 73.3 MILLION] MILLION (US$ 100 MILLION EQUIVALENT) TO

NEPAL

FOR THE

SECOND PROGRAMMATIC ENERGY SECTOR DEVELOPMENT POLICY CREDIT

April 2020

Energy and Extractives Global Practice
South Asia Region

GOVERNMENT FISCAL YEAR

July 16 – July 15

CURRENCY EQUIVALENTS

(Exchange Rate Effective as of April 30, 2020)

Currency Unit: Nepalese Rupee (NPR)

US$ 1.00 = NPR 121.09

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ACoS	Average Cost of Supply
AEPC	Alternative Energy Promotion Center
AHS	Annual household Survey
BFI	Banking and Financial Institutions
CAR	Capital Adequacy Ratio
CAT-DDO	Catastrophe Deferred Drawdown Option
CERC	Central Electricity Regulatory Commission
CBET	Cross-Border Energy Trade
COVID-19	Coronavirus Disease 2019
DFID	U.K. Department for International Development
DPC	Development Policy Credit
DP	Development Partner
DRRM	Disaster Risk Reduction and Management
DONIDCR	Department of National ID and Civil Registration
EIA	Environment Impact Assessment
EIB	European Investment Bank
ENR	Environment Natural Resource
ERC	Electricity Regulatory Commission
ESMAP	Energy Sector Management Assistance Program
EV	Electric Vehicle
EU	European Union
e-GP	Electronic Government Procurement
FDI	Foreign Direct Investment
FDF	Forest Development Fund
FVAP	Financial Viability Action Plan
FY	Fiscal Year
GDP	Gross Domestic Product
GoN	Government of Nepal
GESI	Gender and Social Inclusion
GIZ	German Agency for International Cooperation (*Deutsche Gesellschaft fur Internationale Zusammenarbeit*)

GRS	Grievance Redress Service
GW	Gigawatt
H1FY20	First half of FY20
IBN	Investment Board of Nepal
IDA	International Development Association
IEE	Initial Environment Examination
IFC	International Finance Corporation
IMF	International Monetary Fund
IPP	Independent Power Producer
IRC	Interest Rate Corridor
ISCR	Interest Service Coverage Ratio
JICA	Japanese International Cooperation Agency
KfW	*Kreditanstalt Fuer Wiederaufbau*
kV	Kilovolt
kWh	per kilowatthour
MCC	Millennium Challenge Corporation
MIGA	Multilateral Investment Guarantee Agency
MoEWRI	Ministry of Energy, Water Resources, and Irrigation
MoF	Ministry of Finance
MFD	Maximizing Finance for Development
MoFE	Ministry of Forests and Environment
MoHA	Ministry of Home Affairs
MTF	Multi-tier Framework
MW	Megawatt
NDC	Nationally Determined Contribution
NEA	Nepal Electricity Authority
NFRS	Nepal Financial Reporting Standards
NPL	Non- Performing Loan
NPTCL	Nepal Power Trading Company Limited
NRB	Nepal Rastra Bank
O&M	Operation and Maintenance
PAT	Profit After Tax
PBT	Profit Before Tax
PBITDA	Profits before interest, tax, depreciation and amortization
PEFA	Public Expenditure and Financial Accountability
PFM	Public Finance Management
PPMO	Public Procurement Monitoring Office
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
PSIA	Poverty Social Impact Analysis
PV	Photovoltaic
ROW	Right of Way
SSA	Social Security Allowance
T&D	Transmission and Distribution
TA	Technical Assistance
UNDP	United Nations Development Programme

UNCITRAL	United Nations Commission on International Trade Law
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
VAT	Value-added Tax
WBG	World Bank Group

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TABLE OF CONTENTS

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SUMMARY OF PROPOSED FINANCING AND PROGRAM

BASIC INFORMATION

Project ID	Programmatic	If programmatic, position in series
P170248	Yes	2nd in a series of 3

Proposed Development Objective(s)

The Energy Sector Development Policy Credit (DPC) operation aims to to support the government's efforts to improve the financial viability and governance of the electricity sector. The programmatic DPC series has two pillars: (i) improving the financial viability of the electricity sector; and (ii) improving the governance of the electricity sector.

Organizations

Borrower:	NEPAL
Implementing Agency:	MINISTRY OF ENERGY, WATER RESOURCES AND IRRIGATION

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Financing	**100.00**

DETAILS

International Development Association (IDA)	100.00
IDA Credit	100.00

INSTITUTIONAL DATA

Climate Change and Disaster Screening

YES
A climate and disaster risk screening of Nepal energy sector indicates potential risks to hydropower development from flash floods and glacier thinning and retreat in the Himalayas. It highlights the need to build risk management capacity to counter multiple hazards and the need for better coordination among different government agencies.

Overall Risk Rating

Substantial

Results

Indicator Name	Baseline (FY2016)	Target (FY2022)
Average retail tariff relative to average cost of electricity services	Average tariff is 32 percent below average cost of services	Average retail tariff covers average cost of electricity services
NEA's PBITDA	NPR 0.49 billion	> NPR 20 billion
Overall transmission and distribution loss	Baseline: 25.8 percent	< 18 percent
Generation PPAs	Generation PPA signed through negotiations	Generation PPA signed based on posted tariff and/or succeeding directives
Amount of electricity traded and exchanged	2,178 GWh	At least 20 percent higher
GESI guidelines	NEA recruitment policy is not informed by GESI guidelines	NEA recruitment policy is informed by GESI guidelines with mandated 45 percent target for women and socially excluded groups, of which 33 percent is targeted for women only in new NEA recruitment.

IDA PROGRAM DOCUMENT FOR A PROPOSED SECOND ENERGY SECTOR DEVELOPMENT POLICY CREDIT TO NEPAL

1. INTRODUCTION AND COUNTRY CONTEXT

1. **The proposed operation is the second in a series of three Development Policy Credit operations.** The Energy Sector Development Policy Credit (DPC) operations aim to support the Government of Nepal's (GoN) efforts to improve the financial viability and governance of the electricity sector. The programmatic DPC series has two pillars: (i) improving the financial viability of the electricity sector; and (ii) improving the governance of the electricity sector. The electricity sector is one of the key drivers of Nepal's economy and has the potential to yield large economic dividend for the country by meeting domestic demand and generating revenues through electricity trade with neighbors. A twofold to fourfold increase in investment is needed to realize the full economic potential of the electricity sector. The proposed operation seeks to strengthen the enabling conditions for investments to meet electricity demand in a reliable and sustainable manner. It also seeks to achieve greater integration with the regional electricity market to ensure the optimal use of Nepal's hydropower resource. IDA would provide US$ 100 million equivalent credit for the second operation in the DPC series.

2. **Access to reliable, affordable, and sustainable electricity services is fundamental to Nepal's economic growth and competitiveness.** While electricity connections – grid and off grid combined - are now available to 88 percent of the population[1], the annual per capita electricity consumption in Nepal, at 245 kWh, remains low and represents 8 percent of the global average and 35 percent of the South Asian average. The economic loss from load shedding during 2008–2016 in Nepal was estimated to be as high as US$ 1.6 billion per year.[2] Improved management of generation, reduced system losses, and increased electricity imports from India have helped eliminate the nationwide load shedding and supported economic growth. Improved electricity supply is one of the key factors for sustained Gross Domestic Product (GDP) growth in the last three years.

3. **The ongoing COVID-19 pandemic has halted many of the economic activities, reduced electricity demand, and weakened the financial position of the Nepal Electricity Authority; the full Impact is yet to be understood.** The immediate impact has been felt on Nepal Electricity Authority (NEA)'s cash position. The lockdown in effect in Nepal since March 25, 2020 stops all but essential movements of goods and people and prevented most consumers from paying their electricity bills. As a result, NEA is collecting only 20 percent of the normal revenues despite the incentives for customers to pay the bills. NEA is also experiencing reduced demand, primarily from industrial and commercial customers which normally represent 45% of the total demand and 50% of the total revenues. There is immediate need for NEA to comply with its payment obligations to independent power producers (IPPs) and keep the continuity of energy services. Further structural reforms are needed in the electricity sector to facilitate investments and ensure resilience, reliability, affordability and sustainability of electricity services.

4. **The proposed DPC operation continues to support key policy, regulatory, and institutional reforms to unlock the potential of Nepal's electricity sector.** These include measures to improve the financial viability of the government owned national utility Nepal Electricity Authority (NEA) as the sole off-taker; establish a regulatory framework that is autonomous, transparent, and accountable; facilitate electricity trade; and restructure NEA to

[1] Annual Report, NEA 2019, Annual Progress Report, AEPC, 2019.
[2] Timilsina Govinda, Prakash Raj Sapkota, and Jevgenjis Steinbuks, 2017. "How Much Has Nepal Lost in the Last Decade due to Load Shedding? An Economic Assessment Using a CGE Model." Policy Research Working Paper WPS 8468, World Bank, Washington, DC.

create a level playing field for the private sector in the electricity sector and increase competition. These reforms will help lower the investment risk and reduce the cost of private capital to Nepal's electricity sector on the one hand, and improve access and affordability of the poor, on the other. There is broad-based consensus among stakeholders on these reforms, which were elaborated in the White Paper on Energy, Water Resources and Irrigation Sector's Current Status and Roadmap for Future (hereafter "the White Paper"), issued in May 2018. Increased political stability, consensus across the political spectrum, dynamic leadership and reform champions in Nepal have led to initial success of the reforms and sector turnaround and are favorable to continued reforms.

5. **Poverty in Nepal has been on a declining trend.** The proportion of Nepali households living in poverty (as measured by the international extreme poverty line) fell from 46 percent in 1996 to 15 percent in 2011. Nepal has also had an impressive performance on shared prosperity. From 2003 to 2010, consumption growth of the bottom 40 percent was 7.5 percent compared to 4 percent on average across all households. With a higher poverty line of US$3.20 a day, the poverty rate is projected to decline to 42 percent in 2019, from 51 percent in 2010. The key drivers of improvement in the twin goals included an increase in the amount and number of households receiving remittances, an increase in labor income derived from wage and non-wage employment, and changes in the demographic structure with a lowering of the dependency ratio.

6. **The proposed operation supports the World Bank's twin goals of poverty reduction and shared prosperity** and is consistent with the World Bank Group's approach to Maximizing Finance for Development (MFD) and the Country Partnership Strategy for FY2019–2023[3]. The DPC series complements the World Bank Group's (WBG's) existing engagement in generation, transmission, distribution and off-grid, renewable-based solutions in the form of investment operations and technical assistance (TA). In addition, the operation has synergy with WBG's engagement in social protection, environmental and social risk and impact management, and water resources management. The operation also leverages the work undertaken by other development partners[4] to support electricity sector reforms in Nepal.

2. MACROECONOMIC POLICY FRAMEWORK

2.1. RECENT ECONOMIC DEVELOPMENTS

7. **After a strong performance in FY19, growth decelerated in the first half of FY20 and likely declined further as the COVID-19 pandemic intensified.** GDP grew by 7 percent in FY19 supported by an uptick in tourist arrivals, strong agricultural growth from good monsoons and robust industrial growth due to increased electricity generation. On the demand side, the main growth drivers were private investment and private consumption, the latter supported by remittance inflows. In the first half of FY20 (mid-July to mid-January, H1FY20), agricultural growth slowed down with delayed monsoons and crop damage. More recently, the stringent measures imposed to contain the spread of COVID-19, including travel restrictions, has stopped tourist arrivals and hotel occupancy rates have fallen significantly.[5] With lower oil prices, remittance inflows are declining, impacting services growth. Lockdowns and social distancing measures have disrupted domestic distribution channels causing shortages of fertilizer, livestock feed, labor and transportation, all of which will further decrease agricultural growth in FY20. The restrictions on trade (limited to only essential goods) has disrupted supply chains in the manufacturing sector. Shortages in imports of building materials and skilled labor have brought construction activity to a halt. Lower

[3] Report No.83148-NP; July 10, 2018 discussed at the Board on August 7, 2018
[4] The list of Development Partner activities in the energy sector can be found:
https://energypedia.info/wiki/Towards_a_Reliable_Affordable_and_Sustainable_Energy_Sector_in_Nepal
[5] As of April 2020, the Hotel Association of Nepal estimated the hotel occupancy rates among its 270-members at below 10 percent.

domestic demand has translated to lower consumption of electricity, gas and water, further reinforcing the slump in overall economic activity.

8. **Inflation was subdued in FY19 but rose in H1FY20 and more recently, driven by higher food prices**. In FY2019, good agricultural production and the peg to the Indian Rupee kept inflation in check at 4.6 percent. Prices for non-food items grew by 5.8 percent during the year, driven mainly by housing and utility prices while food prices rose by 3.1 percent. By H1FY20, inflation rose to 6.4 percent (year-on-year), driven by higher food prices (particularly vegetables) and increased import duties on certain agricultural and industrial goods. More recently, inflation rose further to 6.7 percent (year-on-year) in March 2020, primarily led by food prices because of disruptions in the distribution channels. The Nepalese rupee (NPR) is pegged to the Indian rupee (INR) at the rate of 1.6 NPR to one INR. As a result, inflation follows the price movements in India with a lag. Given the increasing inflation wedge between Nepal and India, the real effective exchange rate appreciated by 2.1 percent (year-on-year), in H1FY20.

9. **To support growth and combat the effects of COVID-19, the NRB has adopted accommodative monetary policy measures**. As per the IMF's COVID-19 policy response tracker, the NRB lowered its cash reserve ratio from four to three percent and reduced the interest rate on the standing liquidity facility rate from six to five percent. The NRB is no longer requiring banks to build up the two percent countercyclical capital buffer that was due in July 2020. The NRB also temporarily relaxed reporting norms and announced that bank and financial institutions will not be charged or penalized for their non-compliance with regulatory and supervisory requirements in April. The size of the Refinance Fund has been increased to provide subsidized funding for banks willing to lend at a concessional rate to priority sectors, including the SMEs affected by the pandemic. The NRB further announced at the end of April that banks will defer loan repayments due in April and May until mid-July. For working capital loans, banks will extend the repayment schedule of the amount due during the lockdown for up to 60 days. Businesses in affected sectors, if they can show the needs, can qualify for additional working capital loans of up to ten percent of the approved amount of their existing working capital loans, to be repaid within a year at most. The NRB has directed banks to apply lower interest rates (up to two percentage points) when calculating the interest due for the period of mid-April to mid-July, and this would be applicable to borrowers from affected sectors.

10. **The banking sector's headline stability indicators were stable as of mid-February 2020.** The capital to risk-weighted-assets ratio of commercial banks stood at 13.7 percent in mid-February 2020, meeting the regulatory minimum of 11 percent. The non-performing loan (NPL) ratio remained low at 1.7 percent of the total loan portfolio, and the loan loss provisions covered 130.4 percent of NPLs. Nevertheless, financial sector stability ratios come with a lag and aggregate indicators may mask individual financial institution weaknesses. Domestic credit increased by 12.6 percent year-on-year in mid-March 2020, and deposits at banks and financial institutions expanded by 16.1 percent. However, both credit and deposit growth rates are below those achieved in the corresponding period of the previous year. The recent reduction in remittances due to COVID-19 is expected to tighten liquidity, causing pressures on interest rates. The commercial banks' credit to core capital cum deposit ratio stood at 77.3 percent, close to the 80 percent regulatory limit.

11. **The trade deficit reduced slightly in FY19 and narrowed further in the first half of FY20**. Imports grew at a slower pace in FY19 (by 5.4 percent) and contracted by 3.5 percent (year-on-year) in the first half of FY20. This was because of lower demand for reconstruction-related industrial supplies (iron, steel, and coal), gold (due to higher prices) and lower petroleum prices. Also, capital goods imports to support federalism declined. Exports

Table 1: Key Macroeconomic Indicators

	FY2017	FY2018	FY2019	FY2020(f)	FY2021(f)	FY2022(f)	FY2023(f)
Real economy (Percentage change, unless otherwise stated)							
Nominal GDP, current prices (NPR, billions)	2,674	3,045	3459	3746	4085	4477	4920
Real GDP growth (at market prices)	8.2	6.7	7.0	1.8	2.1	2.8	3.3
Real GDP growth (at factor prices)	7.7	6.1	6.6	1.8	2.1	2.8	3.3
Contributions to GDP growth (at factor prices):							
Agriculture (percentage points)	1.7	0.9	1.6	0.8	0.7	1.1	1.2
Industry (percentage points)	1.7	1.4	1.2	0.5	0.6	0.7	0.8
Services (percentage points)	4.3	3.8	3.9	0.5	0.8	1.0	1.3
Consumer prices (period average)	4.4	4.1	4.6	6.6	6.7	6.5	6.3
Fiscal sector (As percentage of GDP, unless otherwise indicated)							
Total revenue and grants	24.1	25.2	25.1	21.6	23.8	24.3	24.6
Expenditures	27.2	31.8	27.7	28.9	30.4	30.2	30.0
Fiscal balance (including grants)	-3.1	-6.6	-2.6	-7.3	-6.6	-5.8	-5.4
Financing sources	5.5	7.8	5.1	10.5	9.3	8.5	7.9
Foreign	2.2	3.0	2.4	5.3	4.3	3.5	2.9
Domestic	3.3	4.7	2.8	5.2	5.0	5.0	5.0
Total public debt	26.3	30.2	30.2	38.0	43.6	47.8	49.8
Domestic	10.8	13.0	13.2	16.3	18.9	21.2	23.3
External	15.5	17.3	17.0	21.6	24.7	26.6	26.5
Monetary sector (Percentage change, unless otherwise indicated)							
Broad money	15.5	19.4	15.8	....	....	....	....
Domestic credit	21.4	26.5	21.4	....	....	....	....
Private sector credit	18.1	22.4	19.3	....	....	....	....
Balance of payments (As percentage of GDP, unless otherwise indicated)							
Current account balance	-0.4	-8.1	-7.7	-7.2	-6.5	-5.5	-5.2
Exports of goods and services	9.0	8.9	8.7	6.9	6.0	6.2	6.5
Imports of goods and services	42.4	46.1	46.3	37.2	35.3	35.6	35.8
Remittances (as percentage of GDP)	26.0	24.8	25.4	18.5	17.9	18.2	18.3
Gross official reserves ($, millions, eop)	8,730	9,479	7995	7689	7339	7328	7427
Gross official reserves (in months of prospective imports of goods and services)	7.9	7.4	7.8	7.2	6.2	5.6	5.1
Rupees per U. S. dollar (period average)	106.2	104.4	112.9	...	...	...	...
Memorandum items:							
Nominal GDP, current prices (USD, billion)	25.2	29.2	30.6	...	...	...	...
Population, million	28.7	29.1	29.5	...	...	...	...
GDP per capita, USD current	877	1002	1039	...	...	...	...

(which accounted for only 3.3 percent of GDP in FY19) grew by 12.8 percent in FY19, and by 22.2 percent (year-on-year) in the first half of FY2020. The growth was driven by refined palm and soybean oil exports to India as Nepali traders are not subject to the recently increased tariffs on these products (under the South Asian Free

Trade Area Agreement). The contraction in imports in the first half of FY20, together with higher exports, reduced the trade deficit by 5.6 percent (year-on-year). More recently, the imposition of a lockdown and restrictions on trade to just essential food and health items has reduced both imports (52 percent, year-on-year) and exports (58 percent, year-on-year) between mid-March and mid-April 2020.

12. **The current account deficit declined in the first half of FY20 because of lower imports and the slight increase in remittances.** Remittances grew by 7.8 percent in FY19 supported by the depreciation of the Nepalese rupee against the US dollar and increased use of formal channels for remittance transfers. In the first half of FY20, remittance growth slowed down to 1.2 percent (year-on-year) because of the base effect of the increase in the previous year. With a lower trade deficit and the growth in remittances, the current account deficit declined by 44.3 percent (year-on-year) in H1FY2020. More recently, there has been a sharp decline in the demand for migrant workers in Gulf countries because of lower oil prices (these countries account for almost 70 percent of the remittances). As a result, remittance inflows have reduced significantly.[6] With the exception of medical supplies and other essential items, imports have also declined in recent weeks. FDI, external borrowing and other financing sources remained low, while central bank reserves increased from US$8 billion in July 2019 (7.8 months of prospective imports) to US$8.4 billion (7.3 months of imports) in January 2020.

13. **Significant underspending of the budget reduced the fiscal deficit in FY19 and the first half of FY20.** The budget deficit declined in FY19 to 2.6 percent of GDP as a result of revenue growth of 13.4 percent and an expenditure contraction of 1 percent. Strong revenue growth in FY19 was driven by income taxes, VAT and excise collections, all of which grew by more than 14 percent. Underspending of the budget by 17.4 percent arose from (i) delays in enacting the Federal, Provincial, and Local Civil Service Acts and establishing the provincial civil service commissions which reduced hiring of staff at the subnational levels; and (ii) bunching of spending with 14.9 percent of recurrent and 36.5 percent of capital spending occurring in the last month of the fiscal year. In the first half of FY20, revenues grew by 13.3 percent, primarily because of higher income tax collections. Meanwhile, recurrent spending grew by 3.7 percent year-on-year, driven by transfers to subnational governments, higher wages and social security payments.[7] However, only 15.4 percent of the FY20 capital budget was spent. As a result, there was a fiscal surplus in H1FY20. More recently, with the decline in economic activity, trade restrictions, and the lockdown, revenue collections have declined while spending has increased to support vulnerable groups and firms. Overall, public debt remains low and stood at 30.2 percent of GDP in FY19.

2.2. MACROECONOMIC OUTLOOK AND DEBT SUSTAINABILITY

14. **GDP growth is projected to decelerate sharply in FY20 and is likely to range between 0.5 and 1.8 percent.** This is a significant decline compared to the 6.4 percent projected prior to the pandemic. In FY21, growth is expected to remain subdued at 2.1 percent. However, the economy could contract by as much as 2.8 percent if there is a large-scale community transmission of COVID-19, continuation of the global recession, and if some contingent liabilities devolve on the government.[8] On the supply side, input and labor shortages are projected to impact agricultural growth. Industrial production during FY20-21 is also projected to be lower because of disruptions to supply chains and the shortage of domestic and foreign skilled workers (particularly from China). Growth in services, especially, retail and restaurants are projected to stagnate with the decline in remittance inflows, travel disruptions and lower tourist arrivals. This will translate into a significant reduction in hotel occupancy rates and other ancillary activities including the transport industry (airlines and other forms of

[6] As per the NRB, remittances decreased by 61 percent (year-on-year) between mid-March and mid-April, 2020.
[7] The salary of gazetted and non-gazetted officers was increased by 18 and 20 percent, respectively, from FY20.
[8] IMF is projecting a growth of 1 percent in FY20 and 3.5 percent in FY21.

transport). On the demand side, lower remittances because of the fall in oil prices and reduction in labor outmigration is expected to reduce private consumption. Government consumption (federal, provincial and local) will be supported by increased spending to mitigate the effects of COVID-19. Higher salaries and spending on goods and services will also increase government expenditure. Private investment is projected to be adversely impacted from weak consumer confidence and uncertainty around the pandemic. Public investment is projected to be subdued in FY20 with some pick up in the latter half of FY21 to support economic recovery. Over the medium-term, a gradual recovery is projected. The delays in private investment are expected to lead to a slow and lethargic recovery of the industrial sector. The service sector will also experience a sluggish recovery amid low remittances and the likely aftereffects of COVID-19 on the tourism sector. The agricultural sector may rebound relatively faster than industry and services.

15. **The NRB remains committed to the exchange rate peg with the Indian rupee while adopting measures to mitigate COVID-19 effects**. The currency peg with India will continue to anchor inflation expectations. Over the medium-term, reserves are projected to be adequate for maintaining the peg. Open market operations are the main instrument used to conduct monetary policy. For fiscal and monetary policy coordination, the Secretary of Finance sits on the NRB Board that sets the monetary target (broad money growth). The target is based on projected economic growth and inflation and aims to achieve price and external sector stability. The NRB also sets the target for private sector credit-growth in line with monetary targets. It monitors excess liquidity of the banking and financial institutions (BFIs) and uses the interbank rate of BFIs as the operating target. The interest rate corridor (IRC) is used to minimize the volatility of interbank rates. Until recently, interbank rates in Nepal have remained within the IRC lower bound of 3 percent and upper bound of 6 percent. However, in early March 2020, the interbank rate slumped and remained below the lower limit. On March 29, 2020, NRB reduced the lower and upper bound of the IRC to 2 and 5 percent, respectively, and the policy rate was reduced to 3.5 percent, to mitigate the impact of COVID-19. The monetary policy stance is expected to remain accommodative in the medium-term.

16. **The financial stability risks are likely to build up in line with the impact of COVID-19 on the real economy.** Overall, the COVID-19 crisis is expected to impact the financial sector indicators with a lag and amplify the effect on economic growth. Financial institutions can be expected to face reduced profitability, weaker asset quality, and lower deposit mobilization, negatively affecting liquidity and solvency indicators as well as their risk-appetite to extend further credit. At the same time, disruptions from limited banking hours and/or staff unavailability in financial institutions and regulatory agencies may also impact the provisioning of financial services. The extent to which the NRB's measures will suffice will largely depend on the duration and depth of the COVID-19 crisis. Additional measures may become necessary to support liquidity and risk sharing targeted on the most affected sectors and firms. Overall, NRB will need to continue implementing macroprudential measures, further enhance supervision, and work closely with other government entities to further bolster crisis management, recovery and resolution frameworks, as well as out-of-court and insolvency processes.

17. **The current account deficit is projected to narrow over the medium term with the decline in imports.** Lower economic growth and the sharp fall in oil prices is expected to reduce imports to an average of 36 percent of GDP over the medium term, compared with 46 percent in FY19. With weak external demand, exports are projected to remain subdued and are likely to range between 6-6.5 percent of GDP a year. Remittances are also forecast to decline over the next few years and are expected to stabilize at around 18 percent of GDP over the next three years, significantly lower than the 25 percent in FY19. The significant decline in imports is likely to more than offset the reduction in remittances, resulting in a narrowing of the current account deficit to 5.2 percent of GDP by FY23. It will be financed primarily by long-term borrowing and a drawdown of international reserves. Foreign exchange reserves are likely to cover around 5 months of imports by FY23. This remains comfortably

above the IMF's suggested threshold of 2.3 months for credit-constrained economies with fixed exchange regimes. There are negligible portfolio investments in the country and despite some expected increase in FDI, it will continue to remain low over the medium-term (Table 3).

18. **The fiscal deficit is expected to remain high over the medium term because of increased government spending.** Revenues as a share of GDP are expected to decline sharply from 25.1 percent in FY19 to 21.6 percent in FY20. Given the impact of COVID-19 on the economy, both direct and indirect tax collections are projected to decline. Over the medium-term, as economic growth recovers gradually, tax collections are projected to increase. Some of the measures which will support growth in tax collections over the medium term include efforts to broaden the base and improvements in tax administration (Table 2). At the provincial and local level, efforts will focus on establishing the legal and institutional framework to support enhanced own-tax revenue collection. Non-tax revenues are also expected to increase by FY23 supported by royalties from new hydropower projects. In FY20, recurrent expenditures of the government are likely to increase to 23.6 percent of GDP, up from 20.7 percent in the previous year. The increase is primarily attributable to higher spending on salaries, social security, and COVID-19 related expenditure on health and relief measures. Government spending on relief and recovery efforts will be spread over the next 2-3 years, keeping spending levels elevated. As the pandemic subsides, resources are expected to be redirected to growth supporting capital spending which is projected to increase to 6.4 percent of GDP by FY23. With lower revenue collections and high spending, the fiscal deficit is projected to increase to 7.3 percent of GDP in FY20 and then gradually decline to 5.4 percent by FY23. The deficit will be financed by a mix of domestic and international borrowing, primarily, concessional financing from international Development Partners.

19. **Results from the most recent Debt Sustainability Analysis indicate that Nepal remains at low risk of debt distress.** Despite the impact of the pandemic, all external and total debt and debt service indicators are projected to remain below their policy-dependent indicative thresholds (including under the most extreme shock scenario). An increase in total public debt is projected over the medium term with the increase in deficit levels. However, the debt-to-GDP ratio will remain below the 70 percent threshold over the medium-term (Figures 1 and 2). Stress tests show a vulnerability to growth and export shocks and natural disasters and underscores the importance of implementing sound macroeconomic policies, including structural reforms in support of productivity-led growth and improved spending efficiency.

20. **Although there are higher downside risks from COVID-19, Nepal's macroeconomic policy framework remains adequate for development policy financing**. Risks include a widespread domestic outbreak of COVID-19 requiring an extended period of lockdown, protracted travel restrictions, and a significant decline in remittance inflows. While these risks are significant, Nepal has a record of sustaining macroeconomic stability through various global crises, conflict, internal political instability and natural calamities, providing additional assurance of its capacity to handle the emerging macroeconomic risks in the near and medium-term. Inflation has remained in single digits, the government is engaging on reforms, the debt level remains low and international reserves remain adequate. While a global pandemic presents unprecedented challenges, the government has taken steps to reduce the economic risk from COVID-19 and has started mobilizing finances for a comprehensive economic support package. In the short to medium term, the government's pandemic response will be paramount, including testing, quarantining and treating patients and providing economic relief to the poor and vulnerable. Other ongoing priorities also remain, including accelerating reforms in business regulation and investment climate, deepening fiscal and federalism related reforms and remaining committed to the peg with the Indian Rupee.

Table 2: Fiscal Indicators

(As percentage of GDP, unless otherwise indicated)	FY2017	FY2018	FY2019	FY2020(f)	FY2021(f)	FY2022(f)	FY2023(f)
Total Revenue and Grants	**24.1**	**25.2**	**25.1**	**21.6**	**23.8**	**24.3**	**24.6**
Total revenue	22.9	23.9	24.3	20.1	20.8	22.3	23.1
Tax revenue	20.7	21.0	21.3	18.5	18.9	19.8	20.5
Taxes on goods and services (incl. VAT and excise)	10.4	11.4	11.5	10.3	10.5	10.9	11.4
Direct taxes	5.4	5.1	5.4	4.8	4.9	5.1	5.4
Taxes on international trade	3.9	4.2	4.1	3.2	3.3	3.4	3.5
Other taxes (incl. social security contributions)	1.0	0.3	0.2	0.2	0.2	0.4	0.2
Nontax revenue	2.1	2.8	2.7	1.6	1.9	2.5	2.6
Grants	1.2	1.3	0.9	1.5	3.0	2.0	1.5
Total Expenditure	**27.2**	**31.8**	**27.7**	**28.9**	**30.4**	**30.2**	**30.0**
Current expenditure	19.4	22.9	20.7	23.6	24.9	24.4	23.6
Wages and compensation	4.4	3.7	2.9	3.1	3.1	3.2	3.2
Goods and services	2.1	2.0	1.1	1.2	1.3	1.4	1.4
Interest payment	0.4	0.5	0.6	0.9	1.1	1.3	1.4
Current transfer	12.4	16.7	16.1	18.4	19.4	18.5	17.6
of which: fiscal transfer	0.0	7.9	9.3	8.9	8.9	8.9	8.9
Capital expenditure	7.8	8.9	7.0	5.2	5.5	5.8	6.4
Fiscal balance (including grants)	**-3.1**	**-6.6**	**-2.6**	**-7.3**	**-6.6**	**-5.8**	**-5.4**
Financing sources	5.5	7.8	5.1	10.5	9.3	8.5	7.9
Foreign	2.2	3.0	2.4	5.3	4.3	3.5	2.9
Domestic	3.3	4.7	2.8	5.2	5.0	5.0	5.0

Table 3: BoP Financing Needs and Sources

in US$ millions	FY2017	FY2018	FY2019	FY2020(f)	FY2021(f)	FY2022(f)	FY2023(f)
Financing requirements	**-263**	**-2,543**	**-2528**	**-2587**	**-2569**	**-2420**	**-2501**
Current Account deficits	-95	-2,365	-2351	-2393	-2366	-2195	-2245
Debt amortization	-168	-178	-178	-194	-203	-225	-257
Financing Sources	**263**	**2,543**	**2528**	**2587**	**2569**	**2420**	**2501**
FDI and portfolio investment (net)	127	168	116	133	181	270	366
Long term borrowing	589	956	722	1767	1549	1406	1254
Others (trade credits, currency deposits, misc items etc)	129	1,666	974	382	489	734	981
Changes in reserves (minus sign indicates increase)	-583	-247	716	306	350	11	-99

2.3 IMF RELATIONS

21. **The last Article IV Consultation took place in January 2020 (before COVID-19) and was approved by the IMF Executive Board on March 17**. The Article IV noted that Nepal has been able to achieve higher levels of growth as a result of greater political stability, improved electricity supply and reconstruction activities (following the

2015 earthquake). It highlighted the need for additional policies to support inclusive growth, while safeguarding macroeconomic and financial stability. It also indicated the need for new legislation and regulations to boost foreign investment. It stressed the importance of improving implementation capacity and staffing, better skills matching, and aligning incentives across and within ministries to ensure that high-quality projects move forward in a clear and timely manner. It recommended that fiscal policy should remain prudent, and that the transition to fiscal federalism be carefully managed, given slower growth in India, sluggish remittances, and weaker agricultural production. It noted the narrowing of the current account deficit, stabilization of gross official reserves, and slower credit growth. An updated press release on April 6, 2020 noted that the COVID-19 pandemic has greatly amplified uncertainty and downside risks around the outlook.

22. **Nepal has requested support under the IMF's Rapid Credit Facility (RCF) and will receive debt relief from the Catastrophe Containment and Relief Trust (CCRT) to mitigate the effects of COVID-19 on its foreign exchange earnings and reserves**. The RCF is currently under preparation, to be approved by the Fund Board in the first week of May for a proposed 100 percent of quota (US$217 million). Nepal will also receive debt relief from the CCRT of SDR 2.85 million (or US$3.9 million). CCRT funds will go towards payment of debt service owed to the IMF from previous RCFs (in 2010 and 2015). The World Bank continues to closely coordinate with the IMF on financial sector reform issues, public financial management capacity building, the federalism agenda, and reforms to raise investment and accelerate growth.

3. GOVERNMENT PROGRAM

23. **The GoN is committed to achieve the full economic potential of Nepal's electricity sector.** Despite having an estimated hydropower generating potential of about 43,000 megawatts (MW), Nepal's current installed generating capacity is only about 1,320 MW and the share of electricity in the country's primary energy consumption is less than 10 percent (see Annex 6 for Sector Overview). Increased electricity generation would enable Nepal to meet the rapidly growing electricity demand, reduce dependence on fossil fuel imports, and improve the balance of payment situation through exports to neighbors.

24. **The GoN is committed to developing a reliable, affordable, and sustainable electricity sector that supports poverty reduction and shared prosperity in the country**. It has articulated a clear strategic direction for the electricity sector in the White Paper. The key sector goals include: (a) to reach 5,000 MW installed capacity in 5 years and 15,000 MW installed capacity in 10 years, (b) to expand access to electricity in 3 years and clean cooking in 5 years to 100 percent of the population, and (c) to increase the per capita consumption of electricity to 1,500 kWh in 10 years.

25. **The road map to achieve the above-mentioned goals is as follows.** In the short-term, improve the reliability of supply through further reduction of system losses, demand-side management and consumer education, and efficient system dispatch; full operationalization of the Electricity Regulatory Commission (ERC); preparation of a restructuring plan for NEA; and update and implementation of the financial viability plan. In the medium term, reach supply-demand balance through investments in new generation, prioritization of large peaking and storage hydropower projects, expansion of transmission and distribution (T&D) networks, energy access and export, and cross-border transmission lines; deepen power sector reforms through a new legal framework, operationalization of the power trade company, introduction of competition for generation , integrated system planning, and separation of NEA's generation, transmission, and distribution business. In the long-term, achieve sound regulatory framework, competent sector institutions and competitive, efficient power

market through continued sector reforms, sustainable investments in energy infrastructure, and integration into the regional power market.

4. PROPOSED OPERATION

4.1. LINK TO GOVERNMENT PROGRAM AND OPERATION DESCRIPTION

26. **The policy and institutional measures included in the proposed operation are consistent with GoN's power sector strategy and action plan and Nationally Determined Contribution (NDC) to integrate climate change into the country's development and decision-making**. The GoN's vision is to graduate from least-developed country status by 2022 and achieve middle income country status by 2030. The government's 15th Development Plan (FY2020–2024) targets annual average growth of 9.4 percent and an annual per capita income of US$ 1,595 by FY2024. The government sees the electricity sector as key a driver of Nepal's economic growth. The proposed reforms are essential for achieving the full economic potential of the sector and supports the NDC targets related to hydropower and renewable energy development, electric vehicles, low-carbon economic development, forest cover and governance, reduction of fossil fuels for the transport sector and local air pollution. The proposed operation is the second in a programmatic series of three operations. The indicative triggers for the third operation of the series, expected to be prepared in 18 months, are focused on medium-term reforms. It is highly probable that the World Bank Group's support will remain relevant to address medium- and long-term reforms after this series.

27. **The operation draws on previous experience and lessons learned in policy lending in Nepal, including**:

- By responding and remaining committed to the client's request for assistance, the World Bank can continue to be regarded as a valued partner.
- Coordination among government agencies and development partners to maintain consensus on reforms and timely provision of TA can provide more informed decision making.
- World Bank assistance and support for initiating difficult policy decisions can help the client maintain momentum and implement reform actions, even after the policy operation is closed.
- Responding in a timely manner to the client during the emergency such as COVID-19 outbreak helps the government cope with the shock to the provision of basic services and fiscal support.

4.2. PRIOR ACTIONS, RESULTS AND ANALYTICAL UNDERPINNINGS

Pillar 1: Improving the financial viability of the electricity sector

28. **NEA has sustained its impressive financial turnaround.** NEA has now been profitable for three consecutive years after more than a decade of financial losses between FY2006-2016. This reflects efforts by NEA to become more efficient by reducing technical and non-technical losses, reduce financing costs through the implementation of a financial restructuring plan, and institute improved financial planning and discipline through its Financial Viability Action Plan (FVAP). Prior actions in DPC1 and DPC2 have contributed significantly to the turnaround in NEA's financial performance.

Implementation of measures to improve the financial viability

DPC1	DPC2	DPC3
Prior Action 1: The Cabinet has approved the NEA financial restructuring plan.	**Prior Action 1**. (i) ERC has issued Electricity Consumer Tariff Fixation Directive; and (ii) ERC has accepted NEA tariff application.	**Trigger 1.** NEA has published tariff rates

		following ERC decision on its second tariff application.
Prior Action 2: The NEA Board of Directors has adopted a financial viability action plan.	**Prior Action 2.** (i) NEA Board of Directors has approved NEA Corporate Development Plan; and (ii) MoEWRI has assigned the responsibility for the regulation of electric vehicles charging stations operation to NEA.	

29. **Prior Action 1 supports ERC to issue a new tariff-setting directive and NEA to publish the new tariff rates following ERC decisions on its tariff application.** The ERC issued *Electricity Consumer Tariff Fixation Directive* in November 2019. The Directive focuses on establishing the initial regulatory basis of annual revenue requirements using existing data and institutes open, transparent process requirements such as public hearings. In subsequent years, the ERC is expected to carry out regular tariff reviews by requiring NEA and other licensees to improve their efficiency and service quality which will lead to positive environmental and climate co-benefits. The new tariff regime includes a new category for electric vehicles (EVs) to facilitate the adoption of electric vehicles (see para 34 for details) replacing fossil fuel consumption and imports. This tariff review will fill a four-year gap since the last tariff adjustment decision was made by the now defunct Electricity Tariff Fixation Committee in 2016. ERC accepted the NEA application in February 2020 and subsequently initiated stakeholder consultations and public hearings. Due to the COVID pandemic, ERC has not been able to complete the review process and reach a decision by Board submission.

30. **Prior Action 1 builds on actions undertaken in DPC1 and is expected to further strengthen NEA's financial position and achieve financial sustainability**. DPC1 supported the approval of NEA financial restructuring plan and the adoption of the first financial viability action plan. Since FY2017, NEA has been able to sustain and increase profits fmor three consecutive years after decade long financial losses. Prior Action 1 initiates the institutionalization of a regular tariff review process that allows NEA to cover its annual revenue requirements and move toward full cost recovery of its service provision, which is crucial to the financial health and sustainable investments of the sector. The transparent, methodological approach under the new tariff directive represents significant improvement from the past tariff-setting arrangement through protracted, nontransparent, and highly irregular negotiations.

31. **Prior Action 2 demonstrates that NEA and Ministry of Energy, Water Resources and Irrigation (MoEWRI) have taken steps to implement the NEA financial viability action plan adopted in 2018 and updated in 2020.** NEA Board of Directors has approved a corporate development plan in December 2019, an important component of which is a 5-year investment/financing strategy and implementation plan. The US$ 3.6 billion plan covers NEA's investments in hydropower development, transmission and distribution as well as electric vehicle charging infrastructure. The capital requirements and potential sources of financing laid out in this strategy will help NEA optimize its cost of supply, a key element of its long-term financial viability.

32. **To enhance domestic demand for the emerging surplus electricity and reduce fossil fuel consumption and greenhouse gas emissions in the transport sector, MoEWRI has assigned the responsibility for regulating operation of electric vehicle charging stations to NEA.** NEA's long-term financial viability calls for optimizing revenue generation from its emerging surplus electricity, particularly during the raining seasons. EVs can be charged during off-peak hours when electricity demand in other sectors is low and use the surplus electricity which would be spilled or curtained otherwise. Electric mobility is a new frontier that can have transformative impact in replacing fossil fuel consumption with renewable-based electricity and enhance energy security as Nepal spends more than US$ 1.3 billion annually on fossil fuel imports mainly for transport. Promotion of electric vehicles is one of the priorities of NEA's financial viability action plan. GoN adopted a National Action Plan for Electric Mobility in

April 2018 and issued other policy incentives such as reduced custom duties[9], exemption of annual road taxes, and most recently a special tariff category for electric vehicles. However, the fleet of electric vehicles remains low, well short of the target of 20 percent in the total fleet, mainly due to lack of charging station infrastructure and related service standards. Prior action 2(ii) addresses this gap by assigning the responsibilities for service provision modality, quality, safety, and certification of the charging station and related land requirements to NEA in line with the regulatory framework to be developed by ERC. Increased electricity consumption in the transport sector will help implement Nepal's NDC and strength NEA's financial status by increasing the revenue from sales of surplus electricity to EVs. Furthermore, GoN has encouraged to use induction stoves for cooking, and promoted more energy intensive industries. The surplus energy can be sold to Indian exchange markets or short-term markets through bids.

33. **The updated FVAP confirms the effectiveness of NEA's existing investment strategy in subsidiary companies.** Of the 4 subsidiary companies which has been paying dividends in FY2017-19, the average dividends have been more than 27 percent, compared to the industrial benchmark of 16 percent. Given that dividend payments from its subsidiaries are proven to be adequate, there is no need to change NEA's current financial arrangements with its subsidiaries.

34. **Prior actions 1 and 2 sustain the focus on NEA's long-term financial sustainability as defined in the Financial Viability Action Plans to optimize costs of supply and revenue generation.** NEA has made good progress in implementing the recommended measures, notably in T&D loss reduction, system planning, investment planning, and demand side management.[10] Regular update of the FVAP enables a culture of financial planning and discipline to emerge in NEA.

Implementation of measures to reduce T&D losses

DPC1	DPC2	DPC3
Prior Action 3: NEA has signed performance contracts with chiefs of regional and district offices to reduce transmission and distribution losses.	**Prior Action 3**. NEA has (i) implemented immediate priority institutional measures, satisfactory to the Association, to reduce power transmission and distribution losses; and (ii) established a monitoring and evaluation mechanism for the performance of its provincial and district distribution center chiefs.	**Trigger 2.** NEA has completed implementation of the institutional measures to reduce transmission and distribution losses outlined in NEA's loss reduction master plan and published the results of performance contracts.

35. **Prior Action 3 will support NEA to reduce T&D losses through implementation of immediate priority institutional measures to reduce T&D losses and establishment of a monitoring and evaluation mechanism for the performance of its provincial and district distribution center chiefs.** The NEA has implemented the following immediate priority institutional measures, but not limited to: (i) performance contracts signed with 138 NEA provincial chiefs and district distribution center chiefs; (ii) adoption of a Distribution Activity Information System to monitor losses in a systematic manner; (iii) formation of theft control units in NEA Distribution and Consumer Service Offices. NEA has established a monitoring and evaluation mechanism, including a three-person committee, to evaluate the performance of the provincial and district distribution center chiefs on an annual basis against the performance targets and using the data from Distribution Activity Information System. The evaluation results from the monitoring and evaluation committee go into human resource files and are used for promotion and other

[9] 1% and 10% excise duty for private and public electric vehicles respectively compared to 240% custom duty on other vehicles.
[10] The impact of demand side management is remarkable. For example, posterior to load shedding, NEA has managed to increase electricity consumption from 5,615 GWh in 2018 to 6,394 GWh in 2019 while decreasing the peak demand from 1,508 MW to 1,320 MW over the same period.

career advancement opportunities. Along with these institutional measures, NEA has carried out consumer awareness campaigns and undertaken investments to reduce technical losses through, among others, (i) upgradation of 0.4 kV lines, 11 kV lines and transformers, and 33 kV lines and substations; (iii) replacement of non-functioning meters; and (iv) improvement in meter reading. These loss reduction initiatives help to reduce imports from India, improve the operational efficiency, increase the availability and reliability, displace diesel-based generation and reduce import of fossil fuel-based generation from India.

36. **Prior Action 3 expands the performance contracts with chiefs of all provincial offices and district distribution centers and establishes a monitoring and evaluation mechanism.** Performance contracts provided NEA management with an effective institutional tool to reduce system losses, including theft and irregular billing and collection. This initiative has helped bring a "culture change" in NEA. Following the implementation of DPC1 supported performance-based contracts in all districts, NEA has expanded to cover all provincial offices and distribution centers. NEA has also established an evaluation committee for these performance contracts and the evaluation is under way. In DPC3, NEA will build on existing efforts and implement the distribution loss reduction master plan and publish results of performance contracts that demonstrate the milestones of institutional improvements on loss reduction.

37. **Expected results under Pillar 1 are that** (a) average electricity tariff covers the full cost of electricity supply from a baseline of average electricity tariff 32 percent below the cost of electricity supply, (b) projected profits before interest, tax, depreciation and amortization (PBITDA) will increase to at least NPR 20 billion from a baseline of NPR 0.49 billion in FY2016, and (c) T&D losses are reduced to less than 18 percent from the baseline of 25.8 percent in FY2016. PBITDA in FY2019 increased to NPR 16.6 billion. T&D losses reached a new low of 15.3 percent in FY2019. NEA has partially achieved result indicators (a) and (b) and exceeded the result indicator (c). However, due to the current COVID19 pandemic (See Annex 7 for details), the upward trend is most likely to be deflected and the full impact is yet to be understood. The target value for PBITDA by end of this DPC series has been adjusted downward from NPR 40 billion to NPR 20 billion.

Pillar 2: Improving the governance of the electricity sector

38. **Nepal is continuing its reforms to address legal, institutional and regulatory bottlenecks that have impeded the performance of the electricity sector.** An independent electricity regulator, central to the sector's reform agenda, has become operational. A new Electricity Act pending Parliamentary approval will help level the playing field for the private sector by, among others, enabling competition in electricity generation and establishing power trade as a licensed activity.

Adopting a sector strategy and legal framework

DPC1	DPC2	DPC3
Prior Action 4: The Ministry of Energy, Water Resources and Irrigation has adopted a power sector strategy and action plan.	**Prior Action 4.** The Council of Ministers has approved the draft Electricity Bill for the purpose of its submission to the Parliament.	**Trigger 3.** Council of Ministers has approved regulations implementing the Electricity Act.

39. **Prior Action 4 supports the approval the draft Electricity Bill by the Council of Ministers for the purpose of its submission to the Parliament, the promulgation of which will provide the overarching legal framework for the electricity sector under the new constitution and federal structure.** The current Electricity Act (1992) successfully introduced private sector participation—to date, IPPs account for more than half of the installed capacity of the country which is 683 MW. However, the new federal structure and growing size of the sector

(almost five times of the size in mid-1990's) call for a new legal framework. MoEWRI has carried out consultations with a wide range of stakeholders at the federal and provincial level on the draft Electricity Act. The draft Electricity Bill includes major reforms, *inter alia*, (i) proffers a transition from a vertically integrated utility to an electricity market with multiple buyers and sellers and an independent system operator; (ii) strengthens sector planning and introduces competition for generation; (iii) recognizes trading as a separate licensed activity; (iv) enables third-party access and/or open access to the transmission network; and (v) mandates universal access to electricity. The proposed Act aims to align the electricity sector with the Constitution with service provision responsibilities shared among the central, provincial and local governments.

40. **The Electricity Act will strengthen governance and efficiency of service provision and facilitate greater private sector participation to meet growing sector needs.** The Electricity Act is a major milestone in realizing government's vision and priorities outlined in the government's White Paper and the power sector strategy and action plan, which was supported by DPC1. It will also help establish the enabling condition for Nepal to export hydropower to India and Bangladesh, replacing their fossil-fuel-based generation and reducing greenhouse gas emissions. DPC3 will continue to support implementation of related regulations and guidelines under the Electricity Act and eventually help Nepal achieve a sound legal and regulatory framework.

Establishing and operationalizing the ERC

DPC1	DPC2	DPC3
Prior Action 5. (i) The Government of Nepal has published the ERC Act in the official gazette, and (ii) The Cabinet has approved executive regulations implementing the ERC Act.		**Trigger 4.** ERC has issued guidelines on open access and transmission pricing.

41. **Prior Action 1 (i), which was Trigger 5 during DPC1, supports the ERC to issue Electricity Consumer Tariff Fixation Directive.** Following the adoption of ERC Act in August 2017 and ERC regulations in July 2018, the Council of Ministers appointed a chairman and four members to the ERC in May 2019. ERC became immediately operational. Since then, ERC has developed its regulatory strategy and issued tariff-setting directive and power chase directive among its priorities. This is a major regulatory achievement in having the first independent energy sector regulator in Nepal and harbingers a new sector governance structure with separate regulation (ERC), policy making (MoEWRI) and implementation functions (NEA and other service providers).

42. **A sound regulatory framework is key to achieve fairness, competition and transparency of the sector.** The ERC Act (2017) represents a milestone to realize the government's commitment to an autonomous, transparent, and accountable regulatory framework. Following the ERC Act in DPC1, DPC2 and DPC3 support the operationalization of the regulator through the new tariff-setting directive and transmission pricing and open access guidelines, respectively. ERC will also issue the grid code and supply code and regulations on power trading, to mention a few. Put together, this series of DPC prior actions will help institute a new regulatory framework that provides private investors with a fair, rule-based investment environment.

Restructuring NEA to move towards electricity markets

DPC1	DPC2	DPC3
	Prior Action 5. The NEA institutional restructuring plan aimed at separation of its generation, transmission and distribution business functions has been approved by MOEWRI and concurred by the Ministry of Finance of the Recipient.	**Trigger 5.** (i) NEA's audited financial statements are compliant with NFRS. (ii) NEA has established separate financial accounts for generation, transmission and distribution business functions, pursuant to the NEA institutional restructuring plan.

43. **Prior Action 5 supports GoN decision on the sequence, timeline, and milestones for the restructuring of NEA, laying the foundation for the transition from a vertically integrated utility to a competitive electricity market.** The aim of the restructuring is to improve the governance and performance of the electricity sector institutions and eventually improve quality and efficiency of electricity services. The government and NEA have adopted a gradual approach to sector restructuring that will see first functional separation of generation, transmission and distribution; corporatization of some of the business units such as generation and distribution and operationalization of Nepal Power Trading Company Limited (NPTCL); and eventually the emergence of provincial distribution companies under Nepal's federal system and an independent dispatch and system operator. Establishing a level playing field for private developers through NEA restructuring will help Nepal in meeting its aspirations to export hydropower to its neighbors and displace thermal generation in those power systems.

44. **The separation of generation, transmission, and distribution under an NEA holding company structure (DPC3 - Trigger 5(ii)) will complete NEA's internal restructuring, an intermediate step toward an electricity market.** This will take place once NEA has (i) completed the asset valuation process that is under way, (ii) complied with Nepal Financial Reporting Standards (NFRS) (DPC3 - Trigger 5 (i)), and (iii) established generation, transmission, and distribution companies as separate corporatized entities with their own management and staff. Completion of this milestone will help achieve transparency in pricing and benchmarking costs and standards of service. Compliance with NFRS would strengthen the quality and transparency of NEA's financial reporting and management system and facilitate the financial separation of its different business functions. The government's medium to long-term objective is to create a competitive wholesale electricity market. In keeping with international good practice, this is anticipated to happen gradually over an eight- to ten-year period. This will allow Nepal's electricity system to grow to a sufficiently large size (>3 GW)[11] to justify an electricity market and benefit from competition.

Institutional development of Nepal Power Trading Company Limited

DPC1	DPC2	DPC3
Prior Action 6. The Nepal Power Trading Company Ltd. has been established and its Board of Directors has appointed a Managing Director.	**Prior Action 6.** NPTCL Board of Directors has approved NPTCL's business plan aimed at its transition from a service provider for NEA to a power trading company.	**Trigger 6.** NPTCL Board of Director approved NPTCL's first annual report.

45. **Prior Action 6 supports the approval of Nepal Power Trading Company Limited (NPTCL)'s business plan, an important step for strengthening the institutional framework for electricity trade in the country.** NPTCL's business plan lays out the company's vision, strategic goals, business modalities, and a transition strategy based on domestic and regional power market analysis. It also elaborates organizational structure, budget, financing and human resource and capacity building requirements to achieve the NPTCL's strategic goals in the first five years. Before the new Electricity Act is enacted, NPTCL will act as a service provider for NEA to facilitate cross-border trade on a fee-for-service basis. After power trade is recognized as a separate licensed activity under the new Electricity Act, NPTCL will be responsible for trading NEA's energy surplus or deficit after energy banking. NPTCL is expected to grow to act as bulk procurer/supplier, responsible for buying electricity from existing or new hydropower generation and sign back-to-back contractual agreements with distributors or retailers. This business plan reflects the increasing risk-taking appetite as the company matures. The NPTCL business plan and transition strategy was adopted by the NPTCL Board of Directors in March 2020.

[11] Foster, Vivien; Rana, Anshul. 2020. Rethinking Power Sector Reform in the Developing World. Sustainable Infrastructure. Washington, DC: World Bank.

46. **The approval of a Business Plan will help operationalize the NPTCL, which was established under DPC1**. Electricity trade with neighbors allows Nepal to use its seasonal surplus efficiently and significantly improves the financial viability and affordability of the sector. NEA is already relying on imports from India to cope with current shortfall, particularly in peak demand. It has also secured initial agreement on energy banking with India to trade surplus electricity in the wet season and imports in the dry season. Since Nepal is expected to be net exporter of hydropower generation to replace fossil fuels by its neighbors, it will lead to significant environmental and climate adaptation and mitigation co-benefits from this arrangement.

Introduction of New PPA Guidelines and Regulation on Competitive Licensing

DPC1	DPC2	DPC3
Prior Action 7. NEA Board of Directors has adopted: (a) power purchase rates and associated rules for PPA of run-of-the river, peaking run-of-the-river and storage hydropower generation projects; and (b) guidelines on foreign currency-denominated PPAs.	**Prior Action 7.** NEA has amended the Procedure for Purchase of Electricity from Solar Photovoltaic Systems to increase renewable energy-based generation.	**Trigger 7.** Council of Ministers has issued guidelines on competitive licensing process for generation projects.

47. **Prior Action 7 supports NEA improving the Procedure for Purchase of Solar Photovoltaic (PV)-based Electricity (also known as "net metering procedure") to increase renewable energy-based generation.** The hydropower and solar power purchase agreement (PPA) guidelines under DPC1 enabled NEA to sign take or pay PPAs for more than 955 MW of hydropower capacity and up to 68 MW solar capacity[12], the 216 MW Upper Trishuli 1 Hydropower being the largest of all. However, individual PV system owners were unable to sell surplus electricity to the grid without a generation license. To fill this void, NEA issued the net metering procedure[13] in 2018 and an amendment in February 2019 to allow individually owned solar generation to sell surplus electricity to NEA and further increase renewable energy-based generation. The original net metering procedure authorizes solar PV systems greater than 500 W to sell solar energy back to the national grid at a pre-set price while receiving regular services from NEA. The amendment incentivizes the owners further by allowing energy netting, i.e. owners are no longer obliged to consume electricity from NEA more than the shortfall from their own generation and can continue to sell surplus electricity back to the national grid at the pre-set price.

48. **GoN is committed to further improving the transparency and efficiency of hydropower development.** Competition at the level of hydropower licenses will be enabled under the new Electricity Act and respective regulations are expected to be adopted in DPC3. Competitive licensing needs to be consistent with the sector's least cost generation plan. NEA was aspired to use competitive bidding to prioritize the sequence of the PPAs it signs with hydropower independent power producers and optimize its costs of supply. However, under the current Electricity Act, NEA is required to sign PPAs with all developers that have been issued hydropower licenses. As such, the original Trigger 8(i) under DPC2 – NEA Board adopting competitive bidding guidelines--was dropped and a new trigger under DPC3 – the Cabinet has issued guidelines on competitive licensing process for hydropower generation—is added.

[12] This consists of 44 MW with IPPs through direct tender and 24 MW through ADB-funded project. NEA is also constructing 25 MW solar plant under World Bank-funded Grid Solar and Energy Efficiency Project.
[13] NEA Board Decision No. 773, 2075/3/26 (July 2018 in Georgian year).

Adoption and implementation of environment and social guidelines

DPC1	DPC2	DPC3
Prior Action 8: The Ministry of Forests and Environment has adopted a hydropower environment impact assessment (EIA) manual.	**Prior Action 8.** NEA has adopted the Gender Equity and Social Inclusion Strategy and Operational Guidelines to mainstream gender and social inclusion in its projects and work force.	**Trigger 8**. (i) MoFE has approved guidelines on the structure, governance and operations of the Forest Development Fund. (ii) Council of Ministers has approved land compensation guidelines, including right of way compensation guidelines. (iii) Ministry of Home Affairs has approved a framework for creating a national social registry. (iv) MoFE has adopted a training handbook for the capacity building of EIA reviewing and monitoring staff.

49. **Prior Action 8 supports NEA Gender and Social Inclusion (GESI) Guidelines which aim to increase women and vulnerable groups in NEA's work force and mainstream gender equity and social inclusion in its projects.** The government is making continuous effort in strengthening environmental and social management policy framework and procedures which have been listed by the private sector as one of the main constraints in the electricity sector. There exist significant gender gaps in the energy sector, including access to energy services, institutional capacity, asset/endowment voice/agency/participation, and livelihood gaps. Although increasing in number, women representation at NEA remains low, accounting for 13.6 percent (=1,197/8,769) of the total staff with the majority working in administration and support roles. Women receive limited training opportunities in comparison to their male counterparts. The GESI strategy and operational guidelines, developed with support from Asian Development Bank (ADB) and the World Bank, include measures and strategies to ensure that NEA adopts a gender responsive and socially inclusive approach in its human resource strategy i.e. in recruitment – a mandated 33 percent in new positions, revised requirements for promotion, professional and on-the-job trainings to enhance performance of women, and GESI sensitive work environment such as basic amenities (toilets, transportation) in all worksites and offices and zero-tolerance policy to Sexual Exploitation and Abuse/Sexual Harassment. The guidelines also provide guidance on the implementation of gender equality and social inclusion in all aspects of policy reforms/development, program/ project design and implementation processes. The guideline includes plans for operationalizing the strategy with strong commitment from NEA on institutional restructuring, integration in planning and budgeting, capacity development and monitoring. NEA Board has approved the GESI Guidelines in March 2020. The Energy Sector Management Assistance Program (ESMAP)-supported TA led by the World Bank will continue to support the operationalization of the GESI guideline.

50. **DPC3 will support the Government to develop operational guidelines for offsetting forest clearance and compensating forest-dependent people.** The Forest Act 2019 provides for the Government of Nepal to grant approval to priority development projects[14] to use forest areas if there are no alternatives and if the environmental examination indicates no significant impact on the environment. The Procedure with Standard Relating to Use of National Forest Area for National Priority Projects 2019 (also known as Forest Clearance Guidelines 2019) approved by the Government outline the governmental process for assessing and approving such projects and the way the project proponent is to compensate the government for the loss of the forest ecosystem. Regarding compensation, the Forest Clearance Guidelines 2019 improved on the Forest Clearance Guidelines 2017[15] which had introduced a compensatory cash payment option for project developers, in addition to the land-for-land option but had not defined the payment amount. The land-for-land option had proven difficult to implement for proponents of projects that had been approved for using forest areas, as it required them to identify suitable alternative land and carry out afforestation/reforestation on it themselves. The Forest Clearance Guidelines 2019

[14] Projects of national priority, projects that are approved by the Investment Board, projects of national pride.
[15] Work Procedure for Obtaining National Forestland for National Priority Projects 2017.

operationalize the cash compensation option by specifying values for different types of forest and levels of forest quality, based on which the cash payment amount is to be determined. As such, these new guidelines removed a bottleneck for increasing investments in the energy sector. At the same time, the mechanism to channel the collected funds for carrying out offset afforestation or reforestation and compensating forest dependent people in line with Forest Act 2019 is still under development. The Forest Act 2019 established the Forest Development Fund (FDF) for financing such offsets and compensation. The guidelines to be supported under DPC3 will specify the structure, governance and operational procedures for FDF, including fiduciary and environmental and social safeguards. The Bank will support the development of these guidelines as part of its forest landscape engagement through the performance-based Nepal Emission Reduction Program (P165375, US$ 45.8 million) and the proposed Forests for Prosperity Project (P170798, US$ 24 million), and additional technical assistance as needed. In the Letter of Development Policy (Annex 3), the government confirms its commitment to continue developing comprehensive forestry regulations and offsetting the loss of forest ecosystems and livelihoods derived from them by forest-dependent people, as a result of forest clearance.

51. **The Government continues to improve its land use and compensation policies.** Right of way (ROW) management has been a major contributor to implementation delays in transmission line projects and community resistance due to lack of a relevant national policy framework; project developers are struggling with negotiating with individual communities and the level of compensation are inconsistent across communities. The proposed Land Use Act and land compensation guidelines, which covers ROW compensation, are critical reform needed to fill a policy void by providing common compensation criteria for pre-defined land use categories across all sectors. These guidelines will fill a void on ROW categorization and compensation and facilitate effective and sustainable development of hydropower and renewable energy and related transmission infrastructure. Specifically, landowners would enjoy ROW compensation in full amount of assessed land value and handover the ownership to the government or in 50 percent of assessed land value by the dedicated agency and retaining the land for intended purposes. In addition, informal landowners (without title) would enjoy up to 80 percent equivalent ROW compensation of land title holders, depending on ROW impact on their livelihood. Due to the ongoing COVID-19 crisis, the administrative process of enacting the requisite Land Use Act has been delayed. To ensure the implementation effectiveness of the land compensation guidelines, the original DPC2-Trigger 9(i)(b) has been shifted to DPC3.

52. **DPC3 will also support Ministry of Home Affairs to adopt a policy framework for creating a national social registry (DPC3-Trigger 8(ii)).** The reforms supported by this operation are expected to promote greater consumption of electricity, especially among the poor and vulnerable. As discussed in the Poverty and Socia Impact Assessment (PSIA) section below, new connection/increased consumption can however have negative distributional impacts. The GoN is committed to ensuring affordability for this population group. In order to lay the foundations for a future support or compensation measure (whether it takes the form a differentiated tariffs, vouchers, or cash transfers), this DPC supports the approval of the framework that will establish a social registry in Nepal. A social registry is an inclusion system supporting the process of intake, registration, and assessment of needs and conditions of households and individuals, to help determine their eligibility for programs. International evidence shows that Social Registry can also increase people's knowledge of the services/benefits available, thereby, acting as a "gateway" to increase access to programs and promote greater inclusion. Many countries have successfully used social registries to identify beneficiaries of mitigation/compensation/support programs during energy sector reforms. For instance, the Philippines and Brazil use Social Registries to channel resources to the poor and compensate economic shocks or increases in the price of certain commodities, and to provide targeted subsidized programs.

53. **Finally, DPC3 will support Ministry of Forests and Environment (MoFE) to adopt a training handbook for the capacity building of EIA reviewing and monitoring staff (DPC3-Trigger 8 (iv)).** DPC3 will continue to help government officials at central and provincial level in their review and oversight of environment impact assessments (EIAs). The Training Handbook aims to operationalize the Hydropower EIA Manual (DPC1-Prior Action 8). A Training of the Trainers program has been rolled out by MoFE and the first one was conducted in January 2020 for federal and provincial staff. Each of those staff trained are to then train their colleagues, with the goal that everyone knows about the Manual, understands its contents and how to use it and can build capacity of each other. This will in turn ensure that the Manual is fully used and there is a shift towards good international industry practice.

54. **The expected results under Pillar 2 are that** (a) electricity traded and exchanged has increased by at least 20 percent from a baseline of 2,178 GWh which is attributable to Prior Actions 4, 5, and 6, (b) PPAs are signed based on posted tariff and/or succeeding directives from a baseline where PPAs were signed based on negotiations, which is attributable to Prior Actions 4, 6, 7 and 8, and (c) NEA recruitment policy is informed by GESI guidelines with a mandated 45 percent target for women and socially excluded groups of which 33 percent is targeted for women only in new NEA recruitments; the baseline is that NEA recruitment policy is not informed by GESI guidelines, which is attributable to Prior Action 8. Result indicator (a) has been exceeded - electricity traded and exchanged in FY2019 were 2,848 GWh, 30 percent above the baseline. Result indicator (b) has also been achieved - PPA signed based on posted tariff amounted to 955 MW in FY2018-19. Result indicator (c) is newly added and work in progress given NEA GESI guidelines were adopted recently.

55. **The proposed DPC is underpinned by a series of analytical and advisory activities and projects**. The proposed policy actions benefit from the continuous engagement of the World Bank and development partners supporting the power sector in Nepal, which are summarized in Table 4.

Table 4. DPC2 Prior Actions and Analytical Underpinnings

Prior Actions	Analytical Underpinnings
Pillar A: Improving the Financial Viability of the Electricity Sector	
Prior Action 1. (i) ERC has issued Electricity Consumer Tariff Fixation Directive; and (ii) ERC has accepted NEA tariff application.	• TA on Energy Tariff Reform in Nepal, 2017–20, and Support to Operationalization of ERC supported by ESMA)/World Bank helped assess the poverty and social impacts of proposed increases in tariff and provided inputs to finalize ERC's electricity tariff guidelines. • United States Agency for International Development (USAID) is providing advisory support to ERC to prepare and operationalize electricity tariff guidelines as well as regulatory preparation training to NEA.
Prior Action 2. (i) NEA Board of Directors has approved NEA Corporate Development Plan; and (ii) MoEWRI has assigned the responsibility for the regulation of electric vehicles charging stations operation to NEA.	• TA on NEA Power Sector Financial Analysis and Viability Action Plan Update, 2019-20, the World Bank, helped take stock of NEA's financial performance and identify measures to improve the financial performance of NEA over the medium and long term. • Global Green Growth Institute provided TA on preparation of Nepal National Action Plan on Electric Mobility (2018), which included recommendation of strengthening electric vehicle service infrastructure including charging stations.
Prior Action 3. NEA has (i) implemented immediate priority institutional measures, satisfactory to the Association, to reduce	• TA on loss reduction master plan, 2018–21, the World Bank, helped take stock of NEA's system losses and identify constraints to reducing losses.

Prior Actions	Analytical Underpinnings
power transmission and distribution losses; and (ii) established a monitoring and evaluation mechanism for the performance of its provincial and district distribution center chiefs.	• TA on Performance Improvement Plan and Restructuring Plan, 2019–20, the World Bank, is making recommendations to increase NEA's operational efficiency through implementation technical and non-technical measures. • Study on Reducing Non-Technical Electricity Loss through Employee Incentive Schemes, November 2017, USAID indicates that performance contracts with employees can help improve performance of utilities with high levels of system losses.
Pillar B: Improving the Governance of the Electricity Sector	
Prior Action 4. The Council of Ministers t has approved the draft Electricity Bill for the purpose of its submission to the s Parliament.	• Just-in-time advisory services to MoEWRI on preparation of the draft electricity act, 2019-20, the World Bank and USAID, informed the preparation of the draft act by sharing international experience through workshops and knowledge exchange events, technical inputs, and communications support.
Prior Action 5. The NEA institutional restructuring plan aimed at separation of its generation, transmission and distribution business functions has been approved by MOEWRI and concurred by the Ministry of Finance of the Recipient.	• Just-in-time advisory services to NEA and MoEWRI 2018-20, World Bank to review the Government/NEA's restructuring plan, carry out consultation and share international experience. • Study on Rethinking Power Sector Reform in the Developing World, World Bank, 2020, which finds that power market reforms are most successful in countries that have reached certain minimum conditions of power sector development and offer a supportive political environment.
Prior Action 6. NPTCL Board of Directors has approved NPTCL's business plan aimed at its transition from a service provider for NEA to a power trading company.	• TA to help with the preparation of the NPTCL business plan, 2018–2019, World Bank.
Prior Action 7. NEA has amended the Procedure for Purchase of Electricity from Solar Photovoltaic Systems to increase renewable energy-based generation.	
Prior Action 8. NEA has adopted the Gender Equity and Social Inclusion Strategy and Operational Guidelines to mainstream gender and social inclusion in its projects and work force.	• TA to the GoN on ROW Policy Options, 2018–2020, the World Bank. • World Bank, 2019. Environment Sector Diagnostic: Path to Sustainable Growth under Federalism (A Country Environmental Analysis) identifying key environmental impacts associated with hydropower development, weaknesses in the EIA/IEE system, and principles of a compensation/offset mechanism for forest clearance. • TA on strengthening the capacity of Nepal's energy sector to deliver gender equality and social inclusion results, ADB and the World Bank, 2018-20, to inform GESI guidelines.

56. The proposed changes to the DPC2 prior actions and rationale are summarized in Table 5. These are minor changes which would not affect the development objectives of the DPC series or the results indicators.

Table 5. Proposed Changes to DPC2 Prior Actions

DPC2 Triggers identified during DPC1	DPC2 Prior Actions identified at the ROC stage of DPC2	Rationale
Trigger 1. NEA publishes FY2020 tariff rates following ERC decision on its tariff application.	**Prior Action 1.** (i) ERC has issued Electricity Consumer Tariff Fixation Directive; and (ii) ERC has accepted NEA tariff application.	• Merge Triggers 1 and 5 as both are related to tariff-setting. • Rephrase Trigger 1 to show its linkage to Trigger 5.
Trigger 2. NEA has restructured its financial arrangements with its subsidiary companies to meet expected return on equity as per its financial viability action plan.	**Prior Action 2.** (i) NEA Board of Directors has approved NEA Corporate Development Plan; and (ii) MoEWRI has assigned the responsibility for the regulation of electric vehicles charging stations operation to NEA.	• Trigger 2 is no longer necessary as NEA has demonstrated reasonable return on equity in its current financial arrangements with subsidiaries per the updated FVAP. • Sub actions under Prior Action 2 are chosen to represent significant progress NEA has made in implementing FVAP1.
Trigger 3. NEA has: (i) through its Board of Directors, approved a loss reduction master plan, (ii) implemented immediate priority institutional measures to reduce transmission and distribution losses outlined in its loss reduction master plan, and (iii) measured the transmission and distribution losses in the performance contracts with chiefs of regional and district offices in line with the loss reduction master plan.	**Prior Action 3**. NEA has (i) implemented immediate priority institutional measures, satisfactory to the Association, to reduce power transmission and distribution losses; and (ii) established a monitoring and evaluation mechanism for the performance of its provincial and district distribution center chiefs.	• Delete Trigger 3(i) as the loss reduction master plan is being supported by IDA and not fit for DPC.
Trigger 4. The Government of Nepal has submitted the Electricity Act to the Parliament.	**Prior Action 4.** The Council of Ministers has approved the draft Electricity Bill for the purpose of its submission to the Parliament.	• Due to COVID pandemic and national lockdown in Nepal, submission to the Parliament has not been possible.
Trigger 5. The ERC has issued tariff-setting guidelines.		• Merged with Trigger 1.
Trigger 6. The Cabinet has adopted a resolution on the sequence, timeline and milestones for the restructuring of NEA.	**Prior Action 5.** The NEA institutional restructuring plan aimed at separation of its generation, transmission and distribution business functions has been approved by MOEWRI and concurred by the Ministry of Finance of the Recipient.	• Cabinet approval is not necessary for the NEA institutional restructuring plan. • No material impacts.
Trigger 7. NPTCL Board of Directors has approved its business plan and operating procedures.	**Prior Action 6.** NPTCL Board of Directors has approved NPTCL's business plan aimed at its transition from a service provider for NEA to a power trading company.	• Add context and significance to Trigger 7. • No material impacts.
	Prior Action 7. NEA has amended the Procedure for Purchase of Electricity from Solar Photovoltaic Systems to	• Replace Trigger 8 with Prior Action 7 as Trigger 8 is subject to approval of

Trigger 8. NEA Board of Directors has issued competitive bidding guidelines for electricity projects.	increase renewable energy-based generation.	the new Electricity Act and move it to DPC3. • Add a DPC3 trigger on Cabinet approving guidelines on competitive licensing process for generation projects.
Trigger 9. (i) The Cabinet has adopted (a) improved forest clearance guidelines and (b) right of way guidelines; (ii) NEA has adopted the gender and social inclusion guidelines.	**Prior Action 8.** NEA has adopted the Gender Equity and Social Inclusion Strategy and Operational Guidelines to mainstream gender and social inclusion in its projects and work force.	• Delete Trigger 9(i)(a) -- although it has been achieved, governance arrangements and operational guidelines for managing and using funds from the cash-payments are pending. Added a DPC3 trigger on an FDF guidelines that the Bank will support as part of its programmatic forest landscapes engagement. • Shift Trigger 9(i)(b) to DPC3 due to administration delays caused by COVID-19 crisis and replace it with land compensation guidelines which include elements of the proposed right of way guidelines and consolidates all land compensation issues in one policy. • Add context and significance to Trigger 9(ii). • Add two more DPC3 triggers on Ministry of Home Affairs approving a framework for creating a national social registry, which is important to address poverty and social impacts of sector reforms and MoFE adopting a training handbook for EIA capacity building.

4.3 LINK TO CPF, OTHER BANK OPERATIONS, AND THE WBG STRATEGY

57. **The proposed DPC series is fully aligned with the second pillar of Nepal's Country Partnership Framework for FY2019–23**, which supports growth and employment through the World Bank's support to Nepal's electricity sector and business environment. It is consistent with the priority of the Nepal's 2017 Systematic Country Diagnostic. The Nepal Infrastructure Sector Assessment (2019), including the energy sector, highlighted the need of sound institutional and regulatory environment and financial viability to unlock new sources of finance and has informed the design of this DPC series. Policies supported by the proposed DPC will contribute to the twin goals of reducing poverty and promoting shared prosperity by providing reliable, affordable and sustainable energy services for socio-economic growth and achieving universal electricity access for all. They are consistent with the government's power sector strategy.

58. **The proposed DPC operation complements the World Bank Group's energy sector engagements in Nepal.** The World Bank Group is supporting the development of power for domestic use with private sector participation. Upper Trishuli 1 Hydropower Project with Korean developer and IDA/IFC/MIGA support reached

financial close in October 2019. The Nepal-India Electricity Transmission and Trade Project, with US$ 138 million of IDA financing, enables power imports from India and future exports. The Grid Solar and Energy Efficiency Project (IDA US$ 130 million) aims to increase electricity supply through grid-connected solar photovoltaic farms and reduce distribution losses in selected distribution centers. The Power Sector Reform and Hydropower Development Project (IDA US$ 20 million) is helping improve the readiness of power sector agencies to undertake regulatory and institutional reforms and strengthen the hydropower project pipeline. Synergy between the DPC and ongoing World Bank Group operations is expected to improve the efficiency and quality of electricity services and prepare the power sector for transformational growth.

4.4 CONSULTATIONS AND COLLABORATION WITH DEVELOPMENT PARTNERS

59. **The GoN has undertaken broad-based consultations with relevant stakeholders on the policy interventions supported by this operation.** Key stakeholders, including government agencies at central, provincial and local levels, the private sector, political parties, think tanks, industry groups, and civil society have been consulted on the reforms proposed in the DPC series. There is consensus among stakeholders that significant reforms, including those supported by this series, are needed to mobilize billions of investments needed from the public and private sector to ensure the sustainability of the sector and unleash it as a driver to socio-economic growth.

60. **The proposed DPC operation was prepared in close collaboration with development partners active in the energy sector of Nepal.** The reforms and prior actions have benefited from the support of ADB, USAID, U.K. Department for International Development (DFID), among many[16]. Development partners are coordinating closely with the World Bank to ensure uniform and consistent advice is given to the Government.

5. OTHER DESIGN AND APPRAISAL ISSUES

5.1. POVERTY AND SOCIAL IMPACT

61. **The proposed operation is expected to have mostly positive or neutral poverty and social impacts.** The reforms supported by the operation will help improve access to reliable and affordable electricity. These welfare gains are likely to significantly outweigh adverse impact of tariff increase in the long run. Increased electricity access can be expected to have positive spillover benefits. The poverty and social impact analysis carried out for this operation finds that gaining access to grid and mini-grids in Nepal is associated with a 34 percent and 16 percent increase in per capita total expenditure, respectively. Grid electrification also increases the probability of being enrolled in a school for children. It increases total years of schooling by about 0.3 years for girls and about 0.2 years for boys.

62. **The impact of tariff reforms supported in this operation (DPC2-Prior Action 1 and DPC3-Trigger 1) on electricity affordability is likely to be small based on the current consumption.** Expenditures on electricity have been a moderate component of the total budget of the Nepali households because of the extremely low electricity consumption, only accounting for 1.35 percent in 2017. A simulation analysis based on multi-tier household survey in 2017 was carried out to assess the impact of the tariff structure NEA has proposed to ERC on electricity

[16] The list of DP activities in the energy sector can be found:
https://energypedia.info/wiki/Towards_a_Reliable_Affordable_and_Sustainable_Energy_Sector_in_Nepal

affordability. As the new tariff structure slightly reduces residential electricity tariff (to be cross-subsidized by higher industrial tariffs)[17], the expenditure share of electricity of an average household would further decrease to 1.13 percent. Under a pessimistic scenario where electricity prices increase by 51 percent between FY2018 and FY2022, the analysis finds that the budget share of electricity would only increase to 1.5 percent for the average population, and 2.2 percent for the poorest quintile.

63. **The impacts on the poor will be greater if electricity consumption levels increase.** If electricity consumption reaches to 302 kWh after price hike in a less suppressed demand scenario, the budget share of electricity would reach to 3.4 percent for the average population and 5.1 percent for the poorest income group in the pessimistic scenario mentioned above. If the electricity consumption were at 700kWh, a five-year government target and 400 percent higher than the baseline consumption in 2017, electricity expenses would rise to 7.8 percent of total expenditure for the average population and 11.7 percent for the poorest income group. For the poorest households who were not connected to the grid in 2017, electricity expenses could account for 3.8 percent of their disposable income after the price hike if they gain access to the grid.

64. **GoN is committed to instituting mechanisms to mitigate the adverse impacts of the tariff reforms on the poor and improving access to electricity by all.** Nepal currently has an increasing block tariff structure for electricity where the tariff charged per kilowatt hour (kWh) increases with the level of electricity consumption. In the near term, mitigation mechanisms such as the strengthening of social assistance mechanisms and simplification of the current social assistance system, and tariff structures that differentiate according to consumption levels such as lifeline tariffs can be implemented. However, international experience in countries such as Brazil, Chile, Philippines, Ukraine, and Dominican Republic has shown that a simple compensation policy via tariffs may not be enough to properly protect the poor and vulnerable. Cash transfer, vouchers or subsidy programs can be put in place, building on the systems developed for social protection programs, to more effectively reach the poor. The Bank is currently engaged in an active dialogue with the government on strengthening such systems, including a Social Registry which would help identify and include the poor and vulnerable and a platform of electronic payments through bank accounts (used to pay social security allowances). The reforms proposed under this operation, reflected in DPC3-Trigger 7(ii), will help to advance the dialogue on a central delivery system, a key foundation to set up programs to support and compensate the “economically” poor.

5.2. ENVIRONMENTAL, FORESTS, AND OTHER NATURAL RESOURCE ASPECTS

65. **The division of roles and responsibilities regarding environmental and natural resource (ENR) governance under the federal system is increasingly clarified as key acts and regulations are updated.** The 2015 Constitution devolved many environmental and natural resource (ENR) management functions to the newly created provincial and local governments, while prescribing concurrent mandates between two or more tiers of governments for various ENR themes. Two newly adopted umbrella acts, namely the Environment Protection Act 2019 and the Forestry Act 2019, helped clarify some of the division of labor among the three tiers of government, such as assigning the review and approval of environmental impact assessments (EIA) of risky projects to the federal Ministry of Forests and Environment, while less risky projects requiring an initial environmental examination (IEE) would be reviewed by provincial or local government environment units. Roles and responsibilities for inspecting compliance with approved EIA/IEE conditions are similarly distributed. Management of national forests that are not classified as protected forests, is with provincial governments, while the federal government is entrusted with setting national forest policy and managing protected forests. However, there are

[17] Because electricity is an essential input to production, higher industrial tariffs can mean higher prices for almost all goods and services. Due to limited data availability, the distributional impact of higher industrial tariff is no quantified in the note.

still areas where further clarification is needed, and the revision of the Environment Protection Rules 1997 and the Forest Regulation 1995 is expected to achieve this goal. The policy framework comprises several other key pieces of legislation mirroring the country's ENR issues, including a Solid Waste Management Act and Rules 2011, a Water Resource Act 1992, National Ambient Air Quality Standards 2012, a National Parks and Wildlife Conservation Act 1973; but management of hazardous and electronic waste which is an increasingly important environmental issue not regulated through a dedicated act and regulation.

66. **The regulatory framework around the EIA/IEE system embraces several principles of the World Bank Environmental and Social Framework, but there are also important differences, including in implementation.** The shared principles include risk-based classification of projects, changing the risk rating throughout the project implementation, requirement for stakeholder engagement during the EIA study, and monitoring activities. It is also notable that EPA Act 2019 has provisions for in-depth analysis of alternatives and strategic environmental analysis. Furthermore, regulations are complemented by sectoral EIA guidelines for forestry, industry, and hydropower development, and various manuals for social and environmental management in infrastructure development. On the other hand, the EIA/IEE-related acts and regulations lack reference to a mitigation hierarchy, differentiated measures for the vulnerable groups, assessment of the possible impacts caused by associated facilities, consideration of possible impacts associated with the primary suppliers, consideration of transboundary and global impacts, and importantly, cumulative impacts. In addition, implementation of public consultation and participation, and information sharing fall short of international standards.

67. **Insufficient institutional capacity, especially in the provincial and local governments constrains the implementation of ENR policies and regulations.** Institutionally, the federal Ministry of Forest and Environment (MOFE) is the key ministry responsible for carrying our federal mandates; provincial and local government mandates are implemented respectively by the provincial Ministries of Industry, Tourism, Forestry and Environment, and Environment and Disaster Units under the local governments. The Federalism Needs Assessment (World Bank 2019) found that 68 percent of local governments saw services disrupted / lacking due to insufficient staff qualified to perform environmental functions; 24 percent reported that they do not have any resources and 31 percent reported that they had no physical infrastructure to monitor sector outcomes and performance. In response to the severe capacity deficiencies at the subnational levels, EPA 2019 mandated that the EIA of all national priority projects and those promoted by the Foreign Investment Board, regardless of initially envisaged environmental impact, would be reviewed by MOFE. Furthermore, environmental impact studies and alternatives analyses are often done in perfunctory manner and are of low quality. This may be a result in part of weak enforcement of the EIA/IEE regulations and in part of a weak cadre of EIA professionals. An accreditation system of EIA consultants is not yet in place; however, EPA 2019 provides for punitive measures against project proponents[18] who do not meet standard and quality requirements for environmental study reports determined by the Government of Nepal.

68. **DPC prior actions that support tariff reform, transmission and distribution (T&D) loss reduction and increased use of electric vehicles will have potentially positive impacts on the environment**. Increased vehicular traffic has been one of the main contributors to the worsening ambient air pollution in the Kathmandu valley and other growing urban centers in the recent years. Use of biomass for cooking is the single largest cause of the extremely high levels of indoor air pollution observed rural and to a lesser extent, in urban areas, also contributing to ambient air pollution. The introduction in the Electricity Consumer Tariff Fixation Directive of preferential tariffs for electric vehicles (Prior Action 1) and eventual adoption of guidelines for regulating and managing charging stations for electric vehicles (Prior Action 2) are likely to act as a positive factor motivating car owners to switch

[18] EPA 2019 does not define "proponent", so it is unclear whether the provision applies to the EIA author, the project developer, or both.

to electric vehicles. Replacing internal combustion engine with electric vehicles will lead to a reduction in emissions of air pollution and greenhouse gas emissions and improvement in urban air quality. Reduction of electricity tariffs for low-consumption residential consumers under Prior Action 1 may incentivize households to shift to electric stoves from those using kerosene and biomass. To the extent reductions in T&D losses translate into reduced cost of electricity for households, Prior Action 3 may have a similar impact on consumer preferences for electric stoves and lead to a reduction in indoor air pollution.

69. **Reforms supported by DPC2 Prior Actions may have potential positive as well as adverse impacts on the environment mainly due to an incomplete regulatory framework and weak institutional capacity.** On the one hand, increased availability of reliable hydropower supply can lead to rapid expansion of electrification and solar PV generation, and thus reduce the need for polluting diesel-based generation and use of imported fossil fuels. On the other hand, the expansion in the use of off-grid solar systems is likely result in increased generation of hazardous waste from the panels and batteries used in the solar PV system. In the absence of an adequate hazardous and e-waste waste management system, this could lead to water and soil pollution. Furthermore, investments in hydropower development can have adverse impacts on the environment if not managed wisely. Key potential impacts arise from modification of the flow regime downstream of the dam, inundation of areas upstream of the dam, and associated facilities, such transmission lines and roads, which may lead to deforestation or critical habitat loss among others. These impacts may be exacerbated by climate change. Due to the weak EIA/IEE system discussed above, these risks are often not adequately assessed, avoided, minimized, or mitigated (mitigation hierarchy). Consequently, the residual risk that must be offset may be large. In case of projects that require forest clearance, however, until satisfactory operating guidelines for the Forest Development Fund are in place, offsets may not take place, leading to a net decrease in Nepal's forest cover, eventually compromising Nepal's NDC commitment to maintain forest cover above 40 Percent.

70. **The GoN, with assistance from the Bank and other development partners, is making efforts to address environmental risks in hydropower development and T&D infrastructure.** DPC1 supported adoption of a Manual for Environmental Impacts Assessment of Hydropower Projects and DPC3 will support MOFE to develop a training handbook for building the capacity of staff reviewing and monitoring EIAs. In addition, the Bank, with ESMAP support, is providing technical assistance to NEA to strengthen its staff capacity for managing environmental and social risk in the sector. These elements complement government's regulatory strengthening efforts mentioned above. Furthermore, as part of its forest landscape engagement, the Bank will support government's planning of hydropower development in a manner that internalizes the mitigation hierarchy. Concurrently, to offset any residual impacts caused by forest clearance, the Bank will support GoN to develop operational guidelines for the Forest Development Fund related to offset afforestation/reforestation and compensation of former users, as well as fiduciary management, following international good practice. The adoption of these guidelines will be a trigger under DPC3.

71. **Climate co-benefits assessed for this operation for this operation are significant**, thanks to the emphasis of the prior actions on loss reduction and expansion of hydropower generation and solar generation for domestic consumption and exports, displacing diesel generation, imported thermal generation and fossil fuels and fuelwood. Climate adaption and resilience will be strengthened with a more diversified and sustainable power system and strengthened environmental and social risk management framework. The climate adaptation and mitigation co-benefits of the operation are expected to increase exponentially over the medium to long term through export of hydropower to displace thermal generation in the Indian electricity system.

5.3. PFM, DISBURSEMENT AND AUDITING ASPECTS

72. **The Public Financial Management (PFM) systems are being strengthened.** The 2015 Public Expenditure and Financial Accountability (PEFA) Assessment concluded that Nepal has made substantial progress in deepening the structures and processes of PFM, particularly in the use of Information Technology. As compared to the first PEFA Assessment (2007), the second assessment (2015) recorded improvements in 16 indicators, particularly on budget formulation, credibility, comprehensiveness, accounting, reporting and audits. There are nonetheless areas requiring improvement, specifically on budget execution and controls including on extrabudgetary funds and enhancing parliamentary scrutiny on the PFM systems for better accountability. However, with the advent of federalism, all aspects of PFM need to be developed in subnational governments. The Bank administrated PFM multi-donor trust-funded program is supporting PFM reforms at the three tiers of the government. These reforms are also supported at the policy level by the Bank-financed Development Policy Operations series, which strengthens the policy framework for PFM particularly in the country's transition to federalism.

73. **The federal government is Government Financial Statistics-compliant with publicly available information.** Budget information by geographical locations and monthly expenditure reports by functions are all available at Financial Comptroller General Office website. An integrated budget execution platform is operational, and information is shared with the line ministries. All federal financial transactions have been unified under a single treasury system.

74. **The Fiscal Procedures and Financial Responsibility Act, 2019 lays out the policy framework for PFM in federal context and aims to address the gaps in accountability**. The required systems and procedures to operationalize the policy are being developed. The federal government has shared guidelines on various PFM areas to facilitate sub-national governments vis-à-vis planning, budgeting, accounting, reporting etc. The federal government has provided information systems to account and report for revenue and expenditures of provincial and local governments respectively. Other areas of support include internal controls procedures in sub-national governments.

75. **The public procurement framework is sound.** The Public Procurement Monitoring Office (PPMO) continues to improve transparency in public procurement processes by adopting international standards and IT. The Public Procurement Act and Public Procurement Regulations, compliant with United Nations Commission on International Trade Law (UNCITRAL), provide an international standard procurement legal framework. Anchored in this Act and supporting Regulations is the single Electronic Government Procurement (e-GP) portal which makes all the standard bidding documents of all common procurements on-line to all interested parties. Although the e-GP portal has all features, contract management feature has not been yet used and therefore the PPMO can only partially monitor the procurement progress using this portal. The full-fledged e-GP portal (also called e-GP, phase II) was launched in 2016 and it is capturing contract level data only up to bid submission. This e-GP portal has drastically reduced paperwork, fostered transparency and competition and enabled faster remedial actions by the authorities. As part of the government's ongoing procurement reform program, the Bank is supporting the government in implementing its PFM reform agenda through an Integrated PFM Reform Project, with a procurement reform component which includes enhancement of e-GP features including performance measurement and strengthening of the PPMO. However, recent frequent amendments (6th, 7th, 8th, and 9th) in the Regulations, brought within a short period of time (from August to December 2019), have made the procurement environment difficult by inserting some unusual provisions in contract management and bidding which are not in line with the core procurement principles and good international procurement practices.

76. **There is a need to strengthen monitoring and oversight of public enterprises such as NEA.** Apart from contribution in strategy setting and policy guidance through board representation of the Ministry of Finance (MoF) and/or relevant line ministries and audit by the Office of the Auditor General, no other effective monitoring and oversight functions are in place. Only financial indicators such as share and loan investments and the status of expenditures are being monitored by a division in the MoF as opposed to regular monitoring of overall performance, while most of the public enterprises are continually performing poorly and making losses.

77. **The Bank administrated PFM multi-donor trust-funded program is supporting PFM reforms at the three tiers of the government**. These reforms are also supported at the policy level by the Bank-financed Development Policy Operations series, which strengthens the policy framework for PFM particularly in the country's transition to federalism. Operational, and information is shared with the line ministries. All federal financial transactions have been unified under a single treasury system.) and/or relevant line ministries and audit by the Office of the Auditor General, no other effective monitoring and oversight functions are in place. Only financial indicators such as share and loan investments and the status of expenditures are being monitored by a division in the MoF as opposed to regular monitoring of overall performance, while most of the public enterprises are continually performing poorly and making losses.

78. **As per the 2018 IMF Staff Report, Nepal's monetary policy should be tightened, including to support the exchange rate peg to the Indian rupee.** Since October 1997, the exchange arrangement of Nepal has been reclassified as pegged to a single currency unit. The Nepalese Rupee is pegged to the Indian rupee at a rate of 1.6 Nepalese Rupee to 1 Indian Rupee. All merchandise imports (except certain goods restricted for security reasons) are freely available through an open general license system, with foreign exchange provided through the banking system at the market exchange rate. Recognizing its own capacity limitations, the NRB's foreign reserves are managed conservatively using simple instruments, e.g. short-term deposits in commercial banks. The 2018 safeguards monitoring mission found limited progress on implementation of recommendations of the 2016 IMF assessment on improving key areas including foreign reserves management, currency operations and quality of external and internal audit. The report thus further recommended concerted effort to achieve meaningful progress on safeguards recommendations. In consideration of published annual audit report provided by the Office of the Auditor General which includes audit of the foreign reserves, the foreign exchange control environment is considered adequate for this operation. The 2019 IMF report also notes the progress made in putting in place a fiscal federalism framework and the efforts required to make budgets more realistic and spending more efficient, with focus on building policy implementation capacity and instituting a sound public financial management framework at the subnational level.

79. **Disbursements.** The credit proceeds will be made available to the Government upon approval of the credit. The Bank needs to notify the credit effectiveness to the government. Upon the effectiveness, the Government may submit a withdrawal application in the required format to the World Bank, after submission of the authorized signatory letter. At the request of the MoF, the disbursement in USD will be made into the Treasury account of the federal government maintained at the NRB that forms part of the country's foreign exchange reserve which will later be transferred in local currency equivalent to the Government's consolidated fund (the General Fund). The Government will confirm to the World Bank, within 30 days, receipt of the proceeds and its credit in the Treasury account, including the date of receipt, the exchange rate applied to convert the credit proceeds into Nepalese rupees, and the name and number of the Government's bank account in which the funds have been deposited.

80. **Confirmation and eligible expenditure**. The MoF will provide to the Bank a confirmation that the amount of the operation has been credited to an account that is available to finance budget expenditures. If, after the proceeds are deposited in the government account, the proceeds of the operation are used for ineligible purposes as defined in the Loan Agreement, the Bank will require the Government, upon notice from the Bank, refund an amount equal to the amount of said payment to the Bank. Amounts refunded to the Bank upon such request shall be cancelled.

81. **Reporting, auditing and closing date**. No audit will be required for the proposed operation as fund will be transferred to treasury and not to a dedicated account. The Office of the Auditor General conducts audit of the government treasury including foreign currency account and provides annual audit report within nine months from the end of each fiscal year. The annual audit report is also made publicly available.

5.4 MONITORING, EVALUATION AND ACCOUNTABILITY

82. **Ministry of Finance is leading the effort in coordinating the overall implementation of the DPC in close coordination with the MoEWRI**. Both MoF and MoEWRI have extensive experience and are fully conversant with World Bank policies and procedures through investment lending and TA operations. The World Bank team will continue to provide support, while undertaking monitoring and evaluation, to review progress and adjust, when required.

83. **Grievance Redress**. Communities and individuals who believe that they are adversely affected by specific country policies supported as prior actions or tranche release conditions under a World Bank Development Policy Operation may submit complaints to the responsible country authorities, appropriate local/national grievance redress mechanisms, or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address pertinent concerns. Affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate GRS, please visit *http://www.worldbank.org/GRS*. For information on how to submit complaints to the World Bank Inspection Panel, please visit *www.inspectionpanel.org*.

6. SUMMARY OF RISKS AND MITIGATION

84. **The overall risk of the proposed operation is Substantial.** The main risks to achieving the results of the proposed policy measures are related to political and governance, macro-economic framework, institutional capacity, fiduciary and stakeholders (see Table 6).

85. **Political and governance risks are Substantial**. In contrast to the frequent changes in government that characterized Nepal's decade-long transition to federalism, the new government until recently had enjoyed two-thirds majority in Parliament. However, with the pull out by the Samajbadi Party, the government now has only simple majority. At the same time, state restructuring on this scale is uncharted territory for Nepal and smoothing the transition from the previous unitary system to the new federal one will remain a challenging task. The new system, in principle, provides opportunities to decentralize development benefits and make service delivery more effective and accountable. However, the risks of jurisdictional overlap between the three tiers of government, lack of clarity and coherence between policies and devolved powers, and duplication of efforts will remain during

the coming few years. Key aspects of the new system require further definition and may continue to be contested by different population groups. Despite the lack of clarity at this stage to define roles, rules and create governance capacity at the provincial and local levels, the overall political and governance risk has decreased.

86. **Macro-economic risks are substantial.** Key risks include a widespread domestic outbreak of COVID-19 requiring an extended period of movement restrictions, protracted recessions globally, a significant decline in remittance inflows (particularly from the gulf region), or materialization of contingent liabilities. These risks could potentially translate into an increase in the fiscal and external deficits. Key mitigating factors include the steps already taken by the government to reduce the economic risk from COVID-19 and its efforts to mobilize concessional financing for a comprehensive economic support package. In addition, the government remains committed to maintaining macroeconomic stability and is coordinating its pandemic response measures with international financial institutions, both on financing and technical assistance. Nepal's low debt to GDP ratio also provides a buffer and despite the increase in spending to deal with the pandemic, the country continues to be at low risk of debt distress. However, there is considerable uncertainty on the duration and depth of the crisis. Therefore, despite the mitigating factors, residual risks to the operation remain substantial. This is because the crisis could divert the government's resources to deal with the evolving situation and this could potentially impede the successful implementation of the reforms supported by the operation.

87. **Institutional capacity risks are Substantial.** This operation supports the creation of new institutions in the electricity sector and restructuring of the existing institutions. These institutions will become operational in a low-capacity environment. To address these risks, the World Bank led a capacity needs identification exercise in coordination with donors with an expectation of implementing quick capacity-building activities to strengthen the existing service delivery institutions, systems, and processes. In addition, NEA's financial status, though improving, is vulnerable to internal shocks such as change of management and external shocks such as COVID-19. Reinforcement of institutional measures and disciplines including those supported under this DPC series as opposed of one-off actions will help build NEA's long-term financial viability.

88. **Fiduciary risks are Substantial.** With the implementation of federalism, the fiduciary risks have increased in all aspects of Public Financial Management (PFM), vis-à-vis, budgeting, procurement, internal controls, accounting, reporting, audit and oversight, particularly due to capacity constraints of sub-national governments. The federal government has issued guidelines to sub-national governments on various aspects of PFM. The Financial Procedures and Fiscal Accountability Act provides the PFM framework in the federal context. The federal government has also provided accounting software to sub-national governments to ensure timely and quality accounting and reporting. The Office of the Auditor General conducts audit of the three tiers of the government and the annual audit report is published in their website. The World Bank administered PFM Multi-Donor Trust Fund is supporting in capacity building of sub-national governments in various PFM aspects including procurement. There are other capacity building initiatives supported by various development partners, which is being coordinated with PFM Multi-Donor Trust Fund. The Central Bank is working on implementation safeguards measures to further strengthen the foreign exchange control environment.

89. **Stakeholders risks are Substantial.** Reforms are likely to be opposed by vested interest groups—many political in nature—as this operation supports greater transparency, commercialization, and accountability in the sector. These risks will be mitigated through (a) extensive consultations in a systematic approach of sector reforms; and (b) consensus building among all key stakeholders on how NEA restructuring would fit into the holistic approach of the GoN in sector reforms.

Table 6: Summary Risk Ratings

Risk Categories	Rating (H, S, M, or L)
1. Political and governance	S
2. Macroeconomic	S
3. Sector strategies and policies	M
4. Technical design of project or program	M
5. Institutional capacity for implementation and sustainability	S
6. Fiduciary	S
7. Environment and social	M
8. Stakeholders	S
Overall	**S**

ANNEX 1: POLICY AND RESULTS MATRIX

Prior Action for DPC1	Prior Action for DPC2	Trigger for DPC3 (indicative)	Results	
			Baseline[19] (FY2016)	Target (FY 2022)
Pillar A: Improving the financial viability of the electricity sector				
Prior Action 1: The Cabinet has approved the NEA financial restructuring plan.	**Prior Action 1.** (i) ERC has issued Electricity Consumer Tariff Fixation Directive; and (ii) ERC has accepted NEA tariff application.	**Trigger 1.** NEA publishes tariff rates following ERC decision on its second tariff application.	Average retail tariff is 32 percent below the average cost of electricity services NEA's PBITDA: NPR 0.49 billion Overall T&D losses: 25.8 percent	Average retail tariff covers average cost of electricity services NEA's PBITDA is > NPR 20 billion Overall T&D losses: <18 percent
Prior Action 2: The NEA Board of Directors has adopted a financial viability action plan.	**Prior Action 2.** (i) NEA Board of Directors has approved NEA Corporate Development Plan; and (ii) MoEWRI has assigned the responsibility for the regulation of electric vehicles charging stations operation to NEA.			
Prior Action 3: NEA has signed performance contracts with chiefs of regional and district offices to reduce transmission and distribution losses.	**Prior Action 3.** NEA has (i) implemented immediate priority institutional measures, satisfactory to the Association, to reduce power transmission and distribution losses; and (ii) established a monitoring and evaluation mechanism for the performance of its provincial and district distribution center chiefs.	**Trigger 2.** NEA has completed implementation of the institutional measures to reduce transmission and distribution losses outlined in NEA's loss reduction master plan and published the results of performance contracts.		
Pillar B: Improving the governance of the electricity sector				
Prior Action 4: The Ministry of Energy, Water Resources and Irrigation has adopted a power sector strategy and action plan.	**Prior Action 4.** The Council of Ministers has approved the draft Electricity Bill for the purpose of its submission to the Parliament.	**Trigger 3.** The Council of Ministers has approved regulations implementing the Electricity Act.		

[19] The base year is 2016 when the project concept note was approved unless noted otherwise.

Prior Action for DPC1	Prior Action for DPC2	Trigger for DPC3 (indicative)	Results	
			Baseline[19] (FY2016)	Target (FY 2022)
Prior Action 5 (i) The Government of Nepal has published the ERC Act in the official gazette, and (ii) The Cabinet has approved executive regulations implementing the ERC Act.	[merged with Prior Action 1]	**Trigger 4.** The ERC has issued guidelines on open access and transmission pricing.	Electricity traded and exchanged is 2178 GWh	Electricity traded and exchanged has increased by at least 20 percent
	Prior Action 5. The NEA institutional restructuring plan aimed at separation of its generation, transmission and distribution business functions has been approved by MOEWRI and concurred by the Ministry of Finance of the Recipient.	**Trigger 5.** (i) NEA's audited financial statements are compliant with NFRS. (ii) NEA has established separate financial accounts for generation, transmission and distribution business functions, pursuant to the NEA institutional restructuring plan.	PPAs are signed through negotiation	Generation PPA signed based on posted tariff and/or succeeding directives
Prior Action 6. The Nepal Power Trading Company Ltd. has been established and its Board of Directors has appointed a Managing Director.	**Prior Action 6.** NPTCL Board of Directors has approved the NPTCL business plan and transition strategy aimed at its transition from a service provider for NEA to a power trading company.	**Trigger 6.** NPTCL Board of Director approved NPTCL's first annual report.	NEA recruitment policy is not informed by GESI guidelines.	NEA recruitment policy is informed by GESI guidelines with mandated 45 percent target for women and socially excluded groups, of which 33 percent is targeted for
Prior Action 7: NEA Board of Directors has adopted: (i) power purchase rates and associated rules for PPA of run-of-the river, peaking run-of-the-river, and storage hydropower generation projects; and (ii) guidelines on foreign currency-denominated	**Prior Action 7.** NEA has amended the Procedure for Purchase of Electricity from Solar Photovoltaic Systems to increase renewable energy-based generation.	**Trigger 7.** Council of Ministers has issued guidelines on competitive licensing process for generation projects.		

Prior Action for DPC1	Prior Action for DPC2	Trigger for DPC3 (indicative)	Results	
			Baseline[19] (FY2016)	Target (FY 2022)
PPAs.				female only in new NEA recruitment.
Prior Action 8: The Ministry of Forests and Environment has adopted a hydropower environmental impact assessment manual.	**Prior Action 8.** NEA has adopted the Gender Equity and Social Inclusion Strategy and Operational Guidelines to mainstream gender and social inclusion in its projects and work force.	**Trigger 8**. (i) MoFE has approved guidelines on the structure, governance and operations of the Forest Development Fund. (ii) Council of Ministers has approved land compensation guidelines, including right of way compensation guidelines. (iii) Ministry of Home Affairs has approved a framework for creating a national social registry. (iv) MoFE has adopted a training handbook for the capacity building of EIA reviewing and monitoring staff.		

ANNEX 2: FUND RELATIONS ANNEX

Nepal—Assessment Letter for the World Bank

April 20, 2020

This note provides the IMF staff's assessment of Nepal's macroeconomic conditions, prospects, and policies, based on available information as of April 19, 2020. The assessment has been requested in relation to the Second Programmatic Energy Sector Development Policy Credit to Nepal to be considered by the World Bank in May 2020.

I. Recent Developments, Outlook and Risks

Nepal's near-term growth outlook is being negatively impacted by the COVID-19 pandemic and related containment policies. Nepal's strong growth performance in recent years (7.1 percent in FY2018/19) has been supported by a stable political environment, a more reliable electricity supply, and post-earthquake reconstruction spending. However, the COVID shock is expected to derail the high growth momentum and severely impact both the last quarter of FY2019/20 and the first quarter of FY2020/21 (fiscal year starts in July 16). Remittances (mainly from Gulf Cooperation Council countries, India, and Malaysia) have contracted, tourism has collapsed, and domestic activities have dropped due to containment measures that include a nationwide lockdown and border closures. Staff expects growth to be 1 percent in FY2019/20 (compared to 6 percent in the pre-pandemic baseline) and 3.5 percent in FY2020/21 (compared to 5.7 percent in the pre-pandemic baseline). Inflation is expected to reach 7.5 percent by July 2020, as the pressure on food prices continues due to disruptions to imports and food production. The current account deficit is expected to widen to 7.6 percent of GDP (compared to 5.2 percent of GDP in the pre-pandemic baseline). An increase in health spending, economic support measures, and revenue shortfalls would widen the overall fiscal deficit to 7.2 percent of GDP in FY2019/20.

The COVID-19 shock has given rise to an urgent external financing need of 3.0 percent of GDP and a fiscal financing need of 2.6 percent of GDP in FY2019/20. The authorities are actively seeking budget support from development partners to fill these gaps. In the absence of additional budget support in 2020, the remaining fiscal financing gap will be closed either with additional domestic financing or with rationalization of expenditures. Any remaining external financing gap will be closed with a drawdown of gross official reserves, entailing a loss of 6 percent of reserves. Reserve coverage would nonetheless remain adequate at about 7 months of prospective imports because of subdued import levels. Nepal must preserve its foreign reserves in these uncertain times to protect the credibility of the exchange rate peg, to prepare in case of further weakening of remittances, and to maintain buffers in case other possible risks materialize (including natural disasters).

Downside risks to the outlook are substantial. The depth and duration of the current external shock is highly uncertain. Current projections are based on a global scenario anticipating a sharp contraction in activity in CY2020Q2, and a modest recovery taking hold thereafter. However, there is a significant risk that containment measures could remain in place for longer in Nepal or abroad—for example, through early 2021—in which case disruptions to Nepal's domestic activity, remittances, and tourism would result in a larger and more protracted balance of payments and fiscal financing needs. In addition, if the external and fiscal financing gaps identified in this report cannot be filled, growth would

be weaker than in the baseline, as there would be less support to the economy. An abrupt slowdown in deposit growth, emanating from the fall in remittances related to the COVID-19, could create liquidity strain in the banking system and expose loan portfolio weaknesses. The other risks identified in the 2020 Article IV consultation remain relevant, in particular natural disasters (flooding and landslides).

II. Policy Response and Settings

Fiscal policy

The government has taken actions to counter the effects of the pandemic. Health spending has increased, including to import additional medical supplies, provide additional incentive pay and insurance to front-line medical personnel, and set up quarantine centers and temporary hospitals. Social assistance is being strengthened by providing those most vulnerable with daily food rations, subsidizing utility bills for low-usage customers, and taking measures to partially compensate those who suffer job loss. In the current volatile and uncertain environment, the authorities have adequate focus on the immediate response measures and the need to prioritize the health sector and strengthening social assistance.

Nepal continues to be assessed at low risk of debt distress for both the external and overall public debt, unchanged from the assessment in the February 2020 Joint Bank-Fund Debt Sustainability Analysis (DSA). A preliminary staff update of the DSA—in response the authorities' request for financing under Rapid Credit Facility—assesses debt sustainability with the COVID-19 pandemic as the new baseline. Even under this new baseline and stress tests, all debt and debt service indicators are projected to be well below their indicative threshold values. Nonetheless, Nepal's public debt is projected to gradually increase over the medium-term owing to continuing fiscal and current account deficits. This underscores the importance of further efforts to improve domestic productivity and competitiveness and to enhance monitoring of risks related to contingent liabilities.

Going forward, the priority remains to protect fiscal sustainability while containing external and domestic pressures. It is also key to continue to make improvements in public financial management practices while carefully managing the transition to fiscal federalism. The authorities have indicated their commitment to maintaining fiscal discipline, managing expenditure closely to keep the deficit in check. Once the effects of the pandemic have subsided, an enhanced commitment to fiscal consolidation will be needed to protect fiscal sustainability, which would be facilitated by the expiry of the temporary support programs. Revenue collection will continue to be enhanced by upgrades to the tax system, especially tax administration. Efforts are underway to eliminate duplication of spending across levels of government, and to improve the public procurement process. Further measures would strengthen capital-spending execution rates and smooth its annual profile.

Monetary and Financial Policy

In response to the pandemic, the Nepal Rastra Bank (NRB) is taking actions to support financial sector stability and access to credit. To ensure adequate liquidity in the financial system, reserve requirements and the interest rate on the standing liquidity facility have been lowered. To support borrowers, the size of the refinancing facility has been increased to provide subsidized interest

rates to banks willing to lend to priority sectors, including small and mid-size enterprises affected by the pandemic. The NRB is no longer requiring banks to build up the 2 percent countercyclical capital buffer that was due in July 2020 and financial institutions will not be penalized for their non-compliance with regulatory and supervisory requirements in April. To minimize moral hazard issues, the NRB should clearly communicate that banks are expected to continue to comply with regulatory requirements and, in case of a breach, banks should restore compliance in a timely manner.

Over the medium-term, the NRB needs to continue to strengthen the monetary policy framework. Reducing volatility in short-term interest rates will support financial market development and improve policy signaling and transmission. Steps need to be taken to improve the autonomy and accountability of the central bank, including by updating human resource management to facilitate staff capacity development. On the financial sector, the NRB needs to continue to implement macroprudential measures to limit the buildup of systemic risk in the financial sector while taking actions to further strengthen bank supervision and regulation, including close monitoring of the asset quality of banks.

Macrostructural Issues

To raise growth prospects over the medium-term, there is an ongoing need to strengthen the investment climate in Nepal. This includes implementing structural reforms that encourage high-quality public- and private-sector investment projects, in particular FDI. New legislation and regulations need to be supported by an enabling implementation environment. Moving high-quality projects forward in a timely manner will require adequate staffing, better skills matching, and aligning incentives across and within Ministries. Regarding public procurement, recent reforms—including a reduction in the up-front project mobilization grant size, more stringent scrutiny of bidding contractors' capacity to deliver, and the introduction of a project pipeline—go in the right direction. However, the ultimate enforcement of these regulations, and project monitoring more generally, lies with the Public Procurement Monitoring Office, which requires more staff with expertise in procurement and contract monitoring.

III. IMF Relations

Surveillance. The 2020 Article IV consultation was concluded on March 17, 2020, based on policy discussions in Kathmandu from January 5-17, 2020, before the COVID-19 shock.

Financial support. Nepal has requested financing under the Rapid Credit Facility to support its COVID-19 response. Nepal received grants for relief on IMF debt service under the Catastrophe Containment window of the Catastrophe Containment and Relief Trust for US$3.9 million.

Capacity development. The Fund provides technical assistance and training from headquarters, SARTTAC, and the Singapore Training Institute, as well as a MCM long-term financial sector expert based in Kathmandu.

4

Table 1. Nepal: Selected Economic Indicators, 2016/17-2021/22 1/

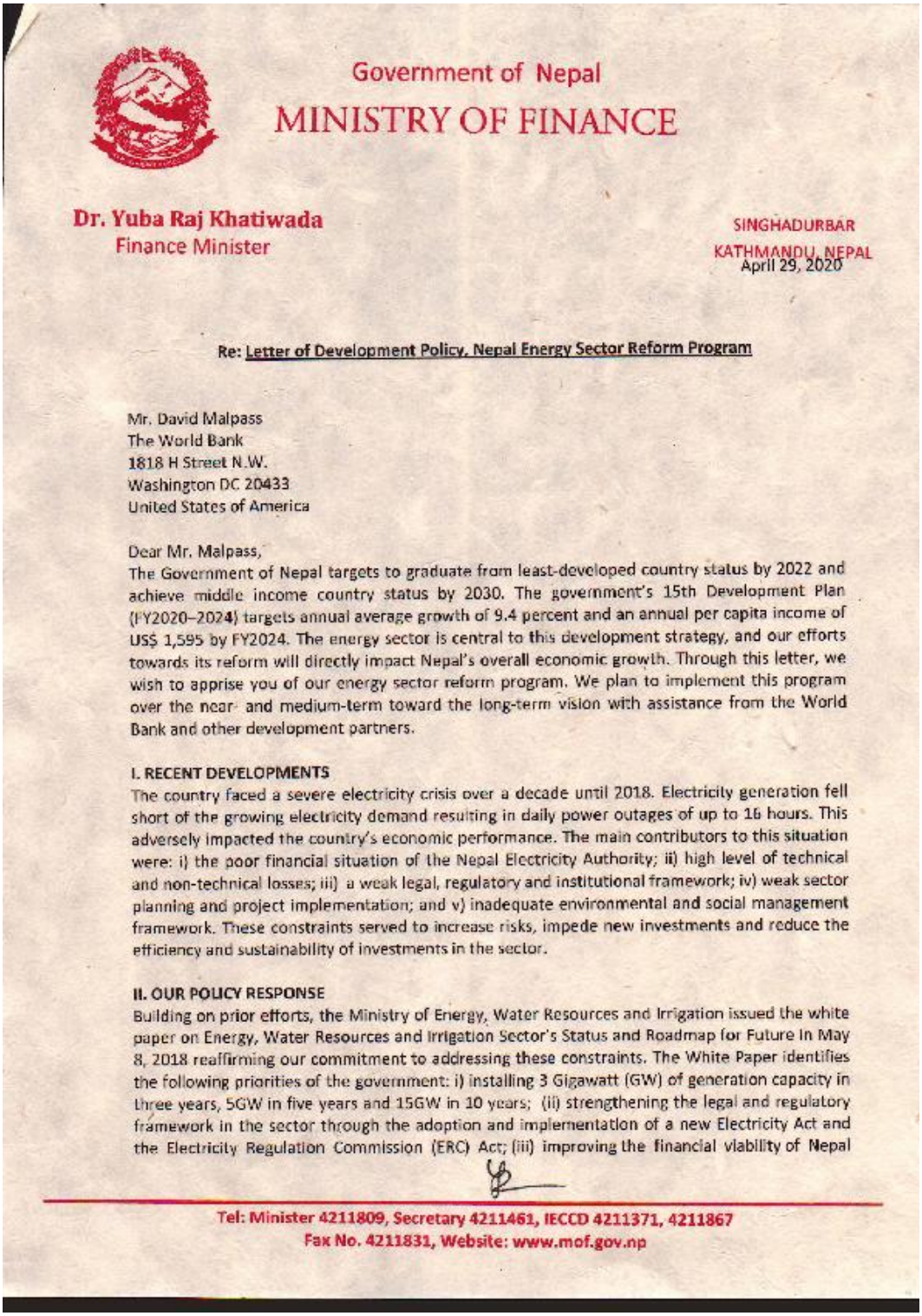
Population (2018, est. million): 28.1
Quota: 156.9 million SDR
Main exports (2017): Textiles and other manufactured goods, food items
Key export markets (2017): India, U.S., Turkey

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
			Est.	Projections		
Output						
Real GDP growth (percent)	8.2	6.7	7.1	1.0	3.5	6.5
Prices						
Inflation (period average, percent)	4.5	4.1	4.6	6.7	6.5	5.8
Inflation (end-year, percent)	2.7	4.6	6.0	7.5	6.0	5.6
General government finances (percent of GDP)						
Total revenue and grants	24.1	25.3	26.0	24.0	25.2	25.2
of which: tax revenue	20.7	21.1	21.9	20.0	21.0	21.0
Expenditure	27.2	31.9	30.6	31.2	31.8	29.9
of which: current expenditure 2/	19.4	23.0	23.6	25.1	24.8	23.1
capital expenditure	7.8	8.9	7.0	6.1	7.0	6.8
Fiscal balance	-3.1	-6.7	-4.6	-7.2	-6.6	-4.7
Public debt	26.1	30.2	30.1	38.0	42.4	43.8
Money and credit						
Broad money (percent change)	15.5	19.4	15.8	8.6	11.4	12.7
Domestic credit (percent change)	20.2	26.1	21.7	16.0	17.5	14.6
Credit to private sector (percent change)	18.0	22.3	19.1	11.5	13.3	12.8
Balance of payments						
Current account (percent of GDP)	-0.4	-8.1	-7.7	-7.6	-7.1	-5.7
Trade balance (percent of GDP)	-33.5	-37.4	-37.1	-30.2	-30.3	-29.0
Remittances (percent of GDP)	26.0	24.9	25.3	18.7	19.1	18.5
Reserves (months of prospective imports)	8.3	7.9	8.2	7.2	6.0	5.2
Public external debt (percent of GDP)	15.5	17.3	17.0	20.6	20.8	20.7
Exchange rate						
Exchange rate (Nepali rupees/US$; period average)	106.2	104.4	112.9	..	..	..
Real effective exchange rate (period avg., y/y percent change)	3.6	0.2	-1.4	..	..	..

1/ Fiscal year ends mid-July.
2/ Current expenditure includes transfers to subnational governments which can be used for capital expenditure.

Note: Forecast as of April 15, 2020

ANNEX 3: LETTER OF DEVELOPMENT POLICY



Government of Nepal
MINISTRY OF FINANCE

Dr. Yuba Raj Khatiwada
Finance Minister

SINGHADURBAR
KATHMANDU, NEPAL
April 29, 2020

Re: Letter of Development Policy, Nepal Energy Sector Reform Program

Mr. David Malpass
The World Bank
1818 H Street N.W.
Washington DC 20433
United States of America

Dear Mr. Malpass,

The Government of Nepal targets to graduate from least-developed country status by 2022 and achieve middle income country status by 2030. The government's 15th Development Plan (FY2020–2024) targets annual average growth of 9.4 percent and an annual per capita income of US$ 1,595 by FY2024. The energy sector is central to this development strategy, and our efforts towards its reform will directly impact Nepal's overall economic growth. Through this letter, we wish to apprise you of our energy sector reform program. We plan to implement this program over the near- and medium-term toward the long-term vision with assistance from the World Bank and other development partners.

I. RECENT DEVELOPMENTS

The country faced a severe electricity crisis over a decade until 2018. Electricity generation fell short of the growing electricity demand resulting in daily power outages of up to 16 hours. This adversely impacted the country's economic performance. The main contributors to this situation were: i) the poor financial situation of the Nepal Electricity Authority; ii) high level of technical and non-technical losses; iii) a weak legal, regulatory and institutional framework; iv) weak sector planning and project implementation; and v) inadequate environmental and social management framework. These constraints served to increase risks, impede new investments and reduce the efficiency and sustainability of investments in the sector.

II. OUR POLICY RESPONSE

Building on prior efforts, the Ministry of Energy, Water Resources and Irrigation issued the white paper on Energy, Water Resources and Irrigation Sector's Status and Roadmap for Future in May 8, 2018 reaffirming our commitment to addressing these constraints. The White Paper identifies the following priorities of the government: i) installing 3 Gigawatt (GW) of generation capacity in three years, 5GW in five years and 15GW in 10 years; (ii) strengthening the legal and regulatory framework in the sector through the adoption and implementation of a new Electricity Act and the Electricity Regulation Commission (ERC) Act; (iii) improving the financial viability of Nepal

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Electricity Authority (NEA) through a targeted reduction of transmission and distribution losses to 15 percent in five years; iv) advancing electricity market reform and regional electricity trade; v) achieving universal access to electricity and clean cooking; and (vi) establishing a domestic carbon market, promoting of renewable energy to mitigate climate change and investments in climate change adaptation measures.

III. ENERGY SECTOR REFORMS

The energy sector reform program is anchored in the White Paper and the power sector strategy and its roadmap. The objective of the government's reform program is to develop an energy sector that meets the needs of Nepali people and economy in a reliable, affordable and sustainable manner. The reforms involve key policy and institutional actions in two focus areas. I) Improving financial viability of the electricity sector; and ii) Improving governance of the electricity sector.

Improving financial viability of the electricity sector

We are pursuing reforms to improve the financial performance of the electricity sector including a financial viability action plan to sustain the recent improvements in performance over the medium to long term. ERC is in a process to approve electricity tariffs that are reflective of costs in the electricity supply chain to provide predictability for sustainable investment in the power sector. Going forward, the ERC will further strengthen the regulatory basis for making tariff decisions. It will periodically update cost-based submissions from NEA and other licensees and transfer them to tariffs and will consider introducing performance and quality of service standards and incentives for the transmission and distribution systems. This will support investors in making decisions to finance much needed new generation capacity, transmission upgrading and distribution improvements.

We will keep electricity affordable by making the electricity system more efficient. We are committed to improving operational efficiency of the sector by reducing both technical and non-technical losses in the sector. NEA has already reduced transmission and distribution losses from 25.8 percent in 2016 to 15.3 percent in 2019. NEA is implementing performance incentives in its regional and district offices to reduce losses. Going forward, the NEA will sustain its efforts in this area while undertaking efforts to increase demand of emerging surplus electricity through the promotion of electric vehicles and electric cooking.

Improving governance of the electricity sector

We would like to see a substantial increase in both public and private investments in the electricity sector to achieve its full economic potential. We would like to improve governance to increase the efficiency of investment and reduce risks in the electricity sector. We have identified five broad focus areas:

- **Electricity Regulatory Commission.** ERC has been established and is operational pursuant to the Nepal Electricity Regulatory Commission Act, 2018. ERC issued Electricity Consumer Tariff

2

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Fixation Directive in November 2019 and is expected to make its first tariff decision on the NEA's tariff application in May 2020 after completing stakeholder consultations and public hearings. The decision process has been slowed down due to the ongoing COVID-19 pandemic. Going forward, ERC will continue to support efforts to ensure competition and transparency in sector. It will issue guidelines and regulations on tariff, open access, grid code and supply code and power trading.

- **Electricity Bill.** The Council of Minister, Government of Nepal approved the draft Electricity Bill on April 20, 2020 for the purpose of its submission to the Parliament and is expected to submit soon. The proposed Electricity Bill together with associated regulations and guidelines will provide the legal foundations for sector restructuring and electricity market reforms in the country.
- **NEA Restructuring.** The Ministry of Energy, Water Resource and Irrigation has approved a restructuring plan for NEA as recommended by the NEA Board. NEA will undertake actions to comply with the Nepal Financial Reporting Standards and complete the separation of generation, transmission and distribution under a holding company structure as per the restructuring plan.
- **Nepal Power Trading Company Limited (NPTCL).** NPTCL has approved a business plan that lays out a clear work program, budget, human resource and infrastructure requirements to achieve its institutional vision. NPTCL's mandate is to carry out electricity trade with neighbors. In the short term, the NPTCL will focus on bridging the supply gap in the country through imports from India. In the medium term, NPTCL will help find a market for the surplus generation in Nepal's power system. It could also attract viable investments by entering commercial arrangements with sellers and buyers through back-to-back PPAs. As the regulatory framework develops, NPTCL could emerge as a bulk buyer and seller of electricity in the electricity market.
- **Net Metering Guidelines.** The NEA Board of Directors has issued Amendment to Procedure for Purchase of Electricity from Solar Photovoltaic Systems (also known as net metering guidelines) to increase renewable energy-based generation. The government intends to introduce guidelines on competitive licensing process for generation projects once the enabling legal framework for competition in electricity generation is established in the new Electricity Bill.
- **Environmental and social guidelines for hydropower development.** The Council of Ministers has approved improved Forestland Clearance Guidelines including a cash compensation option for use of different types of national forest areas. NEA has adopted the Gender Equity and Social Inclusion (GESI) Strategy and Operational Guidelines to remove gender gaps in NEA's work force and maintain gender and social inclusion in its projects. The Ministry of Forests and Environment is planning to adopt and implement guidelines on the structure, operation and governance of the Forest Development Fund, ensuring offsets are implemented effectively and users of cleared national forest areas are compensated

3

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adequately. The government will continue to improve its land use and compensation policies, adopting the proposed Land Use Act and land compensation guidelines, to fill a policy void on common compensation criteria for pre-defined land use categories across all sectors.

IV. Government Commitment

We take this opportunity to reiterate our commitment to undertaking the reforms that are required to improve the performance of the energy sector. We have already taken some significant decisions including electricity tariff revisions, adoptions of the NEA restructuring plan, a loss reduction drive in NEA, implementation of the ERC Act, and the establishment of new institutions of the electricity. These actions have helped improve the performance of the electricity sector after more than decade of severe energy crisis. There has been a significant improvement in electricity supply situation in major cities and NEA's operational and financial performance has improved. The NEA has been able to reduce transmission and distribution losses from 25.8 percent in FY2016 to 15.3 percent in FY2019. NEA has been able to sustain profits for three consecutive years after decade long financial losses. NEA made profits of US$ 14 million in FY2017, US$ 9.4 million in FY2018, and a record US$ 65 million in FY2019 after having posted cumulative losses of more than US$ 650 million over FY2008-16. An independent electricity regulator is operational.

We hope that the measures described above to reform the energy sector constitute the strongest effort yet undertaken for many years. We recognize the need to build on these reforms to consolidate the gains and to lay the ground for sustainable development of electricity sector over the medium and long term. The government's plan to deal with structural impediment to the performance of the energy sector is matched by our commitment for improving the quantity and quality of physical investment in the sector, wherever possible with private sector investment participation.

In closing, we would like to express our continued appreciation of the World Bank for working with the government in the development of a single program for the energy sector that is closely integrated with that of other development partners. We request World Bank support for our energy sector reform program by approving the Second Programmatic Energy Sector Reform Development Policy Credit and the commitment of US$ 100 million. We look forward to continuing to work closely with your institutions in our common purpose of improving Nepal's economic prospects.

Sincerely yours,

Dr. Yuba Raj Khatiwada
Ministry of Finance

4

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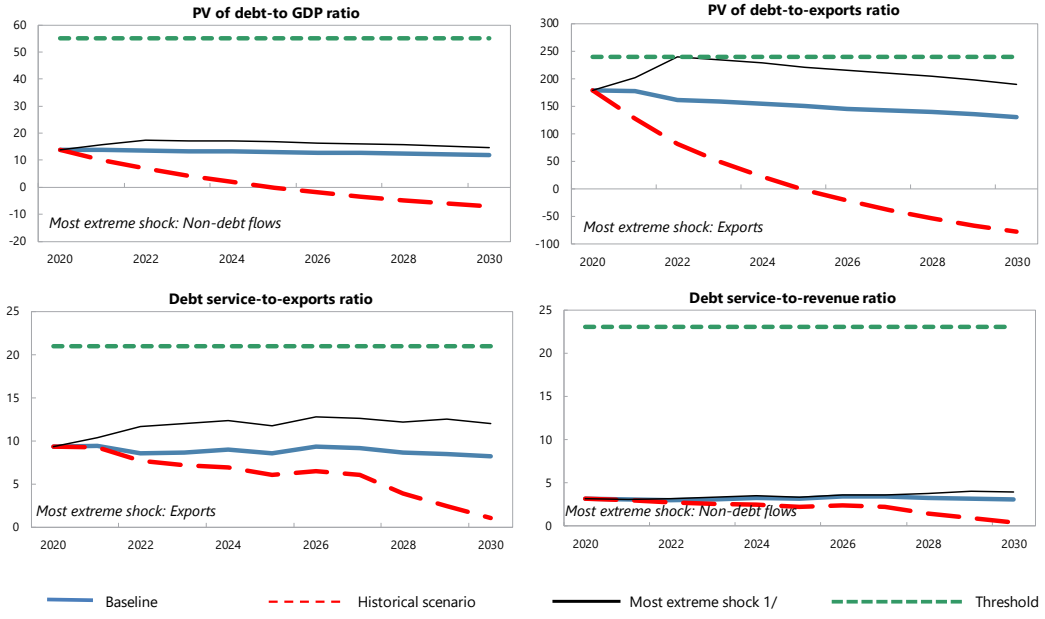
ANNEX 4: ENVIRONMENT AND POVERTY/SOCIAL ANALYSIS TABLE

Prior Actions	Significant Positive or Negative Environment Effects (Yes/No/To be determined)	Significant Poverty, Social, or Distributional Effects Positive or Negative (Yes/No/To be determined)
Pillar A: Improving the financial viability of the electricity sector		
Prior Action 1. (i) ERC has issued Electricity Consumer Tariff Fixation Directive; and (ii) ERC has accepted NEA tariff application.	Yes	Yes
Prior Action 2. (i) NEA Board of Directors has approved NEA Corporate Development Plan; and (ii) MoEWRI has assigned the responsibility for the regulation of electric vehicles charging stations operation to NEA.	Yes	No
Prior Action 3. NEA has (i) implemented immediate priority institutional measures, satisfactory to the Association, to reduce power transmission and distribution losses; and (ii) established a monitoring and evaluation mechanism for the performance of its provincial and district distribution center chiefs.	Yes	Yes
Pillar B: Improving the governance of the electricity sector		
Prior Action 4. The Council of Ministers has approved the draft Electricity Bill for the purpose of its submission to the Parliament.	Yes	No
Prior Action 5. The NEA institutional restructuring plan aimed at separation of its generation, transmission and distribution business functions has been approved by MOEWRI and concurred by the Ministry of Finance of the Recipient.	No	Yes
Prior Action 6. NPTCL Board of Directors has approved NPTCL's business plan aimed at its transition from a service provider for NEA to a power trading company.	No	No
Prior Action 7. NEA has amended the Procedure for Purchase of Electricity from Solar Photovoltaic Systems to increase renewable energy-based generation.	Yes	No
Prior Action 8. NEA has adopted the Gender Equity and Social Inclusion Strategy and Operational Guidelines to mainstream gender and social inclusion in its projects and work force.	No	Yes

ANNEX 5: PRESENT VALUE OF DEBT TO GDP

Figure 1. Nepal: Indicators of Public and Publicly Guaranteed External Debt under Alternatives Scenarios, 2020-2030



Customization of Default Settings

	Size	Interactions
Tailored Stress		
Combined CL	No	
Natural disaster	No	No
Commodity price	n.a.	n.a.
Market financing	n.a.	n.a.

Note: "Yes" indicates any change to the size or interactions of the default settings for the stress tests. "n.a." indicates that the stress test does not apply.

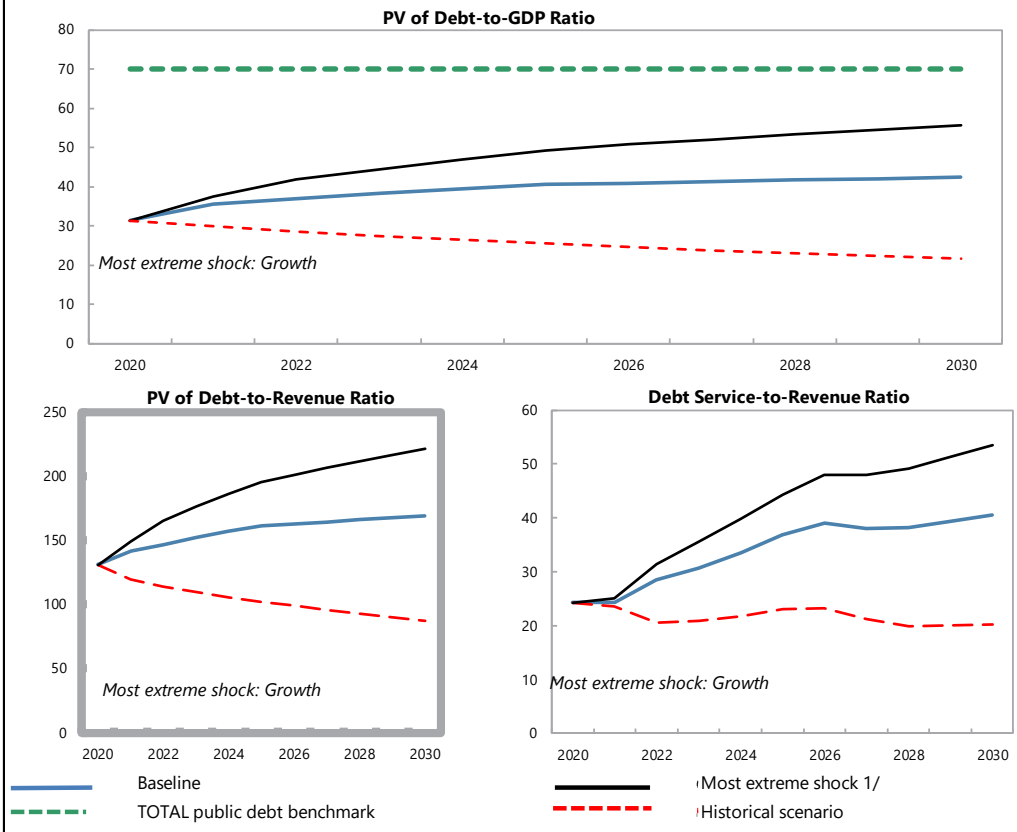
Borrowing assumptions on additional financing needs resulting from the stress tests*

	Default	User defined
Shares of marginal debt		
External PPG MLT debt	100%	
Terms of marginal debt		
Avg. nominal interest rate on new borrowing in USD	0.9%	0.9%
USD Discount rate	5.0%	5.0%
Avg. maturity (incl. grace period)	36	36
Avg. grace period	6	6

* Note: All the additional financing needs generated by the shocks under the stress tests are assumed to be covered by PPG external MLT debt in the external DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.
1/ The most extreme stress test is the test that yields the highest ratio in or before 2030. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.
2/ The magnitude of shocks used for the commodity price shock stress test are based on the commodity prices outlook prepared by the IMF research department.

Figure 2. Nepal: Indicators of Public Debt Under Alternative Scenarios, 2020-2030



Borrowing assumptions on additional financing needs resulting from the stress tests*	Default	User defined
Shares of marginal debt		
External PPG medium and long-term	16%	16%
Domestic medium and long-term	57%	57%
Domestic short-term	27%	27%
Terms of marginal debt		
External MLT debt		
Avg. nominal interest rate on new borrowing in USD	0.9%	0.9%
Avg. maturity (incl. grace period)	36	36
Avg. grace period	6	6
Domestic MLT debt		
Avg. real interest rate on new borrowing	-1.8%	-1.8%
Avg. maturity (incl. grace period)	7	7
Avg. grace period	0	0
Domestic short-term debt		
Avg. real interest rate	-1.8%	-1.8%

* Note: The public DSA allows for domestic financing to cover the additional financing needs generated by the shocks under the stress tests in the public DSA. Default terms of marginal debt are based on baseline 10-year projections.

Sources: Country authorities; and staff estimates and projections.

1/ The most extreme stress test is the test that yields the highest ratio in or before 2030. The stress test with a one-off breach is also presented (if any), while the one-off breach is deemed away for mechanical signals. When a stress test with a one-off breach happens to be the most exterme shock even after disregarding the one-off breach, only that stress test (with a one-off breach) would be presented.

ANNEX 6: NEPAL ENERGY SECTOR OVERVIEW

BACKGROUND

1. **Nepal's electricity system is small for a country with 29 million people.** Current total installed generation capacity of 1,320 MW is dominated by hydropower, which constitutes 96 percent of installed capacity. The balance is composed of solar and thermal installations using multi-fuels and diesel plants. Hydropower facilities are mostly run-of-river, accounting for 92 percent of installed capacity. The ownership is almost equally divided between the state-owned NEA and private sector. There are 78 km 400 kV transmission line, 255 km 220 kV transmission line, and 3142 km 132 kV transmission lines under operation, as well as 1,318 km of 220 kV transmission lines and 949 km of 132 kV transmission lines under construction.

2. **Electricity demand has increased rapidly.** The demand during the peak hour stands at 1,320 MW and was as high as 1,508 MW in 2018. To meet the current demand, up to 653 MW of electricity is being imported from India. The number of NEA's customers has reached 4.2 million in 2019, of which 94 percent are domestic customers consuming 42 percent of the total supply, 1.3 percent are industrial customers consuming 38 percent of total supply, and 4.7 percent are other customers consuming 20 percent of the total supply. In addition, 281 community organizations are serving 500,000 customers, and the Butwal Power Company is supplying electricity to 50,000 customers in the remote districts of Syanja, Palpa, Arghakhachi, and Pyuthan.

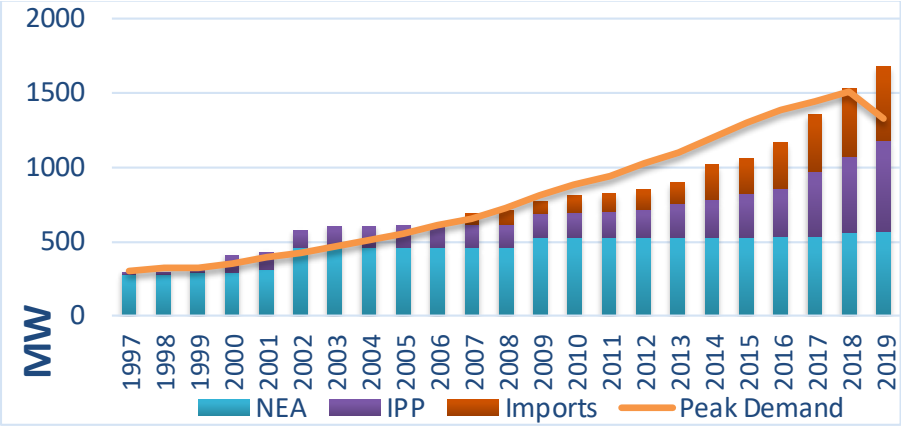
3. **There has been a dramatic improvement in the electrification rate.** Electricity access has increased from 27 percent in 2000 to 95 percent in 2018. 71.7 percent of households have electricity from the national grid, and 23 percent are connected to off-grid sources. Among households using an off-grid solution, the mini-grid and solar lighting systems are the most common sources. However, annual per capita electricity consumption in Nepal, at 250 kWh, remains low and represents 8 percent of the global average and 35 percent of the South Asian average.

KEY OPPORTUNITIES

4. **Hydropower has strong potential to be a driver for Nepal's inclusive economic development aspirations, and for regional climate benefits.** Nepal's hydro generation potential is estimated to be more than 40,000 MW, and less than fortieth of this potential has been developed. Excellent resource potential can be converted into profitable investments that afford clean, affordable energy and significant climate benefits for Nepal and for the Region. As hydropower can be dispatched flexibly and complements with the variability of solar and wind resources, the value of hydropower is only to increase as the region, especially India, scales up its variable renewable energy generation. Therefore, hydropower development in Nepal will serve to help integrate variable renewable power into the national and regional power systems.

5. **Development of major energy and hydropower infrastructure will have spillover effects in human capital development in Nepal, including skill development, job creation, tourism attractions and financial market development.** It will create more vocational and engineering/contract management jobs and increase the demand for upskilling training and education. It will also leverage regional economic development through improved access roads and infrastructure, new tourism attractions, and access of local products to large markets. It could help deepen local financial markets and access to foreign capital markets. Given large financial resource needs, there will be an impetus for Nepal to seek new financial products beyond straight debt from the banking sector that match the needs of hydropower assets.

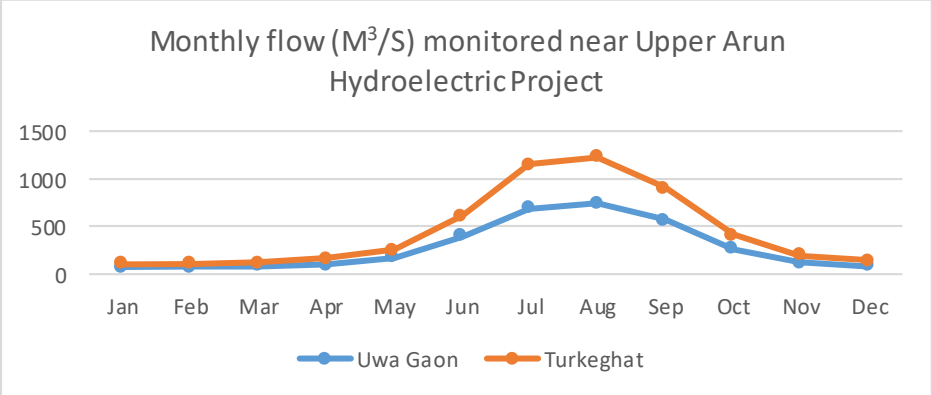
Figure 1. Peak Demand versus Electricity Supply, 1997–2019



Source: NEA

6. **The economics of exporting hydropower from Nepal to India and to Bangladesh are compelling.** Large hydrological flows in the wet season in Nepal, more than twice as much as those in the dry season, will produce a surplus of power that can help India and Bangladesh meet their (increasing) peak load demand in the hot summer months, driven by increased use of air conditioning and cooling storage. The complementarity has a strong foundation for regional electricity market which can bring about benefits for all participants.

Figure 2. The streamflow (M^3/S) in Upper Arun increases dramatically during the monsoon period of June to September



7. **Nepal has recently improved its financial health and supply efficacy of the electricity sector through institutional and technical measures, as well as through imports from India.** Nepal has established a first-ever ERC to ensure transparency, competition and accountability and a level-playing field for the public and private sector. The vertically integrated utility NEA turned profitable for the first time in a decade (Figure 3) in 2017 thanks to a Cabinet-approved financial restructuring and is expected to sustain its financial performance with its Board-approved long-term financial viability plan. Now that Nepal has effectively ended load-shedding thanks to loss reduction, demand management and increased transmission capacity for imports from India (Figures 4 and 5), it can focus its efforts on pursuing hydropower development for its own economic growth.

Figure 3. NEA's Net Income in 2008-19

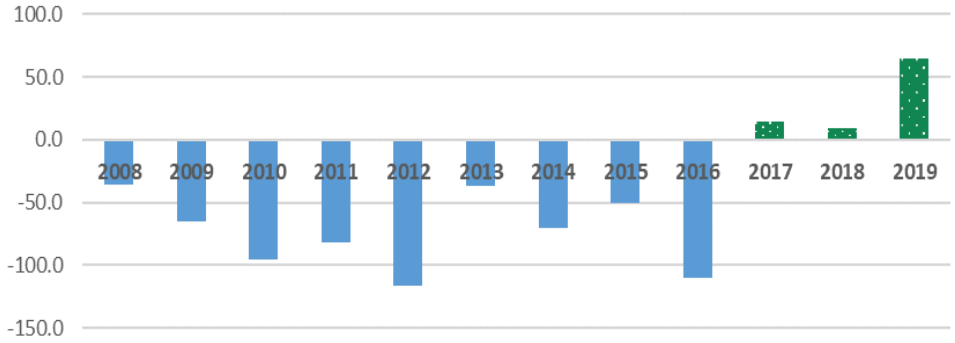


Figure 4. Hours of Load Shedding in 2008-18

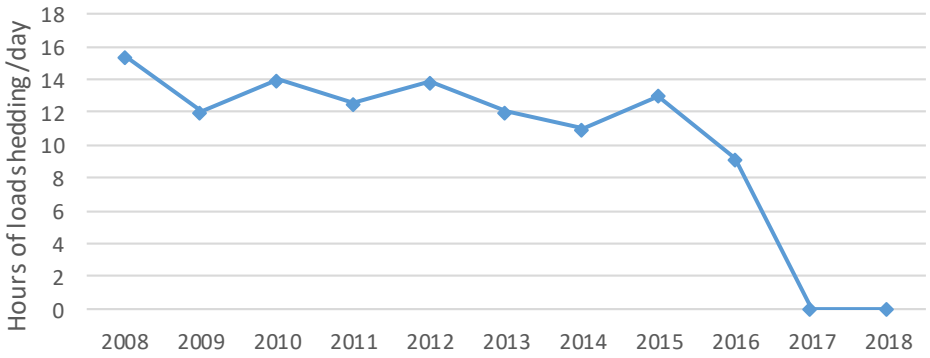
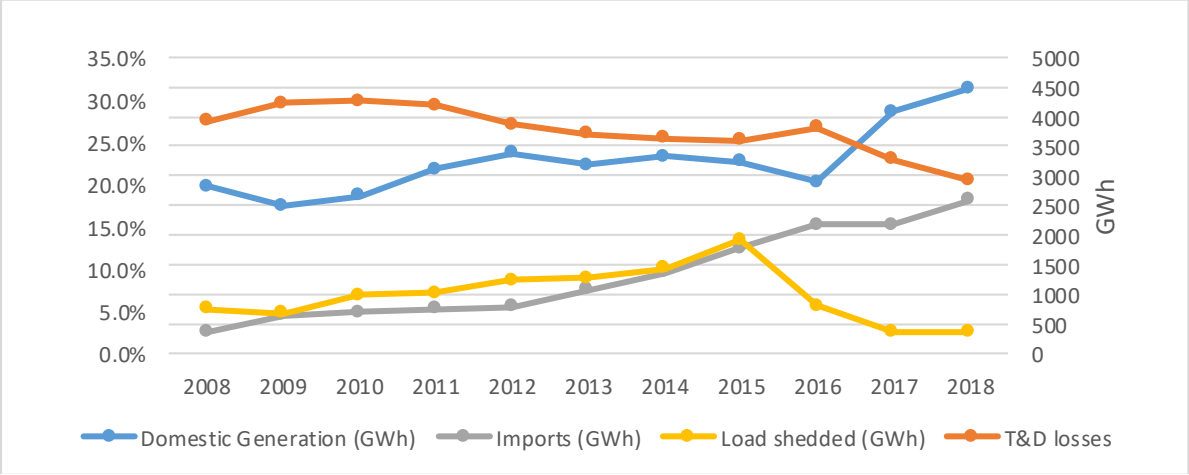


Figure 5. Factors Contributing to Ending of Load Shedding



8. **Energy sector reforms and regional power integration has gained momentum since the new government took office in 2018**. Nepal was one of the early energy sector reformers, introducing private sector participation in its 1992 Electricity Act. Ever since it has gone through fits and starts, complicated by prolonged

civil conflicts and constitution-making process. To date, it has achieved to have independent power producers account for half of the generation. Deeper power sector reforms are planned to establish a new regulatory and legal framework to allow more competition, power market development and power trade in the sector (Figure 6). The new Guidelines for Import/Export (Cross Border) of Electricity – 2018 issued on December 18, 2018 by Ministry of Power and India CERC CBET Regulations: "Central Electricity Regulatory (Cross Border Trade of Electricity) Regulations, 2019" issued on March 8th, 2019 by CERC allow Nepal to export to India or other countries through India with more flexibility. Energy banking/exchange regulations are also in advanced discussion between Nepal and India, which would allow Nepal to cope with seasonal surplus/deficit more effectively.

Figure 6. Chronology of Major Sector Reforms in Nepal

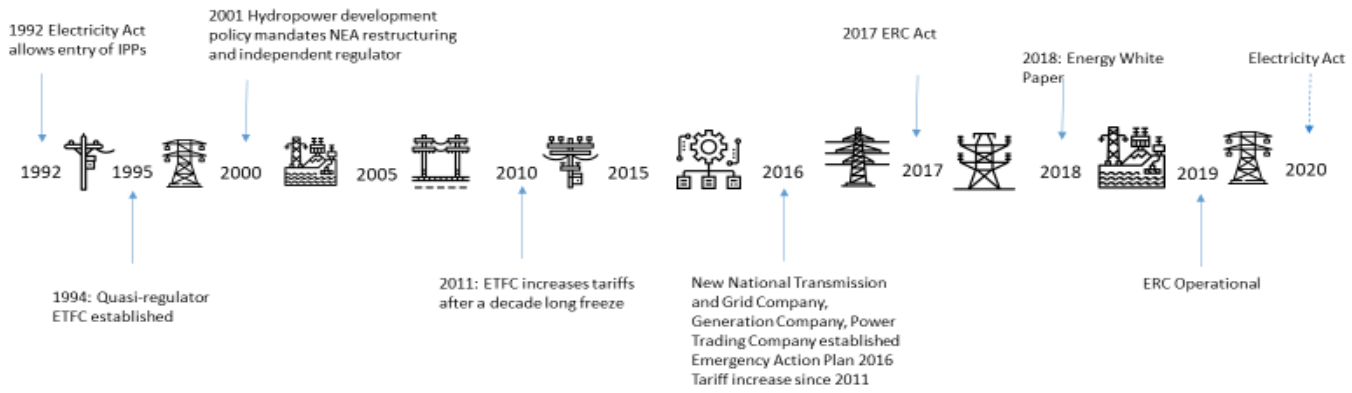
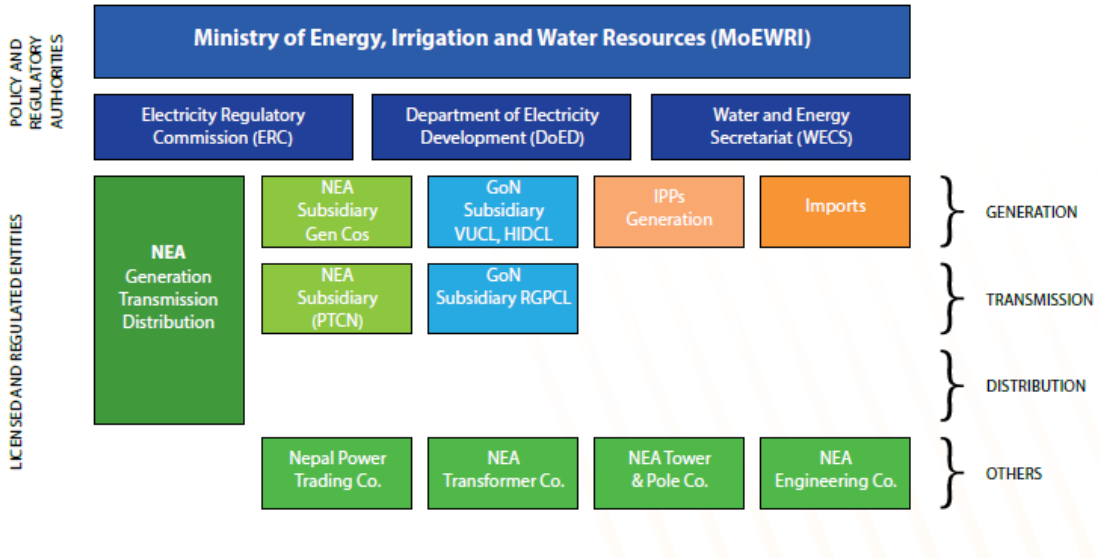


Figure 7. Current Electricity Market Overview

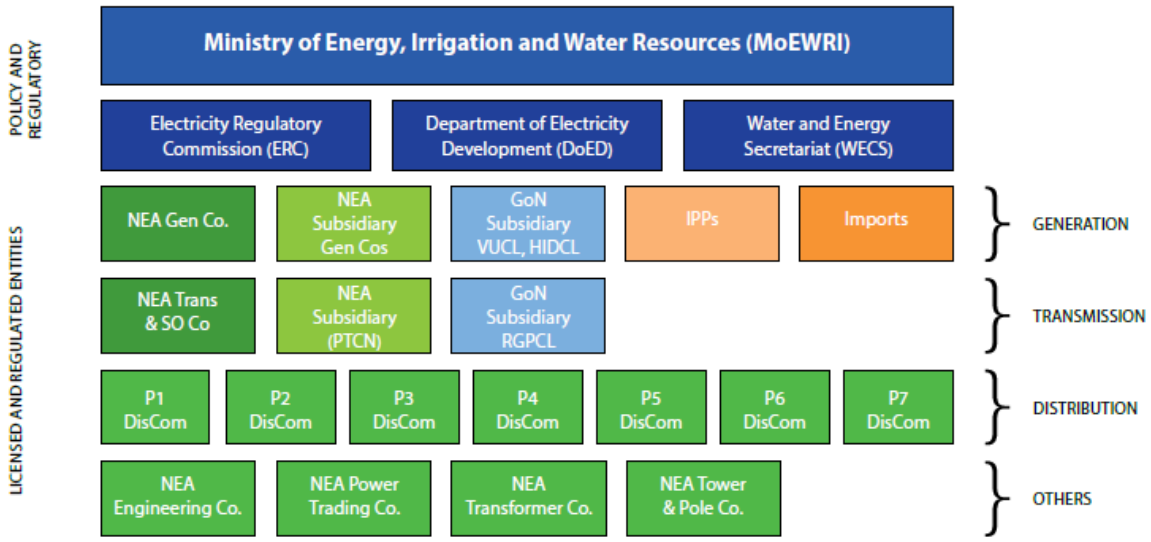


Source: NEA Corporate Development Plan 2020

9. **NEA is being restructured to lay the foundation for the transition from a vertically integrated utility to a competitive electricity market.** NEA owns 50 percent of the generation business and nearly 100 percent transmission and distribution business in Nepal. As a first step, NEA will complete internal restructuring. The government and NEA have adopted a gradual approach to sector restructuring that will see first functional

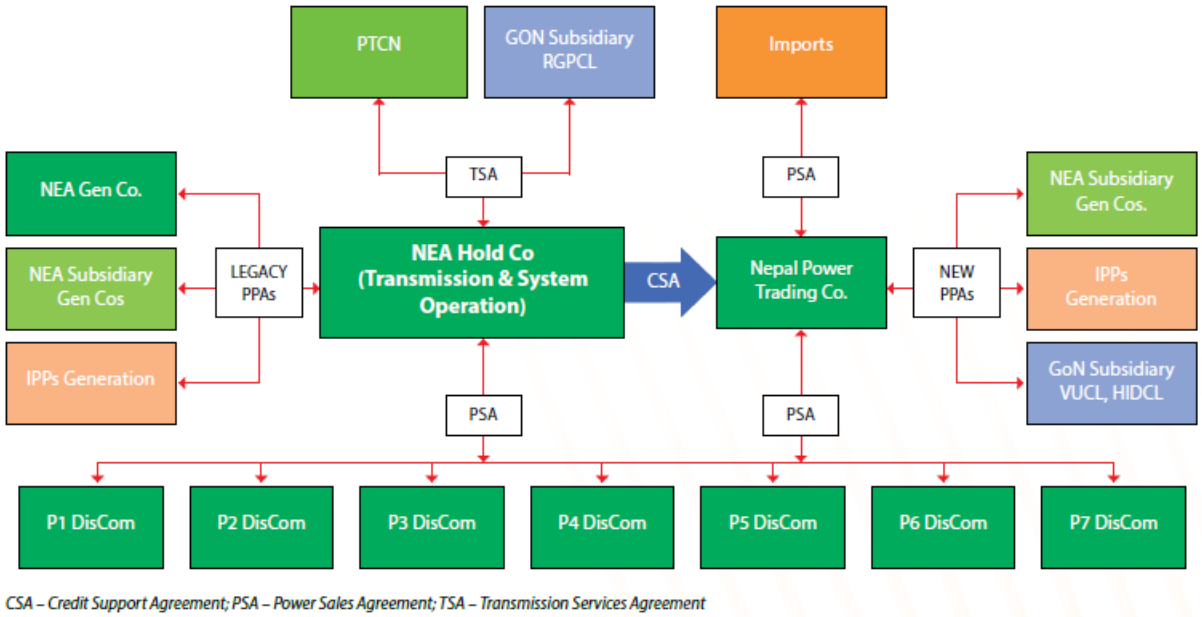
separation of generation, transmission and distribution; corporatization of some of the business units such as generation and distribution and operationalization of Nepal Power Trading Company Limited; and eventually the emergence of provincial distribution companies under Nepal's federal system and an independent dispatch and system operator (See Figures 7 to 9 on Nepal's Power Market Structure before and after NEA restructuring).

Figure 8. Nepal Electricity Market Overview after Re-structuring in the Plan Period



Source: NEA Corporate Development Plan 2020

Figure 9. Market Design After Re-structuring during the Plan Period



Source: NEA Corporate Development Plan 2020

KEY CHALLENGES

10. **The electricity sector in Nepal has suffered from underinvestment**. Per capita electricity consumption in Nepal is 8 percent of the global average and 35 percent of the South Asia average. Investments in the electricity sector must increase substantially to between US$ 1.3 billion to US$ 2.1 billion per year to meet the growing demand (see Table 1).

Table 1: Historical Investments (2010–17) and Projected Investment Needs, 2018–40

Type of investment	Average annual investments (US$ million, 2018 prices)					Total investment financing needs (US$ million)
	Historical investments	Forecast periods—Reference scenario				
	2010–17	2018–25	2026–30	2031–35	2036–40	2018–40
Hydro storage	—	393	404	631	1,017	13,012
Hydro (ROR+PROR)[20]	372	301	485	757	1,221	14,424
Solar	—	43	34	54	87	1,177
Wind	—	26	23	36	58	768
T&D	156	414	539	842	1,356	16,587
Total	**527**	**1,177**	**1,487**	**2,320**	**3,739**	**45,968**
Total (percent of GDP)	**2.1**	**2.7**	**2.4**	**2.6**	**3.0**	**2.0–3.0**

Source: Nepal InfraSAP 2019. Historical investments based on PPI Database 2018 and NEA Annual Report 2018. Projected investments are World Bank estimates based on the Water and Energy Commission Secretariat's 2017 reference case electricity demand projections.
Note: = not available; GDP = gross domestic product; PPI = private participation in infrastructure; PROR = peaking run-of-the-river; ROR = run-of-the-river; T&D = transmission and distribution.

11. **Sizable generation capacity is under development but is facing delays in implementation**. Nearly 4,000 MW have contracts with NEA in the form of power purchase agreement and about 1,400 MW from run-of-river hydropower plants are under construction. However, almost all projects, public or private, are experiencing delays due to external shocks such as earthquake, trade blockade as well as weak implementation capacity. The government has signed project development agreement with two large export-oriented projects and MOU with several other large hydro projects. Development a model large hydro project, such as Upper Arun, on time and budget, adopting an MFD approach, with export of surplus energy to regional markets in India and Bangladesh, and with environmental and social impact management in line with international best practices, will help build investors' confidence and has a mushroom effect on hydropower sector development in Nepal.

12. **Deeper sector reforms are needed to achieve a sound legal, regulatory and institutional framework in the electricity sector**. The Electricity Act is outdated and does not cover power trade. Electricity sector decisions are mostly undertaken on project to project basis without adequate long-term power system planning. NEA faces a growing conflict of interest in its relationship with the IPPs because of its ownership of generation and its control over transmission and dispatch. There is no framework to allow IPPs to exploit the surplus generation in the system through exports and trade. The country lacks a clear roadmap for integration into the regional power

[20] Run-of-river hydroelectricity is the type of hydroelectric generation plant whereby little or no water storage is provided. Peaking run-of-the-river hydropower plants are defined by the NEA as hydropower plants that can provide at least four hours of electricity in the peak hours.

market, which would enable it to develop its hydro for export to India and Bangladesh. The ongoing energy sector DPC series serve as a vehicle to channel the support from the World Bank and other development partners for policy advice, analytic underpinnings, knowledge sharing and capacity building in helping GoN to carry out these reforms. The Government has developed a power sector strategy and action plan to address these challenges, as laid out in Section 3 of the main text.

Box 1. Key Electricity Sector Institutions

- **Ministry of Energy, Water Resources and Irrigation (MoEWRI):** It is the line ministry with primary jurisdiction over electric power, water resources and irrigation in Nepal.
- **National Planning Commission (NPC):** The commission is the apex advisory body of the GoN for formulating a national vision, periodic plans, and policies for development.
- **Department of Electricity Development (DoED):** The department is responsible for assisting the MoEWRI in implementation of overall Government policies related to the power/electricity sector. It facilitates the private sector's participation in the energy sector by providing 'one window' service and license to power projects.
- **Nepal Electricity Authority (NEA):** NEA is the GoN's undertaking that is responsible for generation, transmission, and distribution of electricity in the country as a vertically integrated utility.
- **Water and Energy Commission Secretariat (WECS):** Established by the GoN in 1975, the primary responsibility of the Secretariat is to assist the GoN, different ministries relating to water resources, and other related agencies in the formulation of policies and planning of projects in the water resources and energy sector.
- **Investment Board Nepal (IBN):** The IBN was created in 2011 by the Investment Board Nepal Act. The IBN was formed to promote economic development in Nepal by creating an investment-friendly environment. It does so by mobilizing and managing public private partnerships (PPPs), and domestic and foreign private investment in sectors such as hydropower, chemical fertilizers, and integrated solid waste management.
- **Electricity Regulatory Commission (ERC)**: Established in 2019 by the Electricity Regulatory Commission Act (2017). The ERC is a self-governing body with a mandate to regulate generation, transmission, distribution and trade of electricity.
- **Alternative Energy Promotion Center (AEPC):** Established in 1996 with the objective of developing and promoting renewable/alternative energy technologies in Nepal.

Box 2. Legal and Regulatory Framework in the Electricity Sector

Key legal instruments and policies governing the energy and water resources sector are described as follows:

- **Nepal Electricity Authority Act 1984:** This act provides for the establishment of NEA to generate, transmit, and distribute electricity in an efficient, reliable, and convenient manner.
- **Electricity Act 1992:** The act covers to surveys, generation, transmission, and distribution of electricity as well as standardization and safeguard issues relating to electricity services. It introduces incentives for private investment through tax holidays and customs duty exemption and provides a legal basis for private participation in the generation, transmission, and distribution business.
- **Water Resources Act 1992:** An umbrella Act governing water resource management, it declares the order of priority of water use and vests ownership of water in the state, provides for the formation of water user associations, establishes a system of licensing, and prohibits water pollution.
- **Electricity Theft Control Act 2002:** The act defines electricity theft in different forms and provides penalty mechanisms to reduce electricity theft in the country.
- **Hydropower Development Policy 2001:** The Hydropower Development Policy aims to introduce a competitive environment for electricity development with the setup of an independent regulatory body and unbundling of NEA. This policy also emphasized bilateral and regional energy cooperation.
- **Public-Private Partnership and Investment Act 2019:** The objective of this act is to create an environment for investment in infrastructure development and to manage and mobilize investment of PPPs and national as well as foreign private investors.
- **ERC Act 2017.** The act defines the role of the ERC as a regulatory body to regulate the generation, transmission, distribution, or trade of electricity.

Ongoing Bank Engagement - Progress and Challenges

13. The Bank has five energy lending operations and one energy sector DPC series under implementation, amounting to US$ 404 million and covering power sector reforms, financial viability and sector planning at the policy level and hydropower and solar generation, transmission and distribution as well as small renewables at the project level. They cover all areas of the short-term priorities and some of the medium-term priorities of the sector and supports all energy agencies in Nepal.04 million and covering power sector reforms, financial viability and sector planning at the policy level and hydropower and solar generation, transmission and distribution as well as small renewables at the project level. They cover all areas of the short-term priorities and some of the medium-term priorities of the sector and supports all energy agencies in Nepal.

14. These engagements have made notable impacts on the sector, including reducing the system losses, improving NEA's financial status and increasing the cross-border transmission capacity. However, the challenges remain, with regards to sustainable safeguards management, effective contract management and accelerating disbursements. The GP and CMU have worked together to address these challenges through intensified portfolio reviews and follow-ups, more handholding help to the project implementing agencies, and targeted policy interventions.

15. The Government has requested the Bank to support a demonstration large hydro project. Such demonstration would help build investor's confidence at a time when the government's capacity to undertake large projects is limited and complement with the active private sector participation in small and medium hydropower development in Nepal. It would serve as a model for adopting an MFD approach, proper risk management and opening the access to the regional market through export of surplus electricity.

16. Reliability of supply has become a top priority after the easing of electricity supply, lack of which is largely due to overcrowding and dilapidated distribution networks. It would worsen as demand increases. Nepal should take advantage of disruptive technologies such as smart metering and battery storage in modernizing its distribution network and utility management to increase the reliability, further reduce losses, and improve customer services.

17. The proposed Bank engagement for FY2021-23 covers support to deeper power sector reforms, development of a large hydro project, and modernization of distribution networks and utility management.

ANNEX 7: FINANCIAL ANALYSIS OF NEPAL ELECTRICITY AUTHORITY

A. Current Financial Performance

1. **In the last three years NEA has become profitable, showing a continuous increase in net profits.** In the period FY2016 – FY2019, NEA's financial performance has shown significant improvements. From generating net losses of NPR 8.9 billion in FY2016, NEA has completed FY2019 with net profit of NPR 9.81 billion. This is a 238 percent increase compared to previous year, when NEA recorded a net profit of NPR 2.9 billion. This reflects efforts by NEA to become more efficient by reducing technical and non-technical losses from 25.8 percent in FY2016 to 15.3 percent in FY2019, increase consumers and revenues, reduce financing costs through the implementation of a financial restructuring plan, and institute improved financial planning and discipline through its Financial Viability Action Plan. Prior actions in DPC1 and DPC2 have contributed significantly to the turnaround in NEA's financial performance.

Figure 7.1. Revenue and Profit (NPR, million)

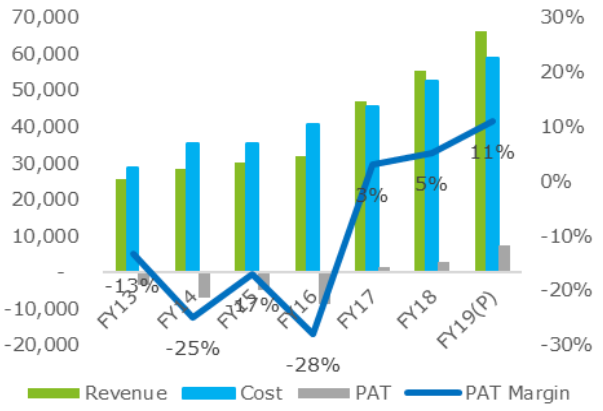


Figure 7.2. Cost Structure FY2019 (P) (NPR per kWh)

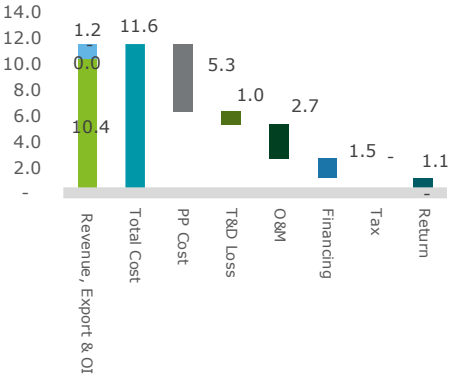
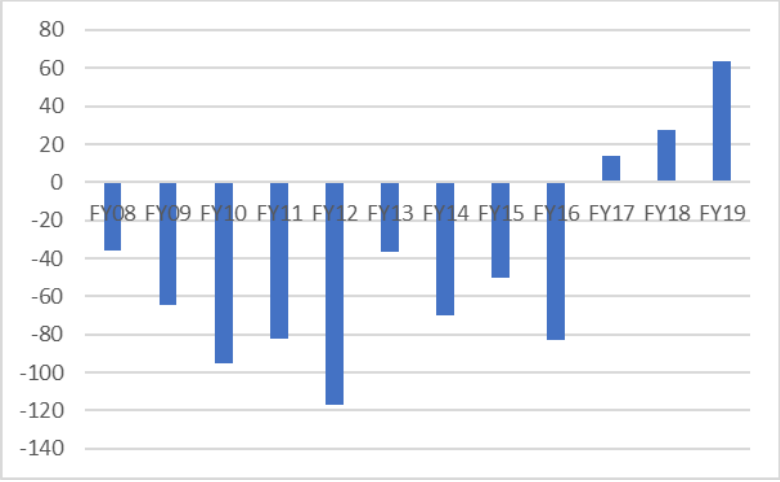


Figure 7.3. NEA Net Profits (US$ millions)



2. **Before FY2017, which was the first year NEA became profitable, it had posted 10 consecutive years of losses due to below cost retail electricity tariffs and high system losses (figure A 7.3).** T&D losses averaged more than 25 percent in this period. There was no increase in electricity tariffs between 2001 and 2012 and then again until 2016. By FY2016, the net accumulated losses had reached NPR 34.60 billion (US$ 320 million), that is, 7.98 percent of the total asset size. The total accumulated loss stands at NPR 12.23 billion as of July 15, 2019, as per the audited financial statement.

3. **The implementation of the NEA financial restructuring plan in FY17 (DPC1 - Prior Action 1) was helpful in improving NEA's finances.** The GoN converted NPR 14 billion (US$ 130 million), its loan to NEA, into equity and added another NPR 10 billion (US$ 100 million) as new equity, leading to an improvement in the debt-to-equity ratio from 1.9 in FY2016 to 1.3 in FY2017. Further infusion of equity in FY2018 and FY2019 has improved the debt to equity ratio and stands at 1.1 in FY2019. NEA's interest expenses were also reduced by 31 percent from FY2016 to FY2017, albeit showing a slight increase in FY2019. Nevertheless, the interest service coverage ratio (ISCR) and current ratio have improved from −0.05 and 0.46 in FY2016 to 3.62 and 0.84, respectively, in FY2019. See figures 7.4, 7.5, and 7.6 for more information on the evolution of NEA's energy, consumer, sales, revenue mix, and cost of power.

Figure 7.3. Energy Mix (percent)

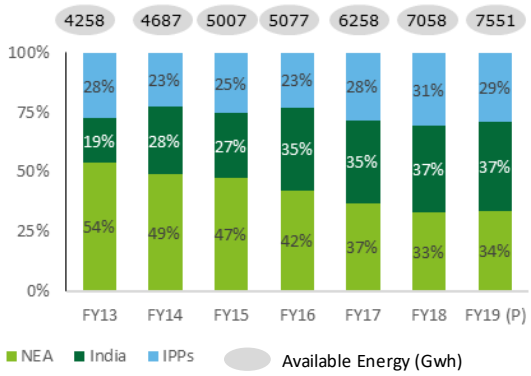
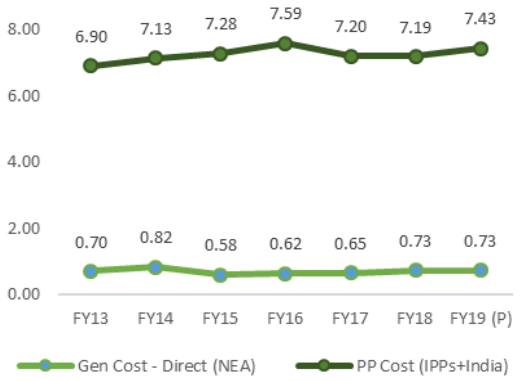


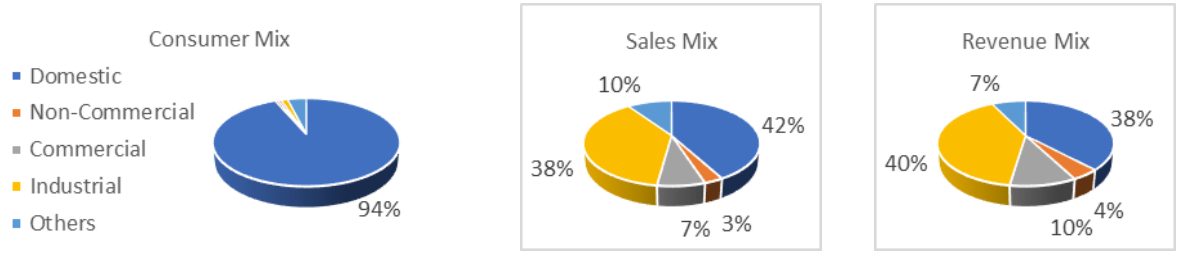
Figure 7.4. Average Cost of Power (NPR per kWh)



Source: NEA FVAP

Gen = generation

Figure 7.5 Consumer, Sales, and Revenue Mix - FY19 (P)



Source: NEA FVAP

4. **NEA's current financial position has been affected by the ongoing COVID-19 pandemic and the full Impact is yet to be understood.** The immediate impact has been felt primarily in NEA's cash position. The lockdown in Nepal that has been in effect since March 25, 2020 prevented most consumers from paying their electricity bills. As a result, the collection dropped significantly, whereby NEA now is collecting less than 10 percent of the bills compared to the average collection rate of around 95 percent. NEA has made efforts to increase consumption by offering 20% discount on unit price for monthly consumption below 150MW and incentivize customers to make payments of their bills through online platforms by offering 25% rebate. However, revenue collection remains low. Less than NPR 10 billion have been collected over the last cycle compared to average monthly collections of NPR 60 billion.

5. **NEA is also experiencing reduced demand, primarily from industrial and commercial customers.** Typically, this customer group represent 45% of the total demand, and 50% of the total revenues. Compared to normal demand at this time of the year, which is usually around 1,300 MW, current demand has dropped to around 950 MW. This will impact NEA's revenues for this period, which have declined by more than 80% for month of March and April, compared to this time last year. As this time period represent the last quarter of the NEA's fiscal year, which ends in July 15, NEA estimates that the decrease in revenues will wipe out to a large part of the profit for FY2020 which was projected to reach NPR 9 billion.

B. NEA's Financial Outlook

6. **Taking no COVID impact on the macro-economic growth into consideration, NEA's financial obligations were expected to increase significantly in the next five years as several new IPPs with take-or-pay contracts come online.** The power purchase cost of NEA is expected to increase threefold from NPR 38.90 billion (US$ 342 million) to NPR 116 billion (US$ 1.02 billion) between FY2019 and FY2024. Further NEA has planned a capital expenditure of NPR 363 billion (US$ 3.3 billion) between FY2020 to FY2024 (figure 7.7 and figure 7.8). The depreciation expense and interest expense on long-term loans are also projected to increase consequently in the next five years, in line with planned capital expenditure. O&M expenses are projected to increase at a rate of 6 percent, in line with inflation rates.

7. **Under the business as usual scenario, Average Cost of Supply (ACoS) of NEA was projected to increase significantly.** The business as usual scenario assumes that the historical levels of T&D losses would have been maintained and that NEA would net out its electricity exports in the wet season with electricity imports in the dry season through energy banking with its neighbors. There would, however, be no export of surplus electricity beyond this. The ACoS of NEA in this scenario is projected to increase from US¢ 10.0 (NPR 12.0 per kWh) per unit in FY2020 to US¢ 17.5 (NPR 20.7 per kWh) per unit in FY2024.

8. **The implementation of NEA's Financial Viability Action Plan (Prior Action 2) was expected to help moderate the increase in NEA's ACoS.** As part of its financial sustainability framework in FVAP, NEA has reduced T&D losses from 25.8 percent in FY2016 to 15.3 percent in FY2019 and is targeting to reduced it to 11 percent by 2024. It plans to net out its electricity exports in the wet season with electricity imports in the dry season through energy banking with its neighbors and then find markets for 50 percent of the surplus electricity from its electricity generation plants and take-or-pay contracts in neighboring countries. Under this so-called reform scenario, ACoS of NEA is projected to increase from US¢8.8 (NPR 10.4 per kWh) per unit in FY2020 to US¢11.5 (NPR 13.5 per kWh) per unit in FY2024 The projected income statement, cash flow statement, balance sheet, and financial ratios of NEA over FY2020–2024 for the reform scenario are presented in Tables 7.1, 7.2, 7.3, and 7.4.

9. **The COVID impact on macroeconomic growth has already led to drop in electricity demand which is expected to continue until fully recovery in FY24[21].** As a result, the energy sector is likely to experience an additional viability gap of NPR 137 billion NPR (26.8%) if there is no tariff increase in the next 10 years. A combination of measures could largely mitigate the negative cash flow impact, caused by Covid-19 pandemic outbreak:

- A reduction in 3% O&M expenses by means of reducing direct overheads and indirect overheads (travel expenses, accommodation expenses, daily allowances, car allowances, telephone expenses, contract labors, etc.),
- One year shifting of the commissioning of new IPP projects planned to be commissioned between FY21 and FY24, and/or
- Postponing at least ~30% of capex/ capital projects, budgeted in FY20 to FY22.

NEA has been making profits over the last three years. If the above measures cannot be implemented in full spirit, it is expected that the profitability of NEA will drop. A full stress testing/simulation analysis to understand the impact of Covid-19 in the electricity sector of NEA under various scenarios is needed once the COVID situations abate.

Figure 7.6. Expenditure Projections (NPR, billions)

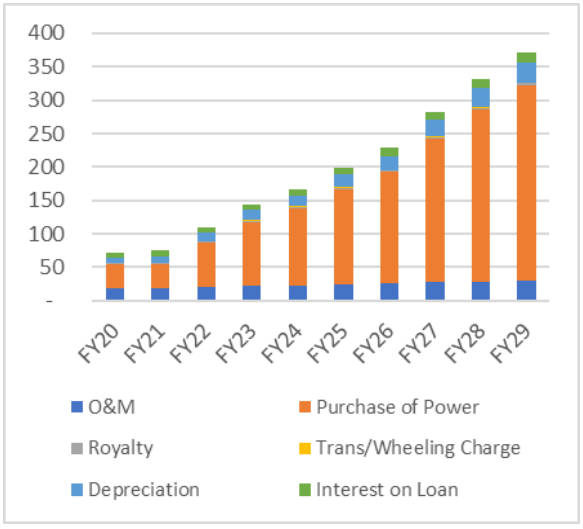
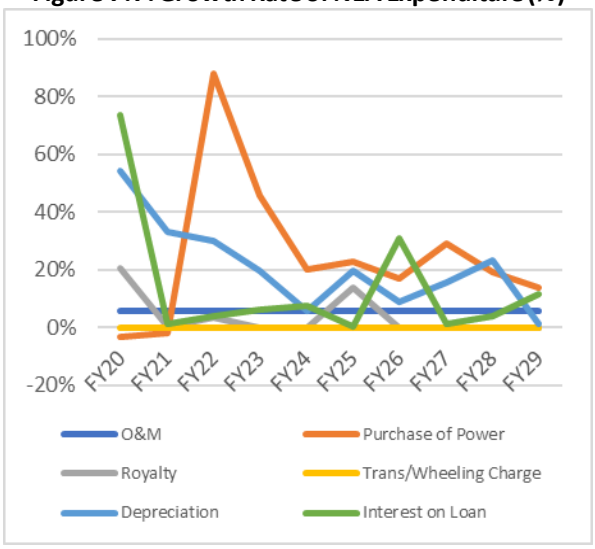


Figure 7.7. Growth Rate of NEA Expenditure (%)



Source: NEA FVAP

[21] Energy intensity of 6.47, an average of FY18-19, is considered for future projections of sales units till FY23; assumption in Energy Intensity would remain the same. It is assumed that the recovery phase (after the impact phase) would end by FY25 and sales will meet the original business as usual case (BAU) case sales numbers by FY25. Thereafter the sales units is assumed to be same as original trajectory.

Table 7. 1. ACoS in Business as Usual and Reform Scenarios (NPR per kWh)

	FY2020	FY2021	FY2022	FY2023	FY2024
ACoS (Business as Usual scenario)	12.0	12.0	15.8	19.2	20.7
ACoS (Reform scenario)	10.4	9.9	11.7	13.0	13.5

Table 7.2. Projected Income Statement of NEA Under Reform Scenario

NPR, Millions	FY2020	FY2021	FY2022	FY2023	FY2024
Revenue from Sale of Power	75,942	1,02,380	1,18,120	1,53,140	1,67,400
Revenue from export to India	216	1,063	8,983	17,538	22,138
Revenue Subsidy	0	0	0	0	0
Other Income	7,999	8,799	9,678	10,646	11,711
Dividend Income	238	238	1,338	1,784	1,784
Expenditure					
O&M Cost	18,155	19,244	20,399	21,623	22,920
Employee Expenses	12,869	13,641	14,460	15,327	16,247
Rehabilitation & Maintenance	2,890	3,063	3,247	3,442	3,648
Administrative & General	2,396	2,540	2,692	2,854	3,025
Purchase of Power	35,922	35,185	66,099	96,303	1,15,826
Fuel consumption	0	0	0	0	0
Royalty	1,736	1,742	1,801	1,801	1,801
Transmission/Wheeling Charge	1,098	1,098	1,098	1,098	1,098
Total	56,910	57,269	89,397	1,20,824	1,41,645
PBITDA	27,484	55,211	48,721	62,284	61,388
Depreciation	7,277	9,702	12,633	15,108	15,986
PBIT	20,207	45,509	36,088	47,176	45,402
Interest on Loan	7,892	7,992	8,292	8,819	9,492
Interest on Working Capital Loan	436	1,639	958	1,332	1,629
(Gain)/Loss on Foreign Exchange	0	2	29	212	453
Interest on Cash Deficit Loan	0	0	0	0	0
Profits Before Tax (PBT)	11,878	35,877	26,808	36,813	33,828
Tax Payable	2,970	8,969	6,702	9,203	8,457
Profit After Tax (PAT)	8,909	26,908	20,106	27,610	25,371

Note: PBITDA = Profit before interest, taxes, depreciation, and amortization; PBIT = Profit before interest and taxes

Table 7.3. Projected Cash Flow Statement of NEA Under Reform Scenario

NPR, Millions	FY2020	FY2021	FY2022	FY2023	FY2024
Revenue	75,942	1,02,380	1,18,120	1,53,140	1,67,400
Revenue from export to India	216	1,063	8,983	17,538	22,138
Revenue Subsidy	0	0	0	0	0
Other Income	7,999	8,799	9,678	10,646	11,711
Dividend Income	238	238	1,338	1,784	1,784
O&M Cost	-18,155	-19,244	-20,399	-21,623	-22,920
Purchase of Power	-35,922	-35,185	-66,099	-96,303	-1,15,826
Fuel Consumption	0	0	0	0	0
Royalty	-1,736	-1,742	-1,801	-1,801	-1,801

NPR, Millions	FY2020	FY2021	FY2022	FY2023	FY2024
Transmission/Wheeling Charge	-1,098	-1,098	-1,098	-1,098	-1,098
Taxes	-2,970	-8,969	-6,702	-9,203	-8,457
Change in Current Assets/Liabilities	-19,854	-17,180	9,718	-5,346	-4,230
CF from Operating Activities	4,661	29,062	51,737	47,736	48,701
Change in Investments	-2,708	-3,831	-4,632	-6,531	-13,692
Capital Expenditure	-59,017	-85,034	-73,876	-67,268	-88,784
CF from Investing Activities	-61,725	-88,864	-78,509	-73,799	-1,02,476
Debt	30,114	49,975	42,399	41,112	67,196
Equity	24,452	27,530	24,739	19,578	12,680
Cash Deficit Loan	0	0	0	0	0
Debt Repayment	-5,707	-6,187	-7,368	-9,825	-12,365
Cash Deficit Loan Repayment	0	0	0	0	0
Increase in Working Capital Loan	4,359	12,026	-6,802	3,742	2,961
Interest on Debt	-7,892	-7,992	-8,292	-8,819	-9,492
Interest on WC Loan	-436	-1,639	-958	-1,332	-1,629
Gain/(Loss) on Foreign Exchange	0	-2	-29	-212	-453
Interest on Cash Deficit Loan	0	0	0	0	0
CF from Financing Activities	44,889	73,711	43,687	44,244	58,898
Cash Schedule					
Opening cash balance	31,145	18,969	32,878	49,793	67,973
Cash generated during the year	-12,176	13,909	16,915	18,180	5,124
Closing Cash Balance	18,969	32,878	49,793	67,973	73,096

Table 7.4. Projected Balance Statement of NEA under Reform Scenario

NPR, Millions	FY2020	FY2021	FY2022	FY2023	FY2024
Gross Fixed Assets	2,69,154	3,47,534	4,40,475	5,15,382	5,41,026
Accumulated depreciation	65,596	75,298	87,931	1,03,039	1,19,025
Net fixed assets	2,03,558	2,72,236	3,52,544	4,12,343	4,22,001
Capital work in progress	78,550	85,204	66,139	58,501	1,21,640
Investments	37,300	41,130	45,762	52,293	65,985
Current assets	41,560	46,542	43,570	42,781	32,759
Cash and bank balance	18,969	32,878	49,793	67,973	73,096
TOTAL ASSETS	3,79,937	4,77,990	5,57,809	6,33,891	7,15,482
Equity	1,49,676	1,77,205	2,01,944	2,21,522	2,34,203
Reserve and surplus	(4,221)	22,687	42,793	70,403	95,774
Non-current liabilities	693	693	693	693	693
Long-term loans	1,64,652	2,08,440	2,43,470	2,74,757	3,29,588
Working capital loan	4,359	16,385	9,583	13,325	16,286
Cash deficit loan	-	-	-	-	-
Current liabilities	64,778	52,580	59,325	53,191	38,939
TOTAL LIABILITIES	3,79,937	4,77,990	5,57,809	6,33,891	7,15,482

Table 7. 5. Projected Key Financial Ratios under Reform Scenario (percent)

	FY2020	FY2021	FY2022	FY2023	FY2024
Profitability ratios					
PBITDA margin (percent)	36 percent	54 percent	41 percent	41 percent	37 percent
Profit after tax margin (percent)	12 percent	26 percent	17 percent	18 percent	15 percent
Return on equity (percent)	6 percent	16 percent	11 percent	13 percent	11 percent
Return on net worth (percent)	7 percent	16 percent	9 percent	10 percent	8 percent
Return on gross fixed assets (percent)	4 percent	9 percent	5 percent	6 percent	5 percent
Return on net fixed assets (percent)	6 percent	11 percent	6 percent	7 percent	6 percent
Return on total assets (percent)	3 percent	6 percent	4 percent	5 percent	4 percent
Leverage ratios					
Debt-to-equity ratio	1.10	1.18	1.21	1.24	1.41
Debt-to-net worth ratio	1.13	1.04	0.99	0.94	1.00
Debt service coverage ratio	1.77	3.15	2.62	2.76	2.33
ISCR	3.05	5.58	4.95	5.84	5.36
Self-financing ratio	0.08	0.34	0.70	0.71	0.55

ANNEX 8: POVERTY AND SOCIAL IMPACT ASSESSMENT

1. Electricity tariff reform is one of the key measures of the electricity sector reform supported by this DPC operation. A cost-based pricing mechanism is considered essential for encouraging more efficient consumption, improving private investment, and strengthening the financial position of Nepal Electricity Authority (NEA). However, significant tariff increases clearly carries the risk of increasing economic stress, particularly for poor households.

2. The purpose of this annex is twofold: (a)present a partial equilibrium analysis of the poverty and welfare impact of electricity tariff reform on households in Nepal; and (b) describe current evolution of social protection system to reach and identify the poor households, which could be used to support any cash compensation for the poor if necessary. The main analysis finds that expenditures on electricity have been a moderate component of the total budget of the Nepali households because of the extremely low electricity consumption: they represented 1.35 percent of the households' total expenditure in 2017. In February 2020, NEA proposed a new tariff structure that would slightly reduce residential electricity tariff (to be cross-subsidized by higher industrial tariffs). Under the proposed new tariff structure, the expenditure share of electricity of an average household would further decrease to 1.23 percent.

3. In the longer term, to reach cost recovery, residential tariffs are expected to increase by 51 percent[22] during FY2018 and FY2022 under a pessimistic projection of NEA's financial performance. Under this scenario, the budget share of electricity would increase to 1.47 percent for the average population and 2.19 percent for the poorest households in a demand suppressed scenario. The impact of tariff increase would be higher if average annual per capita electricity consumption is less suppressed or reaches 700kWh - a five-year government target and 400 percent higher than the baseline consumption in 2017. The budget share of electricity after proposed price hike would increase to 5.05 percent of total expenditure for the poorest income group if per capita electricity consumption reaches to 302 kWh, a level comparable to that in neighboring countries (after controlling for differences in weather pattern and electricity price). The share would increase to 11.71 percent of total expenditure for the poorest income group if consumption rises to 700kWh, a 400 percent increase from the baseline consumption in 2017. For the poorest households who were not connected to the grid in 2017, electricity expenses could account for 3.75 percent of their disposable income after the price hike if they gain access to the grid.

4. Electricity sector reform also provides opportunities that would not otherwise exist to improve access and quality of power supply. These welfare gains are likely to significantly outweigh any adverse impact of tariff increase in the long run. Using data from a recent multi-tier household survey in Nepal, the analysis finds that gaining access to grid and mini-grids is associated with a 34 percent and 16 percent increase in per capita total expenditure, respectively. Grid electrification also increases the probability of being enrolled in a school for children. It increases total years of schooling by about 0.3 years for girls and about 0.2 years for boys. In contrast, the welfare effects of off-grid electricity are small and statistically insignificant.

5. Data for this analysis comes from two sources: three years of Annual Household Survey (AHS) from 2014 to 2017 conducted by Central Bureau of Statistics of Nepal; and a household survey based on the multi-tier

[22] The base case of the NEA FVAP projects that electricity tariffs would have to go up by 20% by FY2022 to ensure cost recovery in the electricity sector. A 5

framework (MTF) of energy access sponsored by the World Bank and carried out during July - November 2017[23]. The AHS contain basic demographic information of households and extensive details on household consumption on various categories of goods and services including electricity. It also provides information on households' primary source of lighting. The MTF survey covered 6000 households in 7 provinces and 3 ecological regions (Mountains, Hills and Terai). In addition to data on basic demographic and economic characteristics of households, MTF survey provides much more detailed information on household electricity use, including various primary and alternate sources of electricity and the quality of electricity supply measured by daily average duration of outages. The recall period for electricity expense is last 12 month for AHS, and last 30 days for MTF survey. The MTF survey also asked respondents to share electricity bills/invoices when possible. Electricity usage data from MTF are, therefore, more reliable and are used as the main data for the distribution impact analysis. AHS data from 2014-2017 are used to describe the trend of electricity access and consumption.

6. Regarding the current social protection system to identify and reach the poor, Nepal has made significant investments in schemes to support the poor and socially vulnerable population and approved new laws and regulations to support development of a more comprehensive social protection system. The main scheme for the poor and socially vulnerable, the Social Security Allowance (SSA) implemented by the Department of National ID and Civil Registration (DONIDCR) from the Ministry of Home Affairs (MOHA), covers nearly 3 million individuals (senior citizens, single women, disable, endangered ethnicities, and children). Other important programs for the poor included health insurance and some labor market programs, as the Prime Minister Employment program, but mostly programs are implemented by different agencies, and neither coordinated nor interoperable, which is changing due to the past year engagement of the Social Protection and Jobs team and DONIDCR. In addition, new laws and regulations approved -such as "National ID and Civil Registration Act, 2020 (2076 BS) that establish the national ID to establish identity of each Nepali citizen through an unique number and with personal and biometric details storage in a card; the "Right to Employment Act, 2018" that has formed the basis for the new Prime Minister's Employment Program launched in FY2018-19, and The "Contribution Based Social Security Act" approved in 2017 that is the basis for a new set of contributory schemes including health and maternity benefits, accident insurance and old age pensions to contributing workers launched in FY2019-20 help establishment of more comprehensive and coordinated Social Protection System.

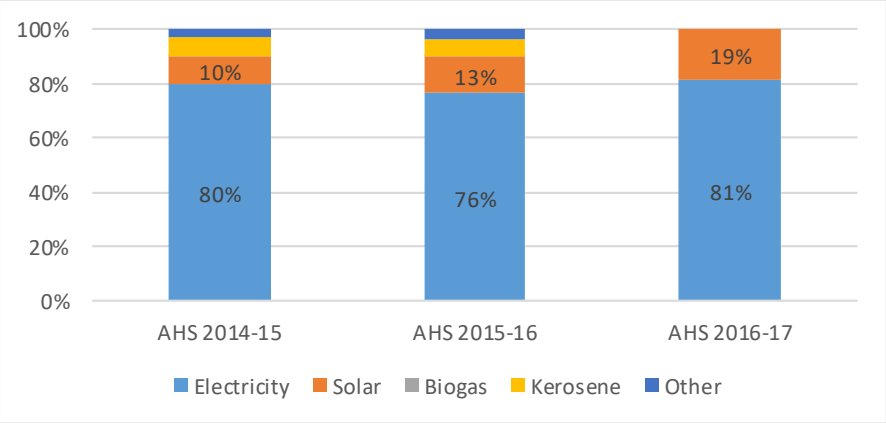
7. Moreover, last September the Government of Nepal and development partners agreed on building an integrated social registry to increase programs' coordination and effectiveness, as well as to be used to respond to shocks. The International Social Protection Conference, held on 18-19 September 2019, brought together international and national experts to deliberate on options to enhance efficiency and impact of social protection in Nepal under support of different development partners as DFID, UNICEF and GIZ. The main outcome of the conference was a joint pledge to build an integrated social registry to increase programs coordination, and social protection effectiveness by ensuring links of program beneficiaries to services and productive opportunities, as well adapted to respond to shocks. Hence, the DONIDCR stepped up to start building such system and the World Bank and DFID are, financially and technically, supporting the development/finalization of the Social Protection strategy, the dialogue on identifying an institutional arrangement for management of the social registry, coordination and monitoring of programs, the operationalizing cash transfer to the "economically poor" under the Social Security Act, and the design of an integrated social registry for improved service delivery and disaster response.

[23] Alisha Pinto and Han Kyul Yoo, 2019. "Nepal Beyond Connections: Energy Access Diagnostic Report Based on Multi-Tier Framework", the World Bank.

ELECTRICITY ACCESS AND POWER OUTAGES

8. There appears to be a significant improvement in access to off-grid electricity in Nepal during 2014-2017, mostly due to increased adoption of off-grid solar technologies (Figure 1). Access to grid electricity remains flat at about 80 percent during 2014-2017[24] (Roughly 72 percent of households are connected to the national grid and 10 percent to local mini grids). In contrast, the percentage of households using solar-based off-grid electricity has increased from 10 percent of the population during 2014-2015 to 19 percent during 2016-2017. During 2014-2015, roughly 10 percent of households do not have access to any source of electricity and rely on kerosene and other type of traditional fuel as their main source of lighting. During 2016-2017, almost all households had access to electricity, thanks to the increased adoption of solar-based off-grid electricity.

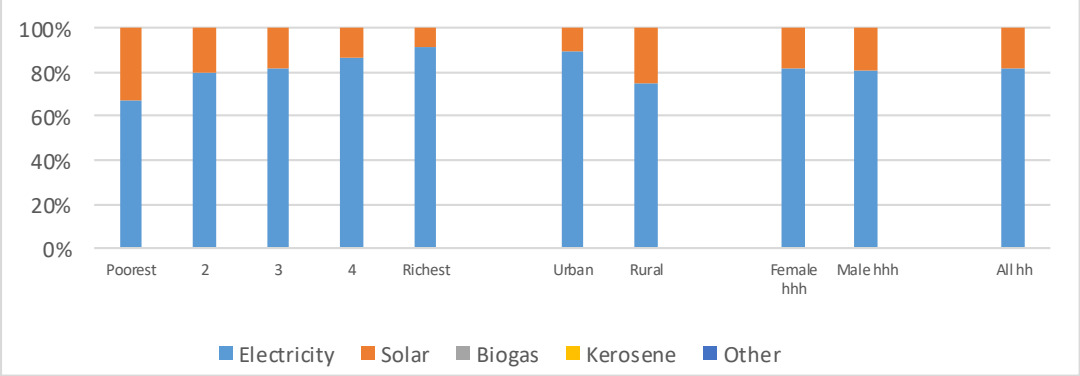
Figure 1: Access to lighting by source (2014-2017)



Source: AHS (2014-2017)

9. Off-grid households tend to be poorer and more likely to live in rural areas (Figure 2). While about 85 percent and 7 percent of the households in the top expenditure quintile reported using electricity from grid and mini-grid as their main source of electricity, respectively, about 32 percent of the households in the poorest quintile do not have access to national grid or mini-grids. There is also a large urban and rural divide. The combined access rates to grid- and local mini-grids in rural area is 74 percent compared to 89 percent in urban area.

Figure 2. Access to lighting by source and households' categories (2016-2017)

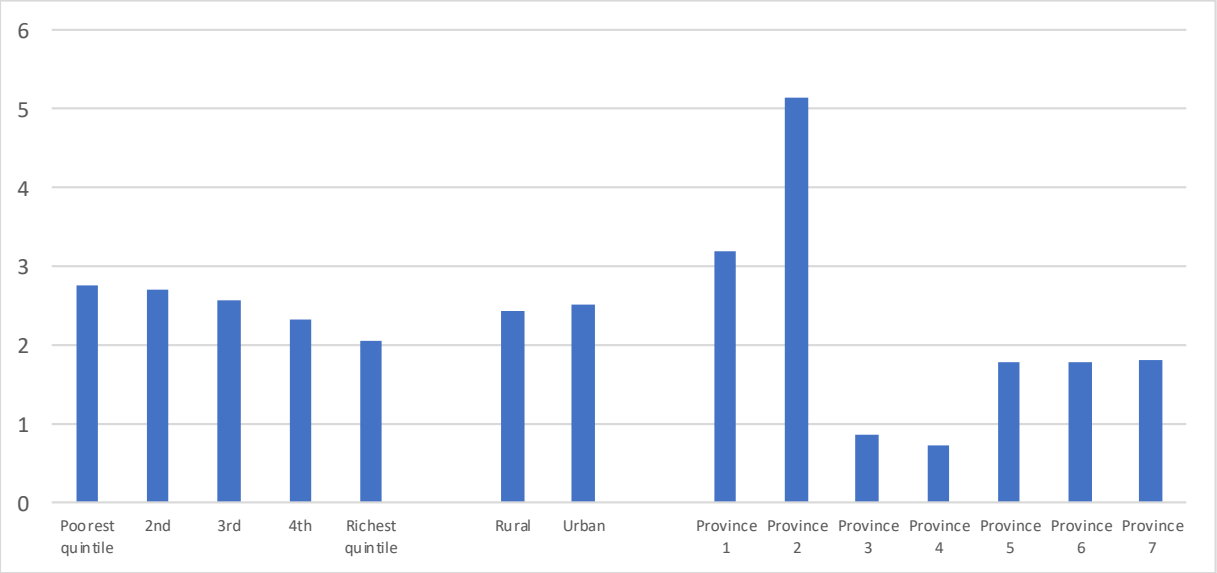


Source: AHS (2016-2017)

[24] Roughly 72 percent of households are connected to the national grid and 10 percent to local mini grids

10. Quality of electricity supply measured by daily average duration of power outages vary largely across provinces (Figure 3). Electricity supply is least reliable in province 2 where power outages on average last for 5.2 hours a day. In contrast, daily power outages are only 0.9 hours in province 3. National average daily power outages for households is 2.5 hours. Rural and urban households are almost equally affected and there is no large difference across expenditure quintiles, possibly because load shedding usually applies to a large geographic area.

Figure 3. Daily average duration of power outages (hours/day)



Source: Estimation based on MTF survey data.

11. Nepal has an increasing block tariff structure for electricity – the tariff charged per kilowatt hour (kWh) increases with the tariff slab. In addition, consumers are also charged a slab-specific fixed connection fee (demand charges) regardless of actual energy consumption. As of 2019, Nepal Electricity Authority set 7 tariff slabs for residential consumers (Table 1A).

Table 1A: Residential Electricity Tariffs as of 2019

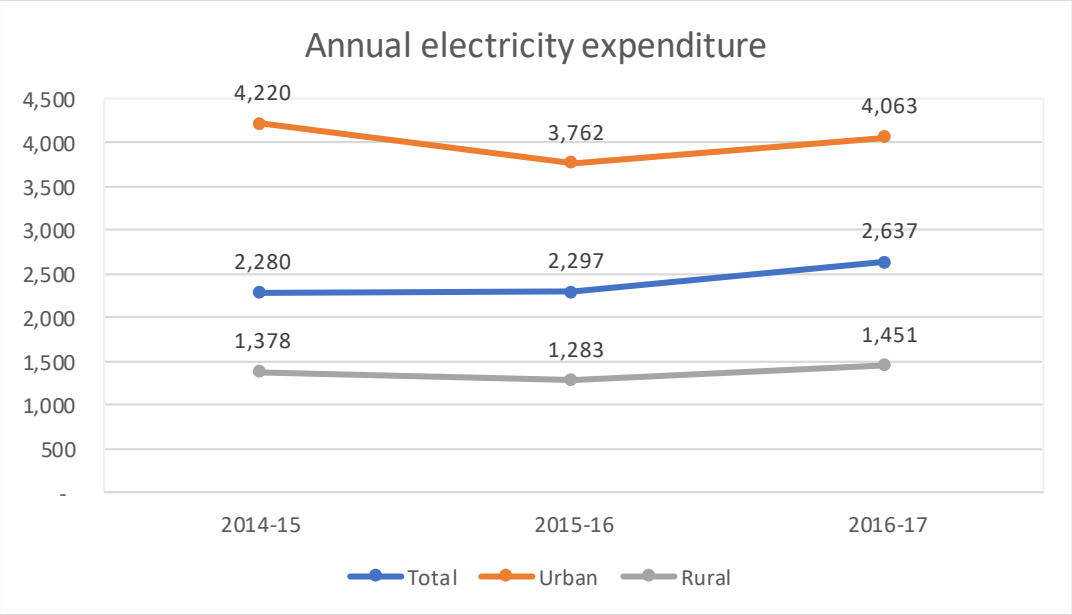
Slab #		Service charge (Rs.)	Energy charge (Rs. /unit)
1	1-20 units	50	4
2	21-30 units	75	7
3	31-50 units	100	8.5
4	51-150 units	125	10
5	151-250 units	150	11
6	251-400 units	175	12
7	> 400 units	200	13

Note: These are the tariff rates for residential consumers with 15 ampere connection and single phase. The tariff rates for a three-phase connection and medium voltage connection are different. However, there were only 10 households that potentially had a three-phase connection. These households were excluded from the sample.

12. Under this tariff structure, a household consuming up to 20 units a month is charged a price of NPR 4 per kWh. In the second tariff slab, if a household consumes up to 30 units, then the first 20 units will be charged at NPR 4 per unit and the next 21 to 30 kWh will be charged at NPR 7.0 per unit. However, if a household lies in the second slab but consumes more than 30 kWh, the consumption from the first unit itself shall be charged at NPR 7.0 per unit. This tariff structure continues for the rest of slabs. If a household consumes 100 kWh in a month, it will be charged NPR 945.[25]

13. According to AHS, Nepali households on average spend NPR 2,280 on electricity during 2014-2015. Average electricity expenses increased to NPR 2,637 during 2016-2017, representing a 16 percent increase in three years. Most of this increase is attributable to increase in electricity expenses by rural households. There is a 3.7 percent decline in households' electricity expenditure in urban area over the period.

Figure 4. Annual households' electricity expense (2014 – 2017)



Source: AHS 2014-2017

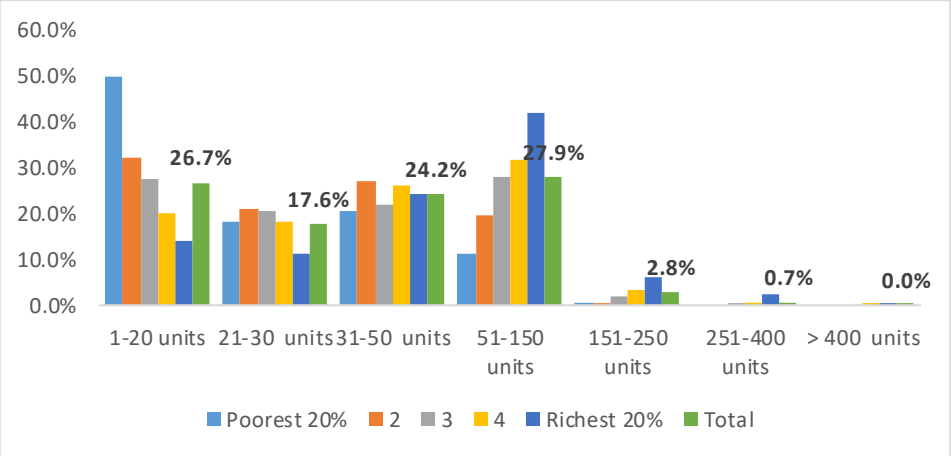
14. Using data on electricity expenditure reported in the MTF survey, we calculate electricity consumption of households that are connected to the national electric grid. The analysis shows that there is a large leakage of subsidies to the non-poor. While tariffs of the first two slabs are heavily subsidized, 25 percent of the households in the richest quintile and 38 percent of the households in the fourth quintile facing tariffs of the first two slabs where the energy charges are heavily subsidized to 4 and 7 rupees per unit. Meanwhile, electricity consumption is positively correlated with income (Figure 5). Only 11.8 percent of households in the poorest quintile consume more than 51 kWh of electricity a month.

15. The budget share of electricity is a modest component of households' total expenditure. It is about 1.35 percent on average and 2.02 percent for the poorest quintile during 2017 (Figure 6). The expenditure share of electricity is inversely correlated with total expenditure – poorer households spend more on electricity per month

[25] The calculation is as the following 20*4+10*7+20*8.50+50*10+demand charge 125=945

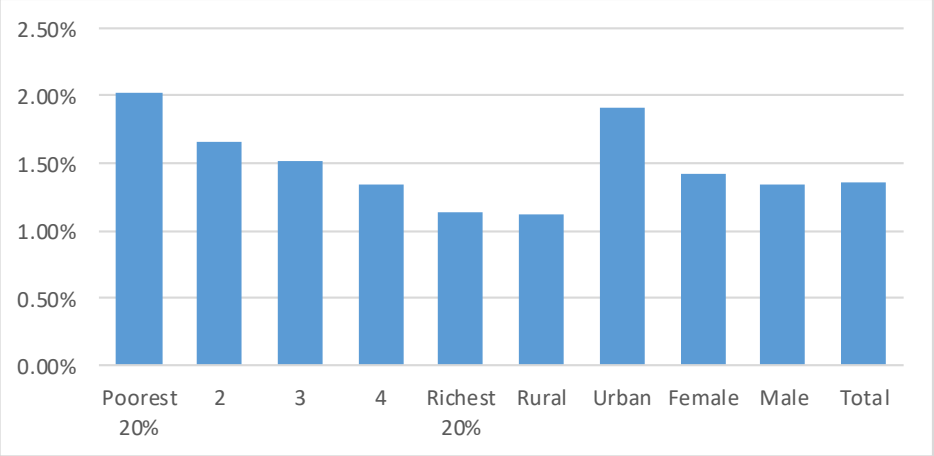
relative to richer households. In addition, urban households spend much more than rural households; female-headed households spend more than male-headed households. [26]

Figure 5. Share of households in each tariff slab by expenditure quintile



Source: Calculation based on MTF survey data.

Figure 6. Share of electricity expenses in total expenditure in 2017

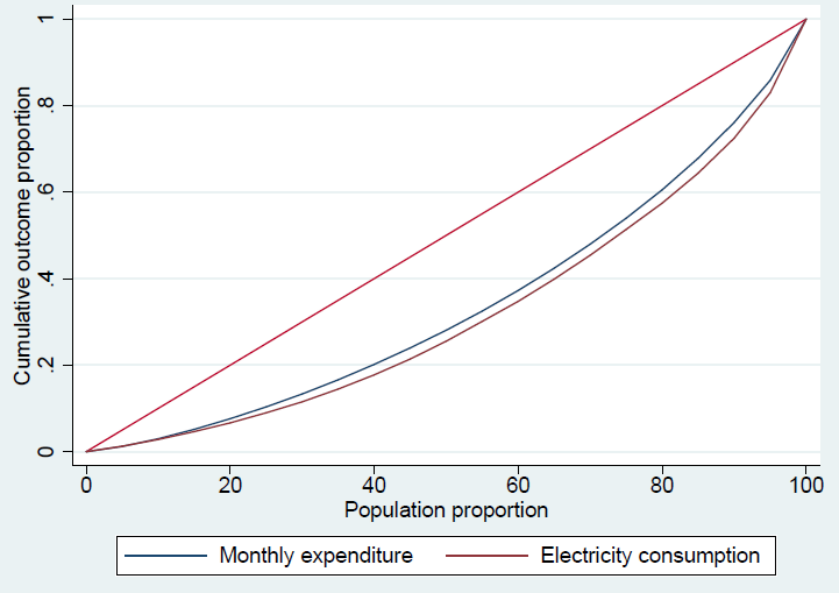


Source: Calculation based on MTF survey data.

16. The electricity consumption gap between rich and poor households is larger than the expenditure gap. The Lorenz curve plots the cumulative share of electricity consumption against the cumulative share of households (ranked by total expenditure). The further the Lorenz curve lies below the 45-degree line, the line of perfect equality, the more unequal is the distribution of consumption and income. (Figure 7) indicates that the electricity consumption and income were skewed towards the non-poor, however, electricity consumption gap between the poor and non-poor was higher than the expenditure gap.

[26] About 1 percent of households who reported having access to national grid did not report have electricity expenses. A series of statistical testing shows that these non-reporting households are not statistically significantly different from those households who reported positive expenditure on electricity. These non-reporting households are not included in the following analysis.

Figure 7. Household electricity consumption and total expenditure Lorenz curves



Source: Estimation based on MTF survey data

DISTRIBUTIONAL IMPACT OF ELECTRICITY TARIFF INCREASE

(1) Short-term impact of proposed tariff change in 2020

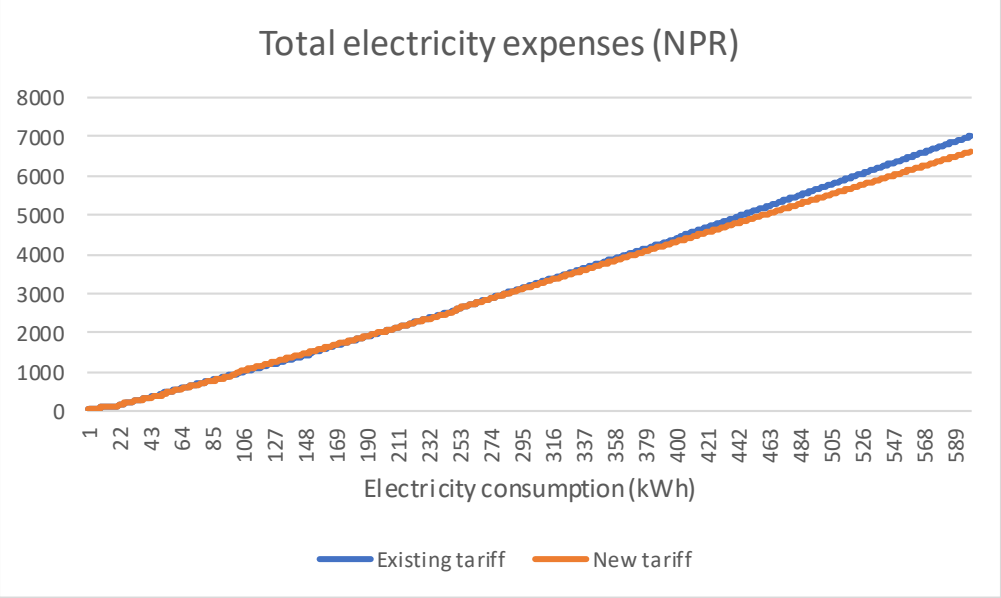
17. In February 2020, NEA proposed a new tariff schedule which would simplify existing tariff structure into 5 slabs for residential households (Table 2). Under the proposed new tariff structure, for residential consumers with 15 ampere connection, demand and energy charges remain the same if a household consumes less than 20 kWh a month. For households consuming between 21-30 kWh, or 101-150 kWh a month, their total electricity expenses (the sum of demand and energy charges) will go up by up to 7 percent. For households whose consumption fall into under tariff slabs, total electricity expenses will in general decrease. Households whose consumption exceeds 500 kWh a month will see the largest decline in their electricity bills - by up to 6 percent. For consumption above 258 kWh a month, total electricity expenses will uniformly decrease under the new tariff schedule, and the higher the consumption, the larger the decline (Table 2 and Figure 8).

Table 2. Residential Electricity Tariffs and proposed changes in 2020

	Existing tariff		Proposed tariff		Total electricity expenses change under proposed tariff
kWh (monthly)	Demand charges (Rs.)	Energy charges (Rs. /unit)	Demand charges (Rs.)	Energy charges (Rs. /unit)	
1-20	50	4	50	4	No Change
21-30	75	7	75	8.5	↑ 1 -7 percent
31-50	100	8.5	75	8.5	↓4-2 percent
51 - 100	125	10	100	9.75	↓ 2 percent
101-150	125	10	150	10.50	↑3-4 percent
151-250	150	11	150	10.50	↓ 1-2 percent
251-400	175	12	200	11.50	↓ 0-2 percent
> 400	200	13	200	11.50	↓2-6 percent

Note: These are the tariff rates/tariff changes for residential consumers with 15 ampere connection and single phase.

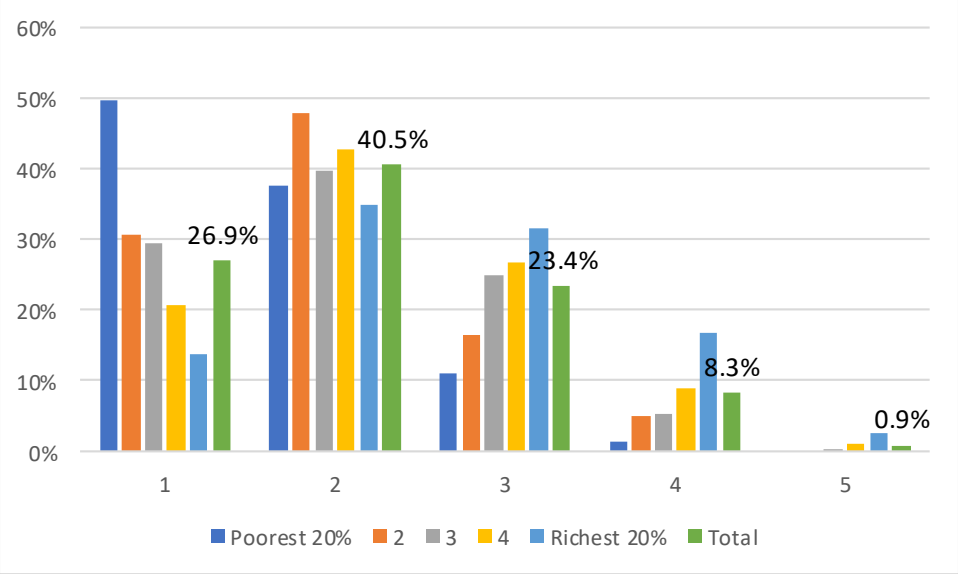
Figure 8. Monthly total electricity expenses under existing and new tariff



Source: Simulation based on existing and proposed tariff schedule

18. To estimate the impact of the proposed tariff changes on household electricity spending, we consider a higher-impact scenario in which demand is perfectly inelastic to price changes. We use cross-sectional data from MTF 2017 to estimate income elasticity of electricity consumption, while controlling for electricity price and household demographic and location characteristics. The estimated income elasticity is 0.18. We further assume the increase in household total expenditure is in line with the increase in GDP which is projected to go up by 24 percent during 2017 and 2020.

Figure 9. Share of households in each tariff slab under proposed new tariff

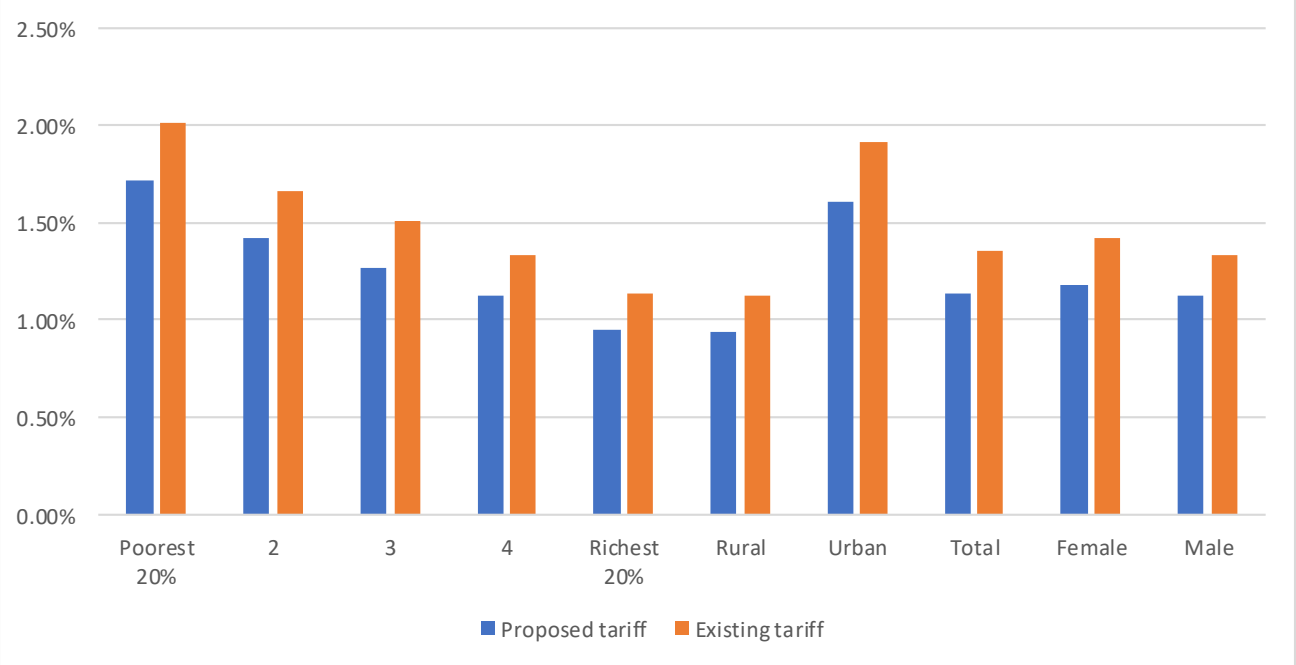


Source: Simulation based on MTF survey data

19. We simulate household electricity consumption under the new tariff schedule (Figure 9). The majority of households – 87 percent of the poorest quintile, 63 percent of the fourth quintile and 49 percent of the richest quintile - would face tariffs of the first two slabs. Only 1 percent of households in the poorest quintile would consume more than 100 units a month. It is 17 percent for the richest households.

20. Under the proposed new tariff, households' budget share of electricity expenses would decrease across the board (Figure 10). Assuming demand is perfectly inelastic, the budget share of electricity for the poorest quintile would decrease from 2.02 percent to 1.72 percent after the price change. The budget share of electricity would decrease from 1.12 percent to 0.94 percent for rural households and from 1.91 percent to 1.61 percent for urban households. On average, the expenditure share of electricity would decrease from 1.35 percent to 1.13 percent.

Figure 10. Budget share of electricity expenditure before and after proposed tariff change in 2020



Source: Simulation based on MTF survey data

21. Electricity prices for households in Nepal are currently cross subsidized from industrial customers. Under the proposed new tariff structure, industrial customers will see tariff to be further increased by 4.87 percent. Because electricity is an essential input to production, higher industrial tariffs can mean higher prices for almost all goods and services. In developing and developed countries alike, low-income households are likely to be disproportionately affected by higher industrial energy prices because energy-intensive goods such as food typically account for a larger share of their budget (Grainger and Kolstad 2010; Grainger, Zhang, and Shreiber 2015) [27]. Due to limited data availability, the indirect effect of higher industrial electricity prices on household

[27] Grainger, C. A., and C. D. Kolstad. 2010. "Distribution and Climate Change Policies." In Climate Change Policies: Global Challenges and Future Prospects, edited by E. Cerda and X. Labandiera. Cheltenham, U.K.: Edward Elgar Publishing. Grainger, Corbett, Fan Zhang, and Andrew Shreiber. 2015. "Distributional Impact of Energy Cross-Subsidies in Transition Economies: Evidence from Belarus." Energy Policy. 2019. V (1215):65-81.

expenses is not quantified in this note.

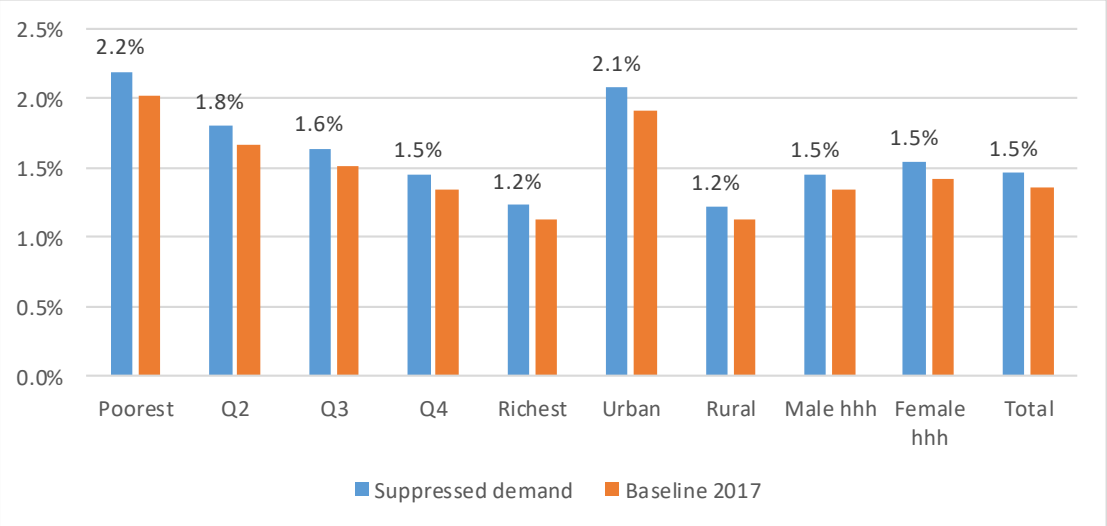
(2) Long-term impact of propose tariff change in 2022

22. Recent literature suggests that households respond to average price of electricity instead of marginal price of electricity[28]. To estimate the impact of electricity tariff increase, we consider the scenario in which average electricity price will increase by 51 percent between fiscal year 2018 and 2022 to reach cost-recovery level under pessimistic projection of NEA's financial performance. Households' income would also increase. We assume the increase in household total expenditure is in line with the increase in GDP which is projected to go up by 52 percent during FY2018 and 2021.

23. The impact of tariff hike on electricity affordability depends crucially on the level of households' electricity consumption. We consider the following three scenarios of potential electricity consumption after price hike:

24. **Scenario 1**: we predict households electricity consumption in a demand suppressed scenario. Using actual electricity consumption data reported in Pinto and Yoo (2019), we run a regression of electricity demand on income, price and other households' economic and demographic characteristics. The estimated income elasticity is 0.18, suggesting that electricity consumption is very inelastic to income changes in Nepal, possibly due to suppressed demand.

Figure 11. Budget share of electricity after price hike in a demand-suppressed scenario



Source: Estimation based on MTF survey data.
Note: This scenario assumes electricity price increases by 51 percent and income increases by 52 percent (the same rate as projected GDP growth). Using MTF data, the suppressed income elasticity is estimated to be 0.18. Price elasticity is assumed to be 0 for a higher impact case.

25. Data limitation and Nepal's block tariff structure preclude an estimation of price elasticity based on household survey data.[29] We consider a higher impact case in which demand is perfectly inelastic to price changes.

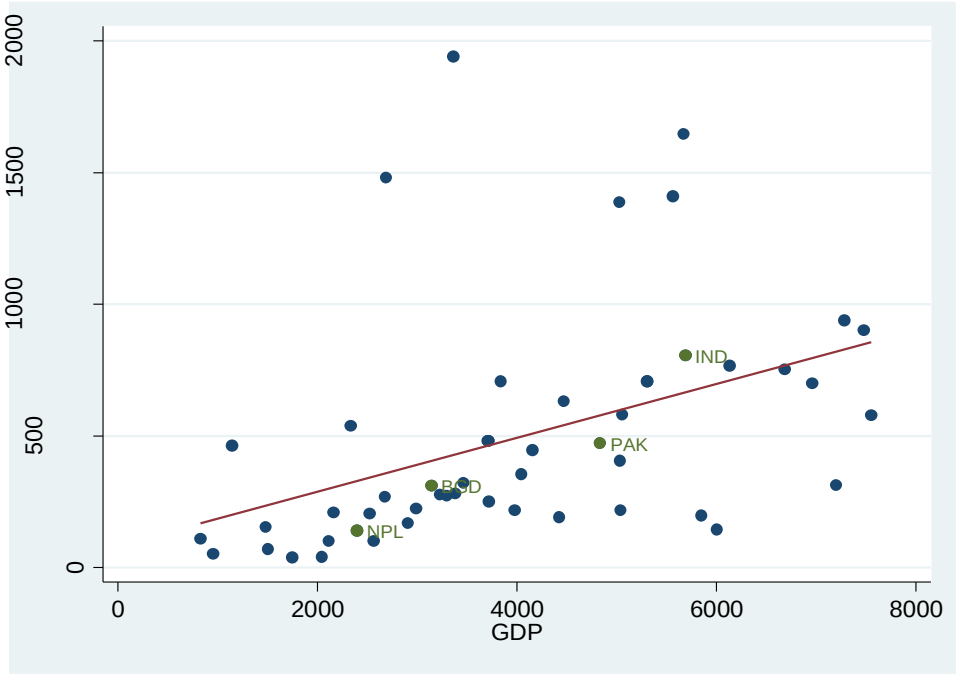
[28] Ito, K. 2014. "Do Consumers Respond to Marginal or Average Price? Evidence from Nonlinear Electricity Pricing." American Economic Review, 104(2): 537-63.
[29] A panel dataset and instrumental variable approach are required to estimate price elasticity given Nepal's block tariff structure (a simple

We further assume that price elasticities are constant across all income groups.

26. Based on the above assumptions, consumption would increase by 9.4 percent given projected price and income changes. The budget share of electricity for the poorest quintile would slightly increase from 2.02 percent in 2017 to 2.20 percent after the price hike (Figure 11). On average, the expenditure share of electricity would increase from 1.35 percent to 1.47 percent.

27. **Scenario 2**: Nepal's per capita electricity consumption ranks the 8th lowest among 144 economies in 2014. It is strikingly low compared to countries of similar income, possibly due to years of underinvestment and load-shedding (Figure 12). The actual income elasticity under less suppressed demand could be higher than that estimated based on MTF data in scenario 1. To predict unsuppressed demand, we estimate income and price elasticity using panel data for Bangladesh, India and Pakistan from 2006 to 2017. Households in these neighboring countries have similar preference and substitution opportunities for electricity, therefore could be used as comparators to predict counterfactuals in which demand is less depressed in Nepal. However, it is worth noting that actual electricity consumption in Bangladesh, India, and Pakistan are also lower than latent demand due to electricity shortages in these countries.

Figure 12. Nepal's electricity consumption is low compared to countries of similar income



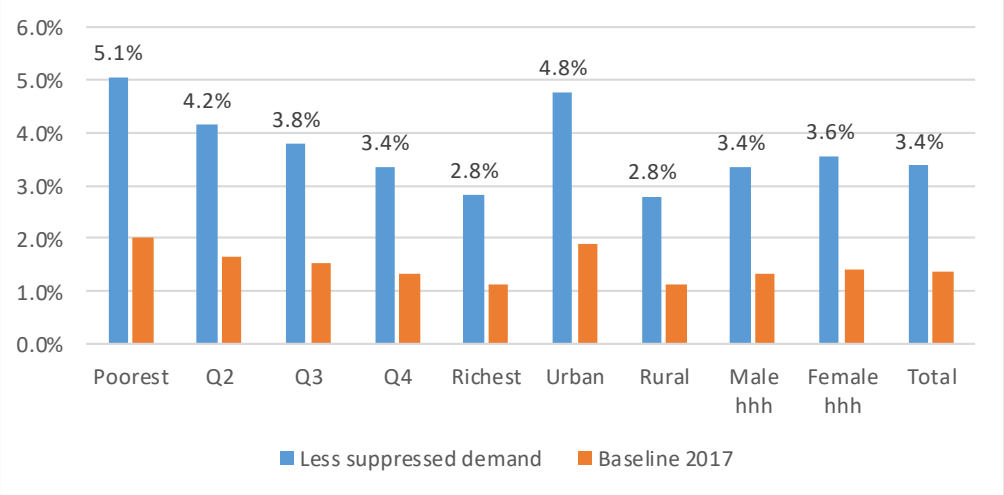
Source: World Bank Development Indicators
Note: The x-axis indicates per capita GDP at purchasing power parity. The y-axis indicates per capita electricity consumption in kWh. All data are for 2014, the latest year when data on per capita electricity consumption are available for most countries. The red line indicates fitted values for the relationship between income and electricity consumption. NPL, BGD, PAK, and IND represents Nepal, Bangladesh, India and Pakistan, respectively.

OLS using cross-section data would yield counterintuitive results). Using the Nepal Living Standard Survey (NLSS) - which was conducted in FY 1996, FY 2004 and FY 2011 - is a possibility. However, electrification rate in Nepal in 1995-96 was extremely low. The sample size was less than 200 households. Because of an insufficient sample size and poor quality of data, using the NLSS to estimate price elasticity was not feasible.

28. We run a regression of per capita consumption on per capita income and average electricity price. We also include country and year fixed effects to control for differences in country-specific characteristics such as weather pattern and energy efficiency standards, and shocks that are common to all countries in a year. The estimated income and price elasticities are 1.08 and -0.22, respectively. The predicted consumption for Nepal after potential price and income increase is 302kWh, a 116 percent rise from baseline consumption in 2017.

29. With a less suppressed demand, the budget share of electricity for the poorest quintile would significantly increase from 2.02 percent to 5.05 percent after the price hike (Figure 13.). On average, the expenditure share of electricity would more than double from 1.35 percent to 3.38 percent.

Figure 13. Budget share of electricity after price hike assuming less suppressed demand

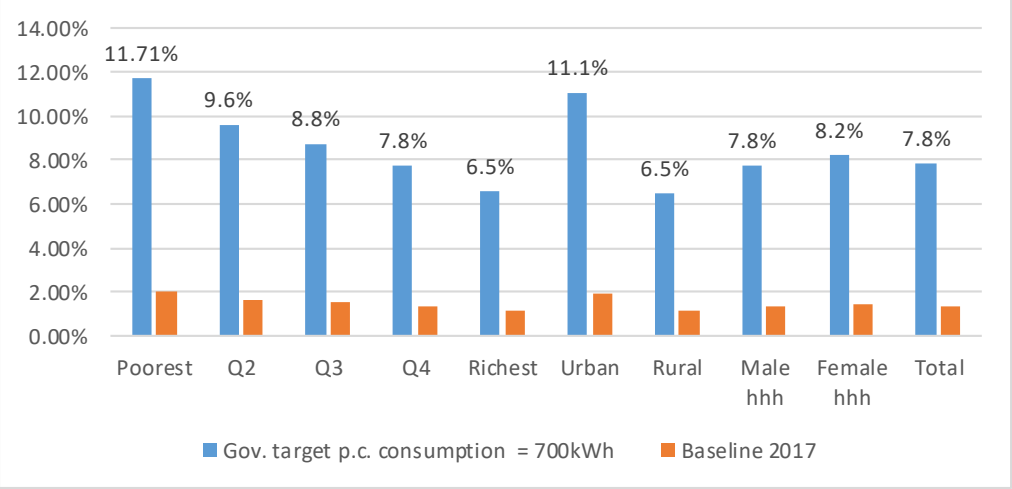


Source: Estimation based on MTF survey data
Note: This scenario assumes electricity price increases by 51 percent and income increases by 52 percent (the same rate as projected GDP growth). Using cross-country panel data, the less suppressed income elasticity is estimated to be 1.08 and price elasticity is estimated to be -0.22.

30. **Scenario 3:** The government sets an ambitious goal to increase annual per capita consumption to 700kWh in 5 years. As a stretch test, we assess the affordability of electricity in a scenario in which average consumption of electricity reaches the government targeted 700kWh, a 400 percent increase from the baseline consumption in 2017. Assuming electricity prices increase by 51 percent and income goes up at the same rate as projected GDP growth. The estimated budget share of electricity jumps to 11.71 percent of total household expenditure for the poorest income group (Figure 14). The budget share of electricity consumption for the average population is 7.8 percent. Urban households appear to be the most affected, for which an average 11.1 percent of disposable income would be spent on electricity.

31. What would be the impact of tariff hike on currently off-grid households once they gain access to the grid? A series of statistical testing shows that off-grid households are systematically different form grid-connected households: they are poorer, more likely to reside in rural area, having a larger family size and more children, more likely to be female headed, and less educated (Table 2A). These off-grid households are likely to be more vulnerable to potential tariff increases once they are connected to the grid.

Figure 14. Budget share of electricity expenditure after price hike if annual per capita consumption increases to 700kWh



Source: Estimation based on MTF survey data

Note: This scenario assumes average consumption of electricity reaches government targeted average consumption of 700kWh; electricity prices increase by 51 percent and income increases by 52 percent (the same rate as projected GDP growth).

Table 2A. Off-grid households are systematically different from households connected to the grid

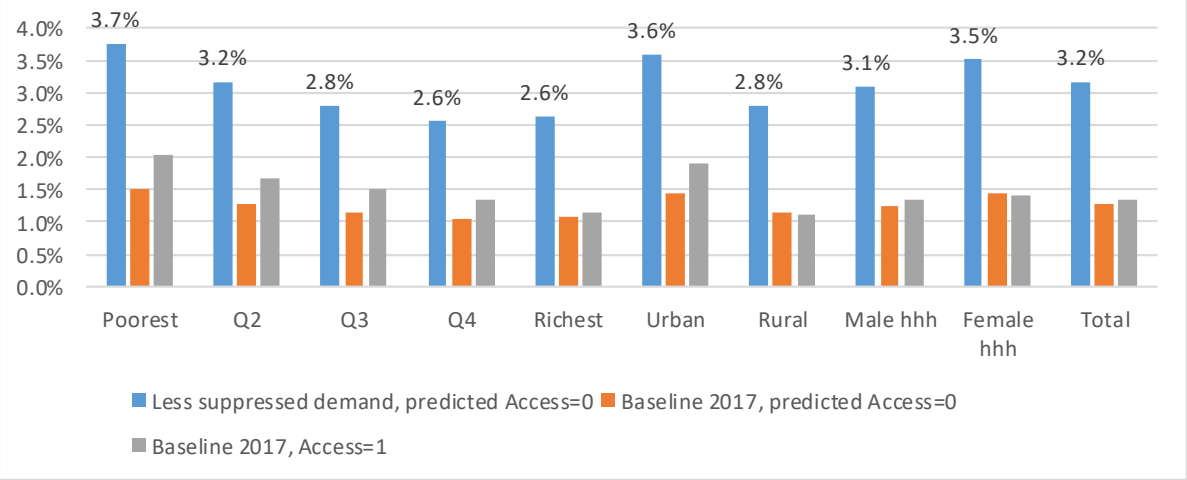
Variables	Total	access=1	access=0	Diff in means
Urban	0.43	0.49	0.20	0.29 ***
	(0.02)	(0.02)	(0.03)	(0.03)
Per capita annual expenditure	70,762	76,686	48,891	27,795 ***
	(1,593)	(1,800)	(1,569)	(2,132)
Number of family members	4.5	4.5	4.7	-0.17 **
	(0.04)	(0.04)	(0.07)	(0.07)
Number of children age below 15	1.6	1.5	1.8	-0.34 ***
	(0.03)	(0.03)	(0.04)	(0.05)
Number of children age below 15, enrolled in school	1.0	0.9	1.1	-0.12 ***
	(0.02)	(0.02)	(0.03)	(0.04)
Age of household head	45.3	45.4	45.1	0.31
	(0.22)	(0.25)	(0.43)	(0.49)
Female head	0.25	0.26	0.22	0.04 **
	(0.01)	(0.01)	(0.01)	(0.01)
HH education, less than primary school	0.66	0.61	0.81	-0.19 ***
	(0.01)	(0.01)	(0.01)	(0.01)
HH education, primary school	0.17	0.19	0.11	0.08 ***
	(0.01)	(0.01)	(0.01)	(0.01)
HH education, secondary school	0.13	0.14	0.07	0.08 ***
	(0.01)	(0.01)	(0.01)	(0.01)
HH education, bachelor and up	0.05	0.05	0.01	0.04 ***
	(0.00)	(0.00)	(0.00)	(0.00)

Total rooms in the house	4.5	4.6	4.0	0.61 ***
	(0.05)	(0.05)	(0.11)	(0.11)
Observations	9,000	7,262	1,739	9,000

Source: AHS 2015-2017
Note: ** indicates statistically significant at 5 percent level, *** indicates statistically significant at 1 percent level.

32. To assess the potential impact of price increase on current off-grid households, we first estimate how much electricity off-grid households would consume if they were connected to the grid. We run a regression of electricity consumption on a range of households' economic and demographic characteristics. We then predict consumption of off-grid households based on estimated coefficients. The average baseline consumption of off-grid households is 84 kWh, 31 percent lower than the average consumption of grid-connected households. Based on the assumptions that (1) price and income increases by 51 and 52 percent, respectively, and (2) price and income elasticities are the same as those estimated under less suppressed demand scenario, the budget share of electricity for the poorest households who were not connected to the grid in 2017 could increase to 3.75 percent after gaining access to the grid (Figure 15).

Figure 15. Potential budget share of electricity after price hike for off-grid household



Source: Estimation based on MTF survey data
Note: This scenario predicts potential electricity consumption of current off-grid households. It assumes electricity price increase by 51 percent and income increases by 52 percent (the same rate as projected GDP growth). The income and price elasticities are the same as those estimated under less suppressed demand scenario, i.e. 1.08 and -0.22, respectively.

BENEFITS OF ELECTRIFICATION

33. Electricity sector reform provides opportunities that would not otherwise exist to improve access and quality of power supply. Experience in other countries suggest that electrification is associated with a broad range of social and economic benefits. These welfare gains often more than offset the short-term adverse impact of tariff increase. We use data from multi-tier household survey to quantify the benefits of electrification in Nepal.

34. We use the following model to estimate the effect of electrification:

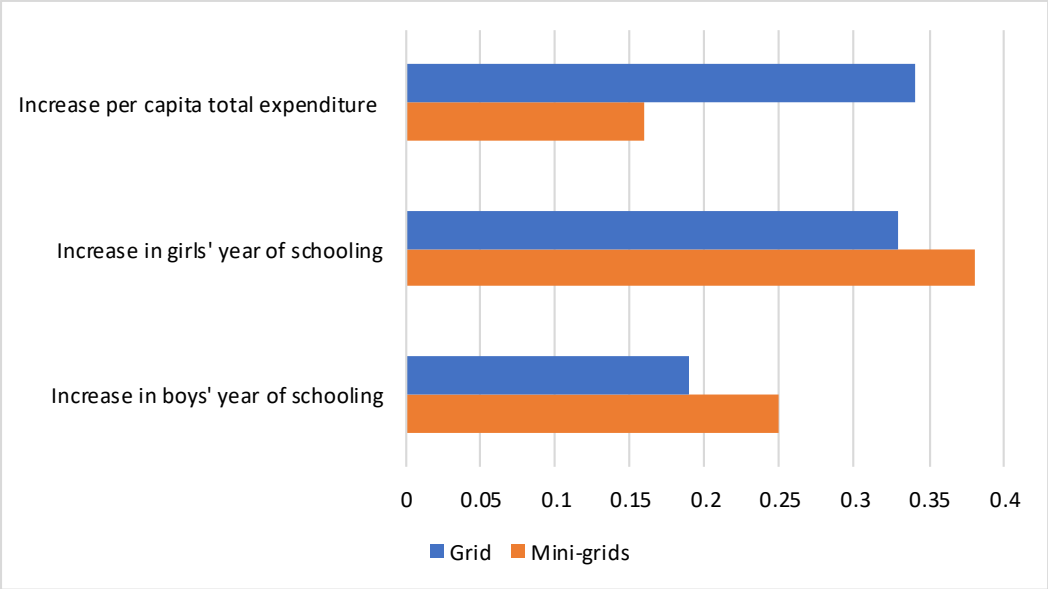
$$Y_i = \beta X_i + \gamma G_i + \delta M_i + u_i + \varepsilon_i \qquad (1)$$

where *Yi* denotes the outcome variables of household i, including per capita total expenditure, and children's school enrollment and years of schooling; *Xi* is a vector of observable household- and community-level characteristics, including age, gender and education level of household's head, the number of adult males and females in the household, the amount of household land asset. We also control for whether a household owns other alternative source of electricity, including solar lighting system, pico-hydro, solar lantern and solar home systems, and rechargeable battery. At the village level, the control variables include dummy variables measuring the presence of paved roads, schools, markets, banks, nongovernmental organizations (NGOs), and development programs; village price of kerosene, the proportion of landless households, distance to the nearest district center, total number of households in the village, and whether the village is located in mountains, hills or Terai. G_i *and* M_i are dummy variables measuring households' electrification status. G_i equals 1 if the household has access to national grid, and 0 otherwise. M_i equals 1 if the household has access to local mini grids, and 0 otherwise. $u_i\varepsilon_{it}$ is unobserved household or village characteristics that could also affect households economic and social outcomes. β, γ and δ are unknown parameters to be estimated.

35. An OLS estimation of equation 1 is likely to be biased because of the endogeneity of *Gi* and *Mi*. The endogeneity arises from both nonrandom grid expansion at the village level and nonrandom adoption of electricity at the household level such that the unobserved household- and village-level characteristics (*ui*) are correlated with both outcome and treatment. For example, the government may target electrification projects to areas that are more easily accessible and have greater growth potential. In addition, when electricity becomes available in a village, better-off households are more likely to obtain grid connections first.

36. We use inverse probability of treatment weighting using the propensity score to address the potential endogeneity. We first estimate the propensity score, that is the conditional probability of being connected to the grid, based on household and village-level observational characteristics. We then weight each observation using the inverse of the propensity score to estimate the average causal effects of treatments.

Figure 16. Benefits of electrification



Source: Estimation based on multi-tier household survey 2017

37. The estimation results show that gaining access to grid and mini-grids are associated with higher income and better educational results (Figure 16). In contrast, the effects of off-grid electricity are small and statistically insignificant. Specifically, being connected to grid and mini-grids is associated with a 34 percent and 16 percent increase in per capita total expenditure, respectively. Electrification (both grid and mini-grids) increases the probability of being enrolled in a school for both boys and girls. It also increases total years of schooling by about 0.3 years for girls and about 0.2 years for boys.